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

Sundry Print Report

02/21/2024

Well Name: RED HILLS UNIT

Well Location: T25S / R33E / SEC 33 / NENE /

County or Parish/State:

Well Number: 78H

Type of Well: OIL WELL

Allottee or Tribe Name:

Lease Number: NMNM005792

Unit or CA Name:

Unit or CA Number:

US Well Number: 3002551927

Well Status: Approved Application for Permit to Drill

Operator: CIMAREX ENERGY COMPANY

Notice of Intent

Sundry ID: 2768265

Type of Submission: Notice of Intent

Type of Action: APD Change

Date Sundry Submitted: 01/04/2024

Time Sundry Submitted: 02:47

Date proposed operation will begin: 03/01/2024

Procedure Description: Cimarex Energy Company respectfully requests the following drilling and directional changes be made to the existing and approved APD for the following well: Red Hills Unit 78H 1. Casing design change - Long String to Liner. 2. New bottom hole location. See attached.

NOI Attachments

Procedure Description

Red_Hills_Unit_78H_Sundry_Submittal_01042024_20240104141708.pdf

Conditions of Approval

Specialist Review

Red_Hills_Unit_78H_Sundry_ID_2768265_20240216103456.pdf

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Well Status: Approved Application for Permit to Drill

Operator: CIMAREX ENERGY COMPANY

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: SHELLY BOWEN

Signed on: JAN 04, 2024 02:17 PM

Name: CIMAREX ENERGY COMPANY

Title: Regulatory Analyst

Street Address: 6001 DEAUVILLE BLVD STE 300N

City: MIDLAND **State:** TX

Phone: (432) 620-1644

Email address: DL_PBUREGULATORY@COTERRA.COM

Field

Representative Name:

Street Address:

City: **State:** **Zip:**

Phone:

Email address:

BLM Point of Contact

BLM POC Name: LONG VO

BLM POC Title: Petroleum Engineer

BLM POC Phone: 5759885402

BLM POC Email Address: LVO@BLM.GOV

Disposition: Approved

Disposition Date: 02/16/2024

Signature: Long Vo

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.

SUBMIT IN TRIPLICATE *- Other instructions on page 2*

5. Lease Serial No.

6. If Indian, Allottee or Tribe Name

7. If Unit of CA/Agreement, Name and/or No.

1. Type of Well
☐ Oil Well ☐ Gas Well ☐ Other

8. Well Name and No.

2. Name of Operator

9. API Well No.

3a. Address

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

10. Field and Pool or Exploratory Area

4. Location of Well *(Footage, Sec., T.,R.,M., or Survey Description)*

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			
☐ Notice of Intent	☐ Acidize	☐ Deepen	☐ Production (Start/Resume)	☐ Water Shut-Off
	☐ Alter Casing	☐ Hydraulic Fracturing	☐ Reclamation	☐ Well Integrity
☐ Subsequent Report	☐ Casing Repair	☐ New Construction	☐ Recomplete	☐ Other
	☐ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon	
☐ Final Abandonment Notice	☐ Convert to Injection	☐ Plug Back	☐ 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 recomplete 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 OFICE 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 ofthis form to U.S. Department ofthe Interior, Bureau ofLand 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: NENE / 388 FNL / 969 FEL / TWSP: 25S / RANGE: 33E / SECTION: 33 / LAT: 32.09321 / LONG: -103.571883 (TVD: 0 feet, MD: 0 feet)

PPP: NENE / 388 FNL / 440 FEL / TWSP: 25S / RANGE: 33E / SECTION: 33 / LAT: 32.093207 / LONG: -103.570174 (TVD: 11050 feet, MD: 11356 feet)

BHL: SESE / 100 FSL / 440 FEL / TWSP: 26S / RANGE: 33E / SECTION: 4 / LAT: 32.065536 / LONG: -103.570137 (TVD: 11050 feet, MD: 21018 feet)

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

Sundry ID	Well Name	API	S/T/R	SHL Old	SHL New	S/T/R	BHL Old	BHL New
	Red Hills Unit 78H	30-025-51927	33/25S/33E	388 FNL 969 FEL	No Change	4/26S/33E	100 FSL 440 FEL	**100 FSL 1100 FEL**
		TVD Old	**TVD New**	**MD Old**	**MD New**	**Old Formation**	**New Formation**	**Producing Zone**
		11,050'	**11,035'**	21,018	**21,140**	Wolfcamp	**Lower 2nd Sand**	**WC G-09 S253335K;LOWER BONE SPRING**

Section 1 - Geologic Formations

See attached drilling plan/attached Geoprog

Section 2 - Blowout Prevention

Old	New
5M	**2M**
	3M
	5M

Section 3 - Casing

Old

Hole Size	Casing Depth From (MD)	Casing Depth To (MD)	Setting Depth (TVD)	Casing Size	Weight (lb/ft)	Grade	Conn
14 3/4	0	970	970	10-3/4"	40.50	J-55	BT&C
9 7/8	0	11220	11050	7-5/8"	29.70	L-80	BT&C
6 3/4	0	10556	10556	5-1/2"	20.00	L-80	LT&C
6 3/4	10556	21018	11050	5"	18.00	P-110	BT&C

New

Hole Size	Casing Depth From (MD)	Casing Depth To (MD)	Setting Depth (TVD)	Casing Size	Weight (lb/ft)	Grade	Conn
17 1/2	**0**	**1010**	**1010**	**13-3/8"**	**48.00**	**H-40**	**ST&C**
12 1/4	**0**	**4900**	**4890**	**9-5/8"**	**40.00**	**HCK-55**	**LT&C**
8 3/4	**0**	**10456**	**10456**	**7"**	**29.00**	**L-80**	**BT&C**
8 3/4	**10456**	**11206**	**10995**	**7"**	**29.00**	**L-80**	**BT&C**
6	**9956**	**21140**	**10897**	**4-1/2"**	**11.60**	**P-110**	**BT&C**

Section 4 - Cement

Old

Casing	# SKS
Surface	481
Intermediate	1460
Production	1349

New

Casing	# SKS
Surface	**620**
Intermediate	**1216**
Production	**479**
Completion System	**737**

Section 5 - Circulating Medium

Old

Depth	Type	Weight (ppg)	Viscosity
0' to 970'	Fresh Water	7.83 - 8.33	28
970' to 11220'	Brine Diesel Emulsion	8.50 - 9.00	30-35
11220' to 21018'	OBM	9.50 - 10.00	50-70

New

Depth	Type	Weight (ppg)	Viscosity
0' to 1010'	**Fresh Water**	**7.83 - 8.33**	**28**
1010' to 4900'	**Brine Water**	**9.50 - 10.00**	**30-32**
4900' to 11206'	**Cut Brine or OBM**	**8.50 - 9.00**	**27-70**
11512' to 21140'	**OBM**	**9.50 - 10.00**	**50-70**

Section 7 - Bottom Hole Pressure

Old	New
5746	**5666**

Section 10 - Variances

Variance Request #1: Skid Rig after Cementing Surface Casing

Coterra requests permission to skid the rig to the next well on the pad in order to begin operations immediately after the cement job for the surface casing has been completed. After the cement job is completed, no operations on the subject well will be conducted until at least 8 hours have elapsed, and both lead and tail slurries have achieved 500 psi compressive strength. While cement cures, the surface casing of the subject well will be suspended in the well by a mandrel and landing ring system, which is independent from the rig and ensures that casing remains centered while the rig is active on other wells.

Variance Request #4: Utilize Co-Flex Choke Line

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

District I
1625 N. French Dr., Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720
District III
1000 Rio Brazos Road, Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

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

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

[1] API Number	[2] Pool Code	[3] Pool Name
30-025-51927	97741	WC G-09 S253335K;LOWER BONE SPRING

[4] Property Code	[5] Property Name	[6] Well Number
	RED HILLS UNIT	78H
[7] OGRID No.	[8] Operator Name	[9] Elevation
215099	CIMAREX ENERGY CO.	3343.4'

[10] Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
A	33	25S	33E		388	NORTH	969	EAST	LEA

[11] Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
P	4	26S	33E		100	SOUTH	1100	EAST	LEA

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

No allowable will be assigned to this completion until all interests have been consolidated or a non-standard unit has been approved by the division.

[16] NOTE:
- Distances referenced on plat to section lines are perpendicular.
- Basis of Bearing is a Transverse Mercator Projection with a Central Meridian of W-103°53'00" (NAD 83)

NAD 83 (SURFACE HOLE LOCATION)
LATITUDE = 32°05'35.56" (32.093210°)
LONGITUDE = -103°34'18.78" (-103.571883°)
NAD 27 (SURFACE HOLE LOCATION)
LATITUDE = 32°05'35.11" (32.093085°)
LONGITUDE = -103°34'17.09" (-103.571413°)
STATE PLANE NAD 83 (N.M. EAST)
N: 398479.22' E: 777142.01'
STATE PLANE NAD 27 (N.M. EAST)
N: 398421.61' E: 735955.49'

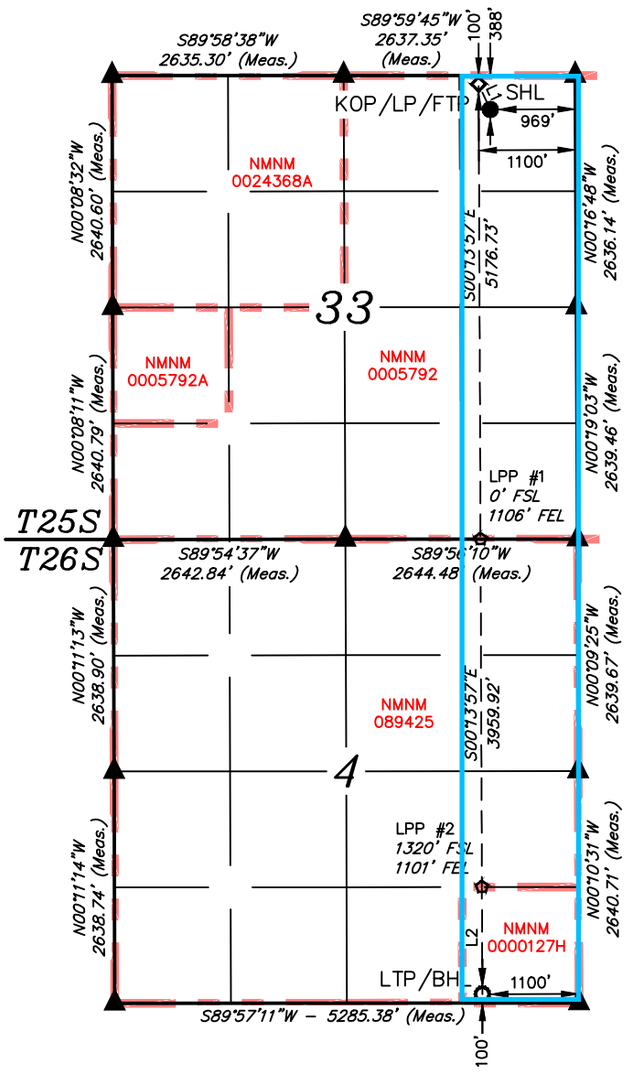
NAD 83 (KOP/LP/FTP)
LATITUDE = 32°05'38.41" (32.094003°)
LONGITUDE = -103°34'20.30" (-103.572306°)
NAD 27 (KOP/LP/FTP)
LATITUDE = 32°05'37.96" (32.093879°)
LONGITUDE = -103°34'18.61" (-103.571836°)
STATE PLANE NAD 83 (N.M. EAST)
N: 398766.79' E: 777008.86'
STATE PLANE NAD 27 (N.M. EAST)
N: 398709.18' E: 735822.36'

NAD 83 (LPP #1)
LATITUDE = 32°04'47.19" (32.079776°)
LONGITUDE = -103°34'20.23" (-103.572287°)
NAD 27 (LPP #1)
LATITUDE = 32°04'46.74" (32.079651°)
LONGITUDE = -103°34'18.54" (-103.571817°)
STATE PLANE NAD 83 (N.M. EAST)
N: 393591.12' E: 777051.46'
STATE PLANE NAD 27 (N.M. EAST)
N: 393533.64' E: 735864.71'

NAD 83 (LPP #2)
LATITUDE = 32°04'08.01" (32.068893°)
LONGITUDE = -103°34'20.18" (-103.572272°)
NAD 27 (LPP #2)
LATITUDE = 32°04'07.56" (32.068768°)
LONGITUDE = -103°34'18.49" (-103.571803°)
STATE PLANE NAD 83 (N.M. EAST)
N: 389632.01' E: 777084.05'
STATE PLANE NAD 27 (N.M. EAST)
N: 389574.63' E: 735897.11'

NAD 83 (LTP/BHL)
LATITUDE = 32°03'55.94" (32.065539°)
LONGITUDE = -103°34'20.16" (-103.572267°)
NAD 27 (LTP/BHL)
LATITUDE = 32°03'55.49" (32.065414°)
LONGITUDE = -103°34'18.47" (-103.571798°)
STATE PLANE NAD 83 (N.M. EAST)
N: 388412.11' E: 777094.08'
STATE PLANE NAD 27 (N.M. EAST)
N: 388354.75' E: 735907.09'

LINE TABLE		
LINE	DIRECTION	LENGTH
L1	N24°36'18"W	316.95'
L2	S00°13'57"E	1220.15'



● = SURFACE HOLE LOCATION
◇ = KICK OFF POINT/LANDING POINT /FIRST TAKE POINT
✩ = LEASE PENETRATION POINT
○ = LAST TAKE POINT/BOTTOM HOLE LOCATION
▲ = SECTION CORNER LOCATED
▬ = LEASE LINE

2000' 1000' 0' 2000'
SCALE
DRAWN BY: T.S. 02-13-20
REV: 1 Z.L. 11-21-23 (UPDATE WELL BORE)

[17] OPERATOR CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Shelly Bowen 1/4/24
Signature Date

Shelly Bowen
Printed Name

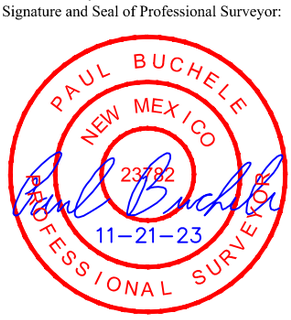
shelly.bowen@coterra.com
E-mail Address

[18] SURVEYOR CERTIFICATION

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.

May 05, 2017
Date of Survey

Signature and Seal of Professional Surveyor:



Certificate Number:

1. Geological Formations

TVD of target 10,897
MD at TD 21,140

Pilot Hole TD N/A
Deepest expected fresh water

Formation	Depth (TVD) from KB	Water/Mineral Bearing/Target Zone	Hazards
Rustler	960	N/A	
Top of Salt	1270	N/A	
Base of Salt/Lamar	4915	N/A	
Top Delaware Sands/Bell Canyon	4940	Hydrocarbons	
Cherry Canyon	5960	Hydrocarbons	
Brushy Canyon	7480	Hydrocarbons	
Basal Brushy Canyon	8855	N/A	
Bone Spring Lime	9040	N/A	
Leonard/Avalon Sand	9065	Hydrocarbons	
Avalon Shale	9330	Hydrocarbons	
1st Bone Spring Sand	10035	Hydrocarbons	
2nd Bone Spring Shale	10235	Hydrocarbons	
2nd Bone Spring Sand	10585	Hydrocarbons	
Lower 2nd Sand - Target	11035	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	1010	1010	13-3/8"	48.00	H-40	ST&C	1.69	3.95	6.64
12 1/4	0	4900	4890	9-5/8"	40.00	HCK-55	LT&C	1.50	1.55	2.87
8 3/4	0	10456	10456	7"	29.00	L-80	BT&C	1.43	1.67	2.12
8 3/4	10456	11206	10995	7"	29.00	L-80	BT&C	1.36	1.59	43.25
6	9956	21140	10897	4-1/2"	11.60	P-110	BT&C	1.34	1.89	33.62
					BLM Minimum Safety Factor			1.125	1	1.6 Dry 1.8 Wet

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

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

3. Cementing Program

Casing	# Sks	Wt. lb/gal	Yld ft3/sack	H2O gal/sk	500# Comp. Strength (hours)	Slurry Description
Surface	489	13.50	1.72	9.15	15.5	Lead: Class C + Bentonite
	131	14.80	1.34	6.32	9.5	Tail: Class C + LCM
Intermediate	930	12.90	1.88	9.65	12	Lead: 35:65 (Poz:C) + Salt + Bentonite
	286	14.80	1.34	6.32	9.5	Tail: Class C + LCM
Production	354	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	737	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	49
Production	4700	25
Completion System	11006	10

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

4. Pressure Control Equipment

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

BOP installed and tested before drilling which hole?	Size	Min Required WP	Type		Tested To
12 1/4	13 5/8	2M	Annular	X	50% of working pressure
			Blind Ram		2M
			Pipe Ram		
			Double Ram	X	
			Other		
8 3/4	13 5/8	3M	Annular	X	50% of working pressure
			Blind Ram		3M
			Pipe Ram		
			Double Ram	X	
			Other		
6	13 5/8	5M	Annular	X	50% of working pressure
			Blind Ram		5M
			Pipe Ram	X	
			Double Ram	X	
			Other		

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

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

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

5. Mud Program

Depth	Type	Weight (ppg)	Viscosity	Water Loss
0' to 1010'	Fresh Water	7.83 - 8.33	28	N/C
1010' to 4900'	Brine Water	9.50 - 10.00	30-32	N/C
4900' to 11206'	Cut Brine or OBM	8.50 - 9.00	27-70	N/C
11512' to 21140'	OBM	9.50 - 10.00	50-70	N/C

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

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

6. Logging and Testing Procedures

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

Additional Logs Planned	Interval

7. Drilling Conditions

Condition	
BH Pressure at deepest TVD	5666 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

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 50% of working pressure. The pressure test will be repeated at least every 30 days, as per Onshore Order No. 2.

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

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

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

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

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

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

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

Geologic Prognosis

COTERRA

Well Information		Contact Information
Well Name: Red Hills Unit 78H	**County:** Lea	**Jenny Blake**
API #:	**State:** New Mexico	Office: (432) 571-7800
Dev/Exp: Development	**Field:**	Cell: (281) 639-4419
		Email: Jenny.Blake@coterra.com

Surface Hole Information					
Footages:	**Section:**	**Township:**	**Range:**	**Direction**	
388' FNL / 969' FEL	33	25S	33E	N-S	**Staci Mueller**

Bottom Hole Information				
Footages:	**Section:**	**Township:**	**Range:**	Office: (432) 571-7898
100' FSL / 1100' FEL	4	26S	33E	Cell: (406) 794-2287
				Email: Staci.Mueller@coterra.com

Target Information

2nd Bone Spring Sand — Landing TVD: ***11,035'*** — TD TVD: 10,987'

Generated By:	Jenny Blake	Date Generated:	12/11/2023
Est. GL Elevation:	3357		
Est. KB above GL	23	Rig:	
Est. KB Elevation:	3380		

Horizon	TVD top	TVD base	SSTVD top	Thickness	Lithology	Mineral Resource	Comments
Rustler	960	1270	2420	310	Anhydrite	Useable Water	Hardline 100' FSL/100' FNL & 330' FWL/FEL
Top Salt/Salado	1270	4915	2110	3645	Halite	N/A	
Base Salt/Lamar	4915	4940	-1535	25	Shale	N/A	
Top Delaware Sands/Bell Canyon	4940	5960	-1560	1020	Sandstone	Natural gas, oil	
Cherry Canyon	5960	7480	-2580	1520	Sandstone	Natural gas, oil	
Brushy Canyon	7480	8855	-4100	1375	Sandstone	Natural gas, oil	
Basal Brushy Canyon	8855	9040	-5475	185			
Bone Spring Lime	9040	9065	-5660	25	Limestone	N/A	
Leonard/Avalon Sand	9065	9330	-5685	265	Shale	Natural gas, oil	
Avalon Shale	9330	10035	-5950	705	Shale	Natural gas, oil	
1st Bone Spring Sand	10035	10235	-6655	200	Sandstone	Natural gas, oil	
2nd Bone Spring Shale	10235	10585	-6855	350	Shale	Natural gas, oil	
2nd Bone Spring Sand	10585	11,035	-7205	450	Sandstone	Natural gas, oil	
Lower 2nd Sand Target	**11,035**	---	**-7,655**	---			

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

Schlumberger

COTERRA

Rev1

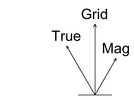
COTERRA

Borehole:	Well:	Field:	Structure:
Red Hills Unit 78H	Red Hills Unit 78H	NM Lea County (NAD 83)	Coterra Red Hills Unit Pad 76-81

Gravity & Magnetic Parameters						Surface Location	NAD83 New Mexico State Plane, Eastern Zone, US Feet					Miscellaneous			
Model:	HDGM 2023	Dip:	59.593°	Date:	21-Dec-2023	Lat:	N 32 5 35.56	Northing:	398479.22ftUS	Grid Conv:	0.4046°	Slot:	Red Hills Unit 78H	TVD Ref:	RKB (3366.400 ft above MSL)
MagDec:	6.192°	FS:	47275.693nT	Gravity FS:	998.438mgn (9.80665 Based)	Lon:	W 103 34 18.78	Easting:	777142.01ftUS	Scale Fact:	0.99997278	Plan:	Coterra Red Hills Unit 78H Rev1 kFc 21Dec23		

Critical Points

Critical Point	MD	INCL	AZIM	TVD	VSEC	N(+)/S(-)	E(+)/W(-)	DLS
SHL [388' FNL, 969' FEL]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Rustler	960.00	0.00	335.16	960.00	0.00	0.00	0.00	0.00
Salado	1270.00	0.00	335.16	1270.00	0.00	0.00	0.00	0.00
Nudge, Build 2°/100ft	2000.00	0.00	335.16	2000.00	0.00	0.00	0.00	0.00
Hold	2249.99	5.00	335.16	2249.68	-9.93	9.89	-4.58	2.00
Lamar	4925.50	5.00	335.16	4915.00	-222.33	221.49	-102.55	0.00
Bell Canyon	4950.59	5.00	335.16	4940.00	-224.32	223.48	-103.47	0.00
Drop 2°/100ft	5636.04	5.00	335.16	5622.84	-278.73	277.69	-128.57	0.00
Hold	5886.04	0.00	335.16	5872.52	-288.66	287.58	-133.15	2.00
Cherry Canyon	5973.52	0.00	335.16	5960.00	-288.66	287.58	-133.15	0.00
Brushy Canyon	7493.52	0.00	335.16	7480.00	-288.66	287.58	-133.15	0.00
Basal Brushy Canyon	8868.52	0.00	335.16	8855.00	-288.66	287.58	-133.15	0.00
Bone Springs Lime	9053.52	0.00	335.16	9040.00	-288.66	287.58	-133.15	0.00
Leonard	9078.52	0.00	335.16	9065.00	-288.66	287.58	-133.15	0.00
Avalon	9343.52	0.00	335.16	9330.00	-288.66	287.58	-133.15	0.00
1st BS SS	10048.52	0.00	335.16	10035.00	-288.66	287.58	-133.15	0.00
2nd BS Carb	10248.52	0.00	335.16	10235.00	-288.66	287.58	-133.15	0.00
KOP, Build 10°/100ft	10456.04	0.00	335.16	10442.52	-288.66	287.58	-133.15	0.00
2nd BS SS	10600.03	14.40	179.53	10585.00	-270.67	269.58	-133.01	10.00
Build 5°/100ft	11206.04	75.00	179.53	10995.95	136.00	-137.07	-129.67	10.00
Landing Point	11511.75	90.29	179.53	11034.99	438.30	-439.36	-127.19	5.00
Red Hills Unit 78H - BHL [100' FSL, 1100' FEL]	21140.24	90.29	179.53	10987.00	10066.67	-10067.40	-47.93	0.00



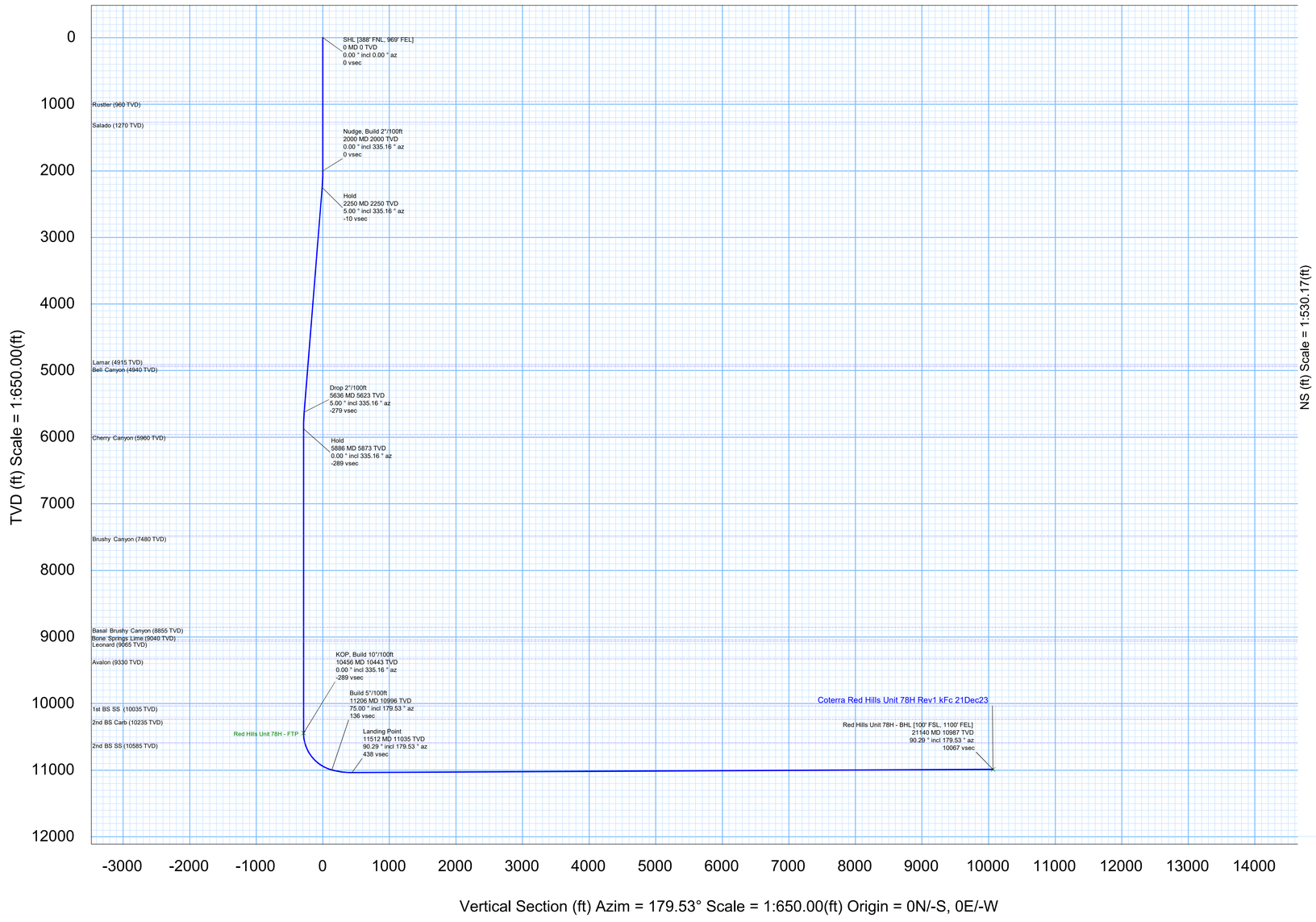
Grid North
Tot Corr (M->G 5.788°)
Mag Dec (6.192°)
Grid Conv (0.405°)

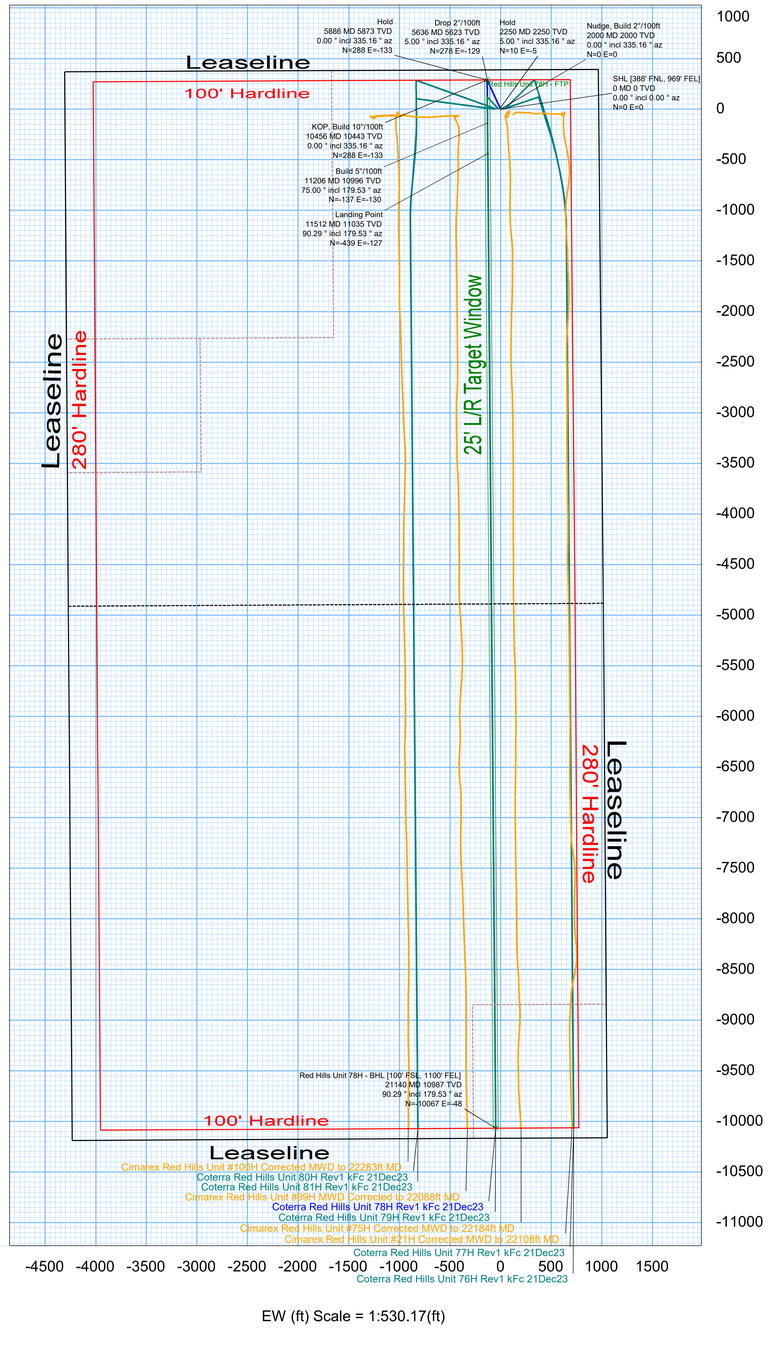
CONTROLLED

Plan ref	Coterra Red Hills Unit 78H Rev1 kFc 21Dec23
Drawing ref	
Copy number	of 3
Date	22-Dec-2023

1	Client	
2	Client	
3	Office	
4	Office	

Copy number for





Schlumberger

Coterra Red Hills Unit 78H Rev1 kFc 21Dec23 Anti-Collision Summary Report

Analysis Date-24hr Time:	December 22, 2023 - 04:08 PM (UTC 0)	**Analysis Method:**	3D Least Distance
Client:	COTERRA	**Reference Trajectory:**	Coterra Red Hills Unit 78H Rev1 kFc 21Dec23 (Def Plan)
Field:	NM Lea County (NAD 83)	**Depth Interval:**	Every 10.00 Measured Depth (ft)
Structure:	Coterra Red Hills Unit Pad 76-81	**Rule Set:**	NAL Procedure: D&M AntiCollision Standard S002
Slot:	Red Hills Unit 78H	**Min Pts:**	Absolute minima indicated.
Well:	Red Hills Unit 78H	**Engine Version:**	2023.1.0.1
Borehole:	Red Hills Unit 78H	**Database \ Project:**	Red Hills Unit 78H–COTERRA
Scan MD Range:	0.00ft ~ 21140.24ft		

Trajectory Error Model: ISCWSA0 3 - D 95 % Confidence 2.7955 sigma

Offset Trajectories Summary

Offset Selection Criteria
Bounding box scan: minimum Ct-Ct separation <= 2000ft
Selection filters: Definitive Surveys - Definitive Plans - Definitive surveys exclude definitive plans
- All Non-Def Surveys when no Def-Survey is set in a borehole - All Non-Def Plans when no Def-Plan is set in a borehole

9 out of 35 are selected

Offset Trajectory	Separation			Allow	Sep.	Controlling	Reference Trajectory		Risk Level			Alert	Status
	Ct-Ct (ft)	MAS (ft)	EOU (ft)	Dev. (ft)	Fact.	Rule	MD (ft)	TVD (ft)	Alert	Minor	Major		
Coterra Red Hills Unit 79H Rev1 kFc 21Dec23 (DefinitivePlan)													Fail Major
	20.01	16.21	18.95	3.80	N/A	MAS = 4.94 (m)	0.00	0.00	CtCt<=15m<15.00			Enter Alert	
	20.00	16.21	18.94	3.79	N/A	MAS = 4.94 (m)	23.00	23.00				WRP	
	20.00	20.05	6.31	-0.05	1.50	OSF1.50	1330.00	1330.00		OSF<1.50		Enter Minor	
	20.00	29.52	-0.01	-9.52	1.00	OSF1.50	1960.00	1960.00			OSF<1.00	Enter Major	
	18.19	33.39	-4.40	-15.21	0.80	OSF1.50	2218.35	2218.14				MinPt-CtCt	
	18.27	33.72	-4.54	-15.45	0.79	OSF1.50	2240.00	2239.72				MinPts	
	18.51	34.02	-4.49	-15.51	0.80	OSF1.50	2260.00	2259.64				MinPt-ADP	
	24.00	36.12	-0.41	-12.13	0.98	OSF1.50	2400.00	2399.11			OSF>1.00	Exit Major	
	39.77	40.02	12.76	-0.25	1.49	OSF1.50	2660.00	2658.12		OSF>1.50		Exit Minor	
	167.67	147.50	69.01	20.18	1.71	OSF1.50	9820.00	9806.48				MinPt-CtCt	
	167.68	147.58	68.97	20.11	1.71	OSF1.50	9830.00	9816.48				MinPts	
	414.89	125.40	330.96	289.49	4.99	OSF1.50	10480.00	10466.47	OSF>5.00			Exit Alert	
	612.96	184.63	489.55	428.33	5.00	OSF1.50	15880.00	11013.22	OSF<5.00			Enter Alert	
	592.30	346.45	361.01	245.85	2.57	OSF1.50	21140.24	10987.00				MinPts	
Coterra Red Hills Unit 77H Rev1 kFc 21Dec23 (DefinitivePlan)													Fail Minor
	19.99	16.21	18.93	3.79	N/A	MAS = 4.94 (m)	0.00	0.00	CtCt<=15m<15.00			Enter Alert	
	19.99	16.21	18.93	3.79	N/A	MAS = 4.94 (m)	23.00	23.00				WRP	
	19.99	20.05	6.30	-0.06	1.50	OSF1.50	1330.00	1330.00		OSF<1.50		Enter Minor	
	19.99	27.12	1.59	-7.13	1.09	OSF1.50	1800.00	1800.00				MinPt-CtCt	
	20.14	27.56	1.43	-7.43	1.08	OSF1.50	1830.00	1830.00				MinPts	
	20.40	27.86	1.50	-7.46	1.08	OSF1.50	1850.00	1850.00				MinPt-ADP	
	30.56	30.72	9.75	-0.16	1.49	OSF1.50	2050.00	2050.00		OSF>1.50		Exit Minor	
	147.19	45.02	116.84	102.16	4.98	OSF1.50	3010.00	3006.79	OSF>5.00			Exit Alert	
	535.39	153.43	432.77	381.95	5.26	OSF1.50	10230.00	10216.48				MinPts	
	535.66	153.57	432.95	382.08	5.26	OSF1.50	10250.00	10236.48				MinPt-SF	
	799.59	240.65	638.82	558.93	5.00	OSF1.50	16630.00	11009.48	OSF<5.00			Enter Alert	
	795.87	364.92	552.27	430.95	3.28	OSF1.50	21140.24	10987.00				MinPts	
Coterra Red Hills Unit 76H Rev1 kFc 21Dec23 (DefinitivePlan)													Warning Alert
	40.00	32.21	38.94	7.80	N/A	MAS = 9.82 (m)	0.00	0.00	CtCt<=15m<15.00			Enter Alert	
	39.99	32.21	38.93	7.79	N/A	MAS = 9.82 (m)	23.00	23.00				WRP	
	39.99	32.21	23.59	7.79	2.53	MAS = 9.82 (m)	1600.00	1600.00				MinPts	
	40.18	32.21	23.39	7.97	2.48	MAS = 9.82 (m)	1640.00	1640.00				MinPt-EOU	
	41.22	32.21	23.83	9.01	2.45	MAS = 9.82 (m)	1700.00	1700.00				MinPt-SF	
	131.44	40.17	104.33	91.27	4.99	OSF1.50	2680.00	2678.05	OSF>5.00			Exit Alert	
	466.15	140.62	372.08	325.53	5.00	OSF1.50	9310.00	9296.48	OSF<5.00			Enter Alert	
	466.15	157.76	360.64	308.38	4.45	OSF1.50	10500.00	10486.44				MinPt-CtCt	
	466.29	158.35	360.40	307.94	4.44	OSF1.50	10580.00	10565.52				MinPt-EOU	
	466.35	158.42	360.41	307.93	4.43	OSF1.50	10590.00	10575.26				MinPt-ADP	
	467.16	158.84	360.93	308.32	4.43	OSF1.50	10650.00	10632.80				MinPt-SF	
	529.76	160.10	422.70	369.66	4.98	OSF1.50	11020.00	10919.73	OSF>5.00			Exit Alert	
	879.70	264.69	702.91	615.01	5.00	OSF1.50	17590.00	11004.69	OSF<5.00			Enter Alert	
	884.78	364.98	641.14	519.81	3.64	OSF1.50	21140.24	10987.00				MinPts	
Coterra Red Hills Unit 80H Rev1 kFc 21Dec23 (DefinitivePlan)													Warning Alert
	40.00	32.21	38.94	7.79	N/A	MAS = 9.82 (m)	0.00	0.00	CtCt<=15m<15.00			Enter Alert	
	40.00	32.21	38.94	7.79	N/A	MAS = 9.82 (m)	23.00	23.00				WRP	
	40.00	32.21	21.60	7.79	2.24	MAS = 9.82 (m)	1800.00	1800.00				MinPts	
	40.14	32.21	21.44	7.93	2.21	MAS = 9.82 (m)	1830.00	1830.00				MinPt-EOU	
	40.78	32.21	21.69	8.57	2.20	MAS = 9.82 (m)	1870.00	1870.00				MinPt-SF	
	139.85	42.76	111.02	97.10	4.99	OSF1.50	2870.00	2867.32	OSF>5.00			Exit Alert	
	701.99	158.55	595.96	543.44	6.67	OSF1.50	10570.00	10555.73				MinPt-EOU	
	702.09	158.68	595.98	543.41	6.67	OSF1.50	10590.00	10575.26				MinPt-ADP	
	703.35	159.21	596.88	544.14	6.66	OSF1.50	10680.00	10660.82				MinPt-SF	
	869.23	261.66	694.45	607.56	5.00	OSF1.50	17480.00	11005.24	OSF<5.00			Enter Alert	
	874.86	365.13	631.11	509.72	3.60	OSF1.50	21140.00	10987.00				MinPts	
	874.86	365.13	631.11	509.72	3.60	OSF1.50	21140.24	10987.00				MinPt-SF	
Coterra Red Hills Unit 81H Rev1 kFc 21Dec23 (DefinitivePlan)													Warning Alert
	59.99	32.81	58.93	27.18	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	59.99	32.81	58.93	27.18	N/A	MAS = 10.00 (m)	23.00	23.00				WRP	
	59.99	32.81	47.20	27.18	5.00	MAS = 10.00 (m)	1240.00	1240.00	OSF<5.00			Enter Alert	
	59.99	32.81	43.59	27.18	3.83	MAS = 10.00 (m)	1600.00	1600.00				MinPts	
	60.14	32.81	43.45	27.33	3.77	MAS = 10.00 (m)	1630.00	1630.00				MinPt-EOU	
	62.03	32.81	44.56	29.22	3.70	MAS = 10.00 (m)	1710.00	1710.00				MinPt-SF	
	99.84	32.81	78.89	67.03	4.95	MAS = 10.00 (m)	2090.00	2089.99	OSF>5.00			Exit Alert	
	723.89	153.92	620.95	569.97	7.09	OSF1.50	10210.00	10196.48				MinPt-EOU	
	723.97	154.01	620.97	569.96	7.09	OSF1.50	10220.00	10206.48				MinPt-ADP	
	726.19	154.78	622.67	571.41	7.07	OSF1.50	10310.00	10296.48				MinPt-SF	
	769.69	150.34	669.14	619.35	7.72	OSF1.50	11280.00	11012.78				MinPt-CtCt	
	769.71	150.37	669.13	619.34	7.72	OSF1.50	11290.00	11014.70				MinPts	
	776.69	152.91	674.42	623.78	7.66	OSF1.50	11610.00	11034.50				MinPt-SF	
	808.21	243.31	645.67	564.89	5.00	OSF1.50	16760.00	11008.83	OSF<5.00			Enter Alert	
	804.00	364.00	561.01	440.01	3.32	OSF1.50	21140.00	10987.00				MinPt-CtCt	
	804.00	364.00	561.01	440.00	3.32	OSF1.50	21140.24	10987.00				MinPts	

Results highlighted in red: Sep-Factor <= 1.5
Result highlighted in boxed, red and bold: all local minima indicated.

Offset Trajectory	Separation			Allow	Sep.	Controlling	Reference Trajectory		Risk Level			Alert	Status
	Ct-Ct (ft)	MAS (ft)	EOU (ft)	Dev. (ft)	Fact.	Rule	MD (ft)	TVD (ft)	Alert	Minor	Major		
Cimarex Red Hills Unit #75H Corrected MWD to 22184ft MD (DefinitiveSurvey)													Warning Alert
	99.90	32.81	98.83	67.09	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	99.88	32.81	98.82	67.08	811074.55	MAS = 10.00 (m)	10.00	10.00				MinPts	
	99.89	32.81	98.82	67.08	133504.99	MAS = 10.00 (m)	23.00	23.00				WRP	
	75.07	32.81	59.50	42.26	5.08	MAS = 10.00 (m)	1763.99	1763.99				MinPts	
	75.19	32.81	59.40	42.38	5.01	MAS = 10.00 (m)	1790.00	1790.00				MinPt-EOU	
	75.28	32.81	59.41	42.47	4.99	MAS = 10.00 (m)	1800.00	1800.00	OSF<5.00			Enter Alert	
	80.73	32.81	62.26	47.92	4.56	MAS = 10.00 (m)	2100.00	2099.98				MinPt-SF	
	100.69	32.81	79.71	67.88	4.99	MAS = 10.00 (m)	2380.00	2379.19	OSF>5.00			Exit Alert	
	266.36	58.10	227.29	208.25	6.97	OSF1.50	4280.00	4271.96				MinPt-SF	
	345.17	72.01	296.83	273.16	7.27	OSF1.50	5230.00	5218.34				MinPt-SF	
	373.53	85.63	316.12	287.90	6.60	OSF1.50	6160.00	6146.48				MinPt-CtCt	
	374.49	89.07	314.78	285.41	6.36	OSF1.50	6400.00	6386.48				MinPt-EOU	
	379.96	96.81	315.10	283.16	5.93	OSF1.50	6930.00	6916.48				MinPt-EOU	
	384.21	104.78	314.02	279.42	5.54	OSF1.50	7470.00	7456.48				MinPt-CtCt	
	384.82	106.65	313.39	278.17	5.45	OSF1.50	7600.00	7586.48				MinPt-EOU	
	385.67	107.65	313.57	278.02	5.41	OSF1.50	7670.00	7656.48				MinPt-ADP	
	416.78	125.73	332.63	291.05	5.00	OSF1.50	8900.00	8886.48	OSF<5.00			Enter Alert	
	183.41	153.10	81.01	30.31	1.80	OSF1.50	11140.00	10975.23				MinPts	
	501.07	153.67	398.30	347.40	4.91	OSF1.50	11610.00	11034.50	OSF>5.00			Exit Alert	
	1480.89	115.10	1403.83	1365.79	19.45	OSF1.50	12690.00	11029.11				MinPt-CtCt	
	1480.97	115.40	1403.71	1365.57	19.40	OSF1.50	12720.00	11028.96				MinPt-EOU	
	1481.14	115.61	1403.74	1365.53	19.37	OSF1.50	12740.00	11028.87				MinPt-ADP	
	1479.62	128.98	1393.30	1350.64	17.33	OSF1.50	13560.00	11024.78				MinPt-CtCt	
	1486.36	148.34	1387.14	1338.02	15.12	OSF1.50	14460.00	11020.29				MinPt-CtCt	
	1488.82	163.83	1379.27	1324.98	13.70	OSF1.50	15100.00	11017.10				MinPt-CtCt	
	1488.82	166.37	1377.58	1322.45	13.49	OSF1.50	15200.00	11016.61				MinPt-CtCt	
	1490.11	173.39	1374.19	1316.72	12.96	OSF1.50	15490.00	11015.16				MinPt-EOU	
	1492.49	182.35	1370.60	1310.14	12.34	OSF1.50	15810.00	11013.56				MinPt-CtCt	
	1494.47	195.23	1363.99	1299.24	11.53	OSF1.50	16280.00	11011.22				MinPt-CtCt	
	1496.39	201.94	1361.43	1294.45	11.16	OSF1.50	16540.00	11009.93				MinPt-EOU	
	1498.09	208.53	1358.75	1289.57	10.82	OSF1.50	16750.00	11008.88				MinPt-CtCt	
	1494.37	231.28	1339.86	1263.10	9.73	OSF1.50	17540.00	11004.94				MinPt-CtCt	
	1491.46	243.04	1329.13	1248.44	9.24	OSF1.50	17940.00	11002.95				MinPt-CtCt	
	1490.84	248.99	1324.52	1241.85	9.01	OSF1.50	18140.00	11001.95				MinPt-CtCt	
	1493.68	260.37	1319.77	1233.31	8.63	OSF1.50	18520.00	11000.06				MinPt-CtCt	
	1497.22	279.19	1310.77	1218.03	8.07	OSF1.50	19140.00	10996.97				MinPt-CtCt	
	1488.24	325.15	1271.15	1163.09	6.88	OSF1.50	20630.00	10989.54				MinPt-CtCt	
	1488.39	332.67	1266.28	1155.72	6.73	OSF1.50	20870.00	10988.35				MinPt-CtCt	
	1487.58	338.37	1261.67	1149.21	6.61	OSF1.50	21050.00	10987.45				MinPt-CtCt	
	1487.78	339.14	1261.36	1148.64	6.60	OSF1.50	21090.00	10987.25				MinPt-EOU	
	1488.06	339.51	1261.39	1148.55	6.59	OSF1.50	21110.00	10987.15				MinPt-ADP	
	1488.71	340.05	1261.68	1148.66	6.58	OSF1.50	21140.24	10987.00				MinPt-SF	
Cimarex Red Hills Unit #99H MWD Corrected to 22088ft MD (DefinitiveSurvey)													Warning Alert
	1261.90	32.81	1260.84	1229.09	6111817.14	MAS = 10.00 (m)	0.00	0.00				MinPts	
	1261.92	32.81	1260.82	1229.11	41729.16	MAS = 10.00 (m)	23.00	23.00				WRP	
	1262.68	32.81	1260.53	1229.87	1160.14	MAS = 10.00 (m)	190.00	190.00				MinPt-EOU	
	1262.67	32.81	1257.95	1229.86	345.02	MAS = 10.00 (m)	450.00	450.00				MinPts	
	1262.78	32.81	1257.81	1229.97	322.67	MAS = 10.00 (m)	480.00	480.00				MinPt-EOU	
	452.66	120.45	372.05	332.23	5.67	OSF1.50	8340.00	8326.48				MinPt-CtCt	
	457.20	133.81	367.66	323.38	5.15	OSF1.50	9280.00	9266.48				MinPt-CtCt	
	457.56	135.17	367.12	322.40	5.10	OSF1.50	9380.00	9366.48				MinPt-EOU	
	459.51	138.56	366.81	320.95	5.00	OSF1.50	9620.00	9606.48	OSF<5.00			Enter Alert	
	459.68	138.84	366.79	320.84	4.99	OSF1.50	9640.00	9626.48				MinPt-EOU	
	461.09	140.82	366.88	320.27	4.94	OSF1.50	9780.00	9766.48				MinPt-EOU	
	463.33	143.47	367.36	319.86	4.87	OSF1.50	9970.00	9956.48				MinPt-ADP	
	475.21	150.00	374.88	325.21	4.77	OSF1.50	10456.04	10442.52				MinPt-SF	
	317.46	153.60	214.72	163.85	3.11	OSF1.50	11147.50	10977.94				MinPts	
	317.46	153.61	214.73	163.86	3.11	OSF1.50	11150.00	10978.83				MinPt-SF	
	506.54	154.08	403.48	352.45	4.95	OSF1.50	11550.00	11034.80	OSF>5.00			Exit Alert	
	1309.38	126.36	1224.82	1183.02	15.65	OSF1.50	13250.00	11026.32				MinPt-CtCt	
	1308.01	132.52	1219.33	1175.49	14.91	OSF1.50	13590.00	11024.63				MinPt-CtCt	
	1308.23	133.26	1219.06	1174.97	14.82	OSF1.50	13640.00	11024.38				MinPt-EOU	
	1309.79	135.59	1219.08	1174.21	14.59	OSF1.50	13760.00	11023.78				MinPt-EOU	
	1310.60	136.51	1219.27	1174.10	14.50	OSF1.50	13810.00	11023.53				MinPt-ADP	
	1313.73	144.32	1217.19	1169.41	13.74	OSF1.50	14150.00	11021.84				MinPt-CtCt	
	1312.66	155.53	1208.65	1157.13	12.73	OSF1.50	14650.00	11019.35				MinPt-CtCt	
	1314.54	160.79	1207.02	1153.75	12.33	OSF1.50	14890.00	11018.15				MinPt-EOU	
	1316.17	162.77	1207.33	1153.40	12.19	OSF1.50	14980.00	11017.70				MinPt-ADP	
	1320.22	176.17	1202.45	1144.05	11.30	OSF1.50	15500.00	11015.11				MinPt-EOU	
	1321.09	177.22	1202.62	1143.87	11.24	OSF1.50	15550.00	11014.86				MinPt-ADP	
	1322.04	201.66	1187.27	1120.38	9.87	OSF1.50	16440.00	11010.43				MinPt-CtCt	
	1322.32	202.59	1186.94	1119.74	9.83	OSF1.50	16490.00	11010.18				MinPt-EOU	
	1324.94	207.83	1186.06	1117.11	9.60	OSF1.50	16680.00	11009.23				MinPt-EOU	
	1329.65	225.05	1179.29	1104.60	8.89	OSF1.50	17250.00	11006.39				MinPt-CtCt	
	1330.13	226.55	1178.77	1103.58	8.84	OSF1.50	17320.00	11006.04				MinPt-EOU	
	1330.66	227.19	1178.87	1103.47	8.82	OSF1.50	17350.00	11005.89				MinPt-ADP	
	1330.36	243.69	1167.57	1086.67	8.22	OSF1.50	17890.00	11003.20				MinPt-CtCt	
	1331.52	246.92	1166.58	1084.60	8.12	OSF1.50	18020.00	11002.55				MinPt-EOU	
	1331.70	247.12	1166.62	1084.58	8.11	OSF1.50	18030.00	11002.50				MinPt-ADP	
	1339.54	263.63	1163.46	1075.91	7.64	OSF1.50	18560.00	10999.86				MinPt-CtCt	
	1337.40	277.06	1152.36	1060.34	7.26	OSF1.50	19010.00	10997.62				MinPt-CtCt	
	1335.54	283.40	1146.28	1052.14	7.09	OSF1.50	19220.00	10996.57				MinPt-CtCt	
	1331.53	297.61	1132.79	1033.92	6.73	OSF1.50	19690.00	10994.23				MinPt-CtCt	
	1331.05	304.05	1128.02	1026.99	6.58	OSF1.50	19900.00	10993.18				MinPt-CtCt	
	1331.76	306.25	1127.27	1025.51	6.54	OSF1.50	19990.00	10992.73				MinPt-EOU	
	1323.08	342.31	1094.54	980.77	5.81	OSF1.50	21130.00	10987.05				MinPt-CtCt	
	1323.10	342.34	1094.54	980.75	5.81	OSF1.50	21140.00	10987.00				MinPts	
	1323.10	342.35	1094.54	980.75	5.81	OSF1.50	21140.24	10987.00				MinPt-SF	
Cimarex Red Hills Unit #21H Corrected MWD to 22108ft MD (DefinitiveSurvey)													Pass
	134.15	32.81	133.09	101.34	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	134.14	32.81	133.08	101.33	271091.86	MAS = 10.00 (m)	10.00	10.00				MinPts	
	134.14	32.81	133.08	101.34	44067.96	MAS = 10.00 (m)	23.00	23.00				WRP	
	133.74	32.81	124.71	100.93	16.65	MAS = 10.00 (m)	887.35	887.35				MinPts	
	133.84	32.81	124.59	101.03	16.21	MAS = 10.00 (m)	910.00	910.00				MinPt-EOU	
	158.51	32.81	139.48	125.70	8.73	MAS = 10.00 (m)	2160.00	2159.92				MinPt-SF	
	811.33	147.23	712.85	664.10	8.31	OSF1.50	10330.00	10316.48				MinPt-CtCt	
	811.62	148.45	712.32	663.17	8.25	OSF1.50	10420.00	10406.48				MinPt-EOU	
	811.91	148.82	712.37	663.09	8.23	OSF1.50	10456.04	10442.52				MinPt-ADP	
	742.19	153.01	639.86	589.18	7.31	OSF1.50	11120.00	10967.54				MinPts	

Offset Trajectory	Separation			Allow	Sep.	Controlling	Reference Trajectory		Risk Level			Alert	Status
	Ct-Ct (ft)	MAS (ft)	EOU (ft)	Dev. (ft)	Fact.	Rule	MD (ft)	TVD (ft)	Alert	Minor	Major		
	742.48	153.11	640.08	589.38	7.31	OSF1.50	11140.00	10975.23				MinPt-SF	
	1506.95	126.56	1422.25	1380.39	17.99	OSF1.50	12570.00	11029.71				MinPt-EOU	
	1507.03	126.65	1422.27	1380.38	17.98	OSF1.50	12580.00	11029.66				MinPt-ADP	
	1506.86	138.07	1414.49	1368.80	16.48	OSF1.50	13400.00	11025.58				MinPt-CtCt	
	1506.34	143.14	1410.58	1363.20	15.88	OSF1.50	13680.00	11024.18				MinPt-CtCt	
	1506.83	144.61	1410.10	1362.22	15.73	OSF1.50	13770.00	11023.73				MinPt-EOU	
	1505.14	154.23	1401.99	1350.91	14.72	OSF1.50	14240.00	11021.39				MinPt-CtCt	
	1504.99	159.43	1398.37	1345.56	14.24	OSF1.50	14480.00	11020.19				MinPt-CtCt	
	1505.81	185.82	1381.60	1319.99	12.21	OSF1.50	15590.00	11014.66				MinPt-CtCt	
	1506.06	186.52	1381.38	1319.53	12.17	OSF1.50	15630.00	11014.46				MinPt-EOU	
	1506.35	186.88	1381.43	1319.47	12.15	OSF1.50	15650.00	11014.36				MinPt-ADP	
	1510.23	193.64	1380.80	1316.58	11.75	OSF1.50	15890.00	11013.17				MinPt-CtCt	
	1512.31	209.41	1372.37	1302.90	10.88	OSF1.50	16480.00	11010.23				MinPt-CtCt	
	1512.61	216.22	1368.13	1296.38	10.53	OSF1.50	16730.00	11008.98				MinPt-CtCt	
	1514.00	225.41	1363.39	1288.58	10.11	OSF1.50	17080.00	11007.24				MinPt-EOU	
	1512.37	232.35	1357.14	1280.02	9.80	OSF1.50	17310.00	11006.09				MinPt-CtCt	
	1508.51	241.68	1347.06	1266.83	9.39	OSF1.50	17640.00	11004.44				MinPt-CtCt	
	1508.67	244.82	1345.13	1263.85	9.27	OSF1.50	17750.00	11003.90				MinPt-CtCt	
	1509.69	247.97	1344.05	1261.72	9.16	OSF1.50	17880.00	11003.25				MinPt-EOU	
	1510.70	249.15	1344.27	1261.55	9.13	OSF1.50	17930.00	11003.00				MinPt-ADP	
	1512.68	253.21	1343.54	1259.46	8.99	OSF1.50	18040.00	11002.45				MinPt-CtCt	
	1512.98	254.20	1343.19	1258.78	8.96	OSF1.50	18090.00	11002.20				MinPt-EOU	
	1513.29	254.59	1343.24	1258.70	8.94	OSF1.50	18110.00	11002.10				MinPt-ADP	
	1516.87	259.41	1343.60	1257.46	8.80	OSF1.50	18270.00	11001.30				MinPt-EOU	
	1517.84	260.59	1343.78	1257.25	8.76	OSF1.50	18320.00	11001.06				MinPt-ADP	
	1528.96	264.25	1352.46	1264.71	8.71	OSF1.50	18530.00	11000.01				MinPt-SF	
	1531.37	284.16	1341.60	1247.21	8.11	OSF1.50	19080.00	10997.27				MinPt-CtCt	
	1531.77	285.45	1341.15	1246.33	8.07	OSF1.50	19140.00	10996.97				MinPt-EOU	
	1532.29	286.09	1341.24	1246.21	8.06	OSF1.50	19170.00	10996.82				MinPt-ADP	
	1512.84	319.93	1299.23	1192.92	7.11	OSF1.50	20290.00	10991.24				MinPt-CtCt	
	1513.69	328.20	1294.55	1185.48	6.93	OSF1.50	20560.00	10989.89				MinPt-CtCt	
	1514.35	330.38	1293.77	1183.98	6.89	OSF1.50	20650.00	10989.44				MinPt-EOU	
	1517.31	339.90	1290.38	1177.41	6.71	OSF1.50	20940.00	10988.00				MinPt-CtCt	
	1518.92	346.01	1287.91	1172.91	6.60	OSF1.50	21140.24	10987.00				MinPt	
Cimarex Red Hills Unit #100H Corrected MWD to 22283ft MD (DefinitiveSurvey)													Pass
	1281.86	32.81	1280.80	1249.05	#########	MAS = 10.00 (m)	0.00	0.00				Surface	
	1281.84	32.81	1280.73	1249.03	28198.04	MAS = 10.00 (m)	23.00	23.00				WRP	
	1281.47	32.81	1279.64	1248.66	1669.52	MAS = 10.00 (m)	140.00	140.00				MinPts	
	1281.65	32.81	1279.48	1248.85	1146.51	MAS = 10.00 (m)	180.00	180.00				MinPt-EOU	
	1279.15	32.81	1269.99	1246.34	157.94	MAS = 10.00 (m)	880.00	880.00				MinPts	
	1279.30	32.81	1269.07	1246.50	139.41	MAS = 10.00 (m)	990.00	990.00				MinPt-EOU	
	1279.62	32.81	1268.79	1246.81	129.84	MAS = 10.00 (m)	1080.00	1080.00				MinPt-EOU	
	882.11	93.69	819.32	788.42	14.26	OSF1.50	6630.00	6616.48				MinPt-CtCt	
	882.41	94.63	819.00	787.79	14.12	OSF1.50	6700.00	6686.48				MinPt-EOU	
	885.76	99.00	819.44	786.77	13.54	OSF1.50	7010.00	6996.48				MinPt-ADP	
	870.42	152.34	768.53	718.08	8.62	OSF1.50	11091.39	10955.44				MinPts	
	870.58	152.40	768.65	718.18	8.61	OSF1.50	11110.00	10963.46				MinPt-SF	
	1705.52	130.59	1618.13	1574.93	19.73	OSF1.50	12630.00	11029.41				MinPt-CtCt	
	1705.69	131.11	1617.95	1574.57	19.65	OSF1.50	12680.00	11029.16				MinPt-EOU	
	1706.82	133.70	1617.36	1573.12	19.28	OSF1.50	12880.00	11028.17				MinPt-EOU	
	1699.56	146.99	1601.24	1552.57	17.45	OSF1.50	13720.00	11023.98				MinPt-CtCt	
	1698.49	152.33	1596.61	1546.16	16.82	OSF1.50	14010.00	11022.54				MinPt-CtCt	
	1693.61	164.89	1583.36	1528.72	15.49	OSF1.50	14620.00	11019.50				MinPt-CtCt	
	1693.98	165.94	1583.03	1528.05	15.40	OSF1.50	14680.00	11019.20				MinPt-EOU	
	1698.12	171.80	1583.26	1526.32	14.90	OSF1.50	14930.00	11017.95				MinPt-EOU	
	1702.85	177.36	1584.29	1525.50	14.47	OSF1.50	15170.00	11016.75				MinPt-ADP	
	1706.96	183.85	1584.07	1523.11	13.99	OSF1.50	15420.00	11015.51				MinPt-EOU	
	1712.55	193.92	1582.94	1518.63	13.31	OSF1.50	15820.00	11013.52				MinPt-EOU	
	1713.38	197.55	1581.35	1515.83	13.07	OSF1.50	15940.00	11012.92				MinPt-CtCt	
	1710.35	217.53	1565.00	1492.81	11.84	OSF1.50	16700.00	11009.13				MinPt-CtCt	
	1711.14	222.21	1562.67	1488.93	11.60	OSF1.50	16870.00	11008.28				MinPt-CtCt	
	1712.35	232.21	1557.22	1480.14	11.10	OSF1.50	17250.00	11006.39				MinPt-EOU	
	1713.60	246.47	1548.97	1467.14	10.46	OSF1.50	17730.00	11004.00				MinPt-CtCt	
	1714.86	254.75	1544.69	1460.10	10.13	OSF1.50	18020.00	11002.55				MinPt-CtCt	
	1713.52	293.89	1517.27	1419.63	8.77	OSF1.50	19360.00	10995.87				MinPt-CtCt	
	1719.00	310.50	1511.67	1408.50	8.33	OSF1.50	19910.00	10993.13				MinPt-CtCt	
	1720.09	328.98	1500.44	1391.11	7.86	OSF1.50	20520.00	10990.09				MinPt-CtCt	
	1721.63	334.74	1498.14	1386.88	7.73	OSF1.50	20730.00	10989.04				MinPt-EOU	
	1729.07	347.68	1496.96	1381.39	7.48	OSF1.50	21140.24	10987.00				MinPts	

Schlumberger

Coterra Red Hills Unit 78H Rev1 kFc 21Dec23 Proposal Geodetic Report

Def Plan

Report Date:	December 22, 2023 - 04:07 PM (UTC 0)	**Survey / DLS Computation:**	Minimum Curvature / Lubinski
Client:	COTERRA	**Vertical Section Azimuth:**	179.529 °(GRID North)
Field:	NM Lea County (NAD 83)	**Vertical Section Origin:**	0.000 ft, 0.000 ft
Structure / Slot:	Coterra Red Hills Unit Pad 76-81 / Red Hills Unit 78H	**TVD Reference Datum:**	RKB
Well:	Red Hills Unit 78H	**TVD Reference Elevation:**	3366.400 ft above MSL
Borehole:	Red Hills Unit 78H	**Seabed / Ground Elevation:**	3343.400 ft above MSL
UBHI / API#:	Unknown / Unknown	**Magnetic Declination:**	6.192°
Survey Name:	Coterra Red Hills Unit 78H Rev1 kFc 21Dec23	**Total Gravity Field Strength:**	998.4378mgn (9.80665 Based)
Survey Date:	December 22, 2023	**Gravity Model:**	GARM
Tort / AHD / DDI / ERD Ratio:	100.285 ° / 10672.242 ft / 6.312 / 0.967	**Total Magnetic Field Strength:**	47275.693 nT
Coordinate Reference System:	NAD83 New Mexico State Plane, Eastern Zone, US Feet	**Magnetic Dip Angle:**	59.593°
Location Lat / Long:	32°5'35.55695"N , 103°34'18.77822"W	**Declination Date:**	December 21, 2023
Location Grid N/E Y/X:	N 398479.220 ftUS , E 777142.010 ftUS	**Magnetic Declination Model:**	HDGM 2023
CRS Grid Convergence Angle:	0.405°	**North Reference:**	Grid North
Grid Scale Factor:	0.99997278	**Grid Convergence Used:**	0.405°
Version / Patch:	2023.1.0.1	**Total Corr Mag North->Grid North:**	5.788°
		Local Coord Referenced To:	Well Head

Comments	MD (ft)	Incl (°)	Azim (°)	TVD (ft)	TVDSS (ft)	VSEC (ft)	NS (ft)	EW (ft)	Northing (ftUS)	Easting (ftUS)	Latitude (°)	Longitude (°)	DLS (°/100ft)	BR (°/100ft)	TR (°/100ft)
SHL [388' FNL, 969' FEL]	0.00	0.00	0.00	0.00	-3,366.40	0.00	0.00	0.00	398,479.22	777,142.01	32.09321027	-103.57188284			
Nudge, Build 2°/100ft	2,000.00	0.00	335.16	2,000.00	-1,366.40	0.00	0.00	0.00	398,479.22	777,142.01	32.09321027	-103.57188284	0.00	0.00	0.00
Hold	2,249.99	5.00	335.16	2,249.68	-1,116.72	-9.93	9.89	-4.58	398,489.11	777,137.43	32.09323754	-103.57189740	2.00	2.00	0.00
Drop 2°/100ft	5,636.04	5.00	335.16	5,622.84	2,256.44	-278.73	277.69	-128.57	398,756.90	777,013.44	32.09397602	-103.57229165	0.00	0.00	0.00
Hold	5,886.04	0.00	335.16	5,872.52	2,506.12	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	2.00	-2.00	0.00
KOP, Build 10°/100ft	10,456.04	0.00	335.16	10,442.52	7,076.12	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
Build 5°/100ft	11,206.04	75.00	179.53	10,995.95	7,629.55	136.00	-137.07	-129.67	398,342.15	777,012.34	32.09283602	-103.57230464	10.00	10.00	0.00
Landing Point	11,511.75	90.29	179.53	11,034.99	7,668.59	438.30	-439.36	-127.19	398,039.87	777,014.83	32.09200509	-103.57230351	5.00	5.00	0.00
Red Hills Unit 78H - BHL [100' FSL, 1100' FEL]	21,140.24	90.29	179.53	10,987.00	7,620.60	10,066.67	-10,067.40	-47.93	388,412.11	777,094.08	32.06553946	-103.57226693	0.00	0.00	0.00

Survey Type: Def Plan

Survey Error Model: ISCWSA0 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	10,400.000	1/100.000	14.75 – 9.875	10.75 – 7.625		A001Mb_MWD		Red Hills Unit 78H / Coterra Red Hills Unit 78H Re
	1	10,400.000	21,140.241	1/100.000	9.875 – 6.75	7.625 – 6.75		A008Mb_MWD+IFR1+MS		Red Hills Unit 78H / Coterra Red Hills Unit 78H Re

EOU Geometry:

End MD (ft)	Hole Size (in)	Casing Size (in)	Name
1,017.000	14.750	10.750	
12,217.000	9.875	7.625	
22,167.000	6.750		

Schlumberger

Coterra Red Hills Unit 78H Rev1 kFc 21Dec23 Proposal Geodetic Report

Def Plan

Report Date:	December 22, 2023 - 04:08 PM (UTC 0)	**Survey / DLS Computation:**	Minimum Curvature / Lubinski
Client:	COTERRA	**Vertical Section Azimuth:**	179.529 °(GRID North)
Field:	NM Lea County (NAD 83)	**Vertical Section Origin:**	0.000 ft, 0.000 ft
Structure / Slot:	Coterra Red Hills Unit Pad 76-81 / Red Hills Unit 78H	**TVD Reference Datum:**	RKB
Well:	Red Hills Unit 78H	**TVD Reference Elevation:**	3366.400 ft above MSL
Borehole:	Red Hills Unit 78H	**Seabed / Ground Elevation:**	3343.400 ft above MSL
UBHI / API#:	Unknown / Unknown	**Magnetic Declination:**	6.192°
Survey Name:	Coterra Red Hills Unit 78H Rev1 kFc 21Dec23	**Total Gravity Field Strength:**	998.4378mgn (9.80665 Based)
Survey Date:	December 22, 2023	**Gravity Model:**	GARM
Tort / AHD / DDI / ERD Ratio:	100.285 ° / 10672.242 ft / 6.312 / 0.967	**Total Magnetic Field Strength:**	47275.693 nT
Coordinate Reference System:	NAD83 New Mexico State Plane, Eastern Zone, US Feet	**Magnetic Dip Angle:**	59.593°
Location Lat / Long:	32°5'35.55695"N , 103°34'18.77822"W	**Declination Date:**	December 21, 2023
Location Grid N/E Y/X:	N 398479.220 ftUS , E 777142.010 ftUS	**Magnetic Declination Model:**	HDGM 2023
CRS Grid Convergence Angle:	0.405°	**North Reference:**	Grid North
Grid Scale Factor:	0.99997278	**Grid Convergence Used:**	0.405°
Version / Patch:	2023.1.0.1	**Total Corr Mag North->Grid North:**	5.788°
		Local Coord Referenced To:	Well Head

Comments	MD (ft)	Incl (°)	Azim (°)	TVD (ft)	TVDSS (ft)	VSEC (ft)	NS (ft)	EW (ft)	Northing (ftUS)	Easting (ftUS)	Latitude (°)	Longitude (°)	DLS (°/100ft)	BR (°/100ft)	TR (°/100ft)
SHL [388' FNL, 969' FEL]	0.00	0.00	0.00	0.00	-3,366.40	0.00	0.00	0.00	398,479.22	777,142.01	32.09321027	-103.57188284			
	100.00	0.00	335.16	100.00	-3,266.40	0.00	0.00	0.00	398,479.22	777,142.01	32.09321027	-103.57188284	0.00	0.00	0.00
	200.00	0.00	335.16	200.00	-3,166.40	0.00	0.00	0.00	398,479.22	777,142.01	32.09321027	-103.57188284	0.00	0.00	0.00
	300.00	0.00	335.16	300.00	-3,066.40	0.00	0.00	0.00	398,479.22	777,142.01	32.09321027	-103.57188284	0.00	0.00	0.00
	400.00	0.00	335.16	400.00	-2,966.40	0.00	0.00	0.00	398,479.22	777,142.01	32.09321027	-103.57188284	0.00	0.00	0.00
	500.00	0.00	335.16	500.00	-2,866.40	0.00	0.00	0.00	398,479.22	777,142.01	32.09321027	-103.57188284	0.00	0.00	0.00
	600.00	0.00	335.16	600.00	-2,766.40	0.00	0.00	0.00	398,479.22	777,142.01	32.09321027	-103.57188284	0.00	0.00	0.00
	700.00	0.00	335.16	700.00	-2,666.40	0.00	0.00	0.00	398,479.22	777,142.01	32.09321027	-103.57188284	0.00	0.00	0.00
	800.00	0.00	335.16	800.00	-2,566.40	0.00	0.00	0.00	398,479.22	777,142.01	32.09321027	-103.57188284	0.00	0.00	0.00
	900.00	0.00	335.16	900.00	-2,466.40	0.00	0.00	0.00	398,479.22	777,142.01	32.09321027	-103.57188284	0.00	0.00	0.00
Rustler□	960.00	0.00	335.16	960.00	-2,406.40	0.00	0.00	0.00	398,479.22	777,142.01	32.09321027	-103.57188284	0.00	0.00	0.00
	1,000.00	0.00	335.16	1,000.00	-2,366.40	0.00	0.00	0.00	398,479.22	777,142.01	32.09321027	-103.57188284	0.00	0.00	0.00
	1,100.00	0.00	335.16	1,100.00	-2,266.40	0.00	0.00	0.00	398,479.22	777,142.01	32.09321027	-103.57188284	0.00	0.00	0.00
	1,200.00	0.00	335.16	1,200.00	-2,166.40	0.00	0.00	0.00	398,479.22	777,142.01	32.09321027	-103.57188284	0.00	0.00	0.00
Salado□	1,270.00	0.00	335.16	1,270.00	-2,096.40	0.00	0.00	0.00	398,479.22	777,142.01	32.09321027	-103.57188284	0.00	0.00	0.00
	1,300.00	0.00	335.16	1,300.00	-2,066.40	0.00	0.00	0.00	398,479.22	777,142.01	32.09321027	-103.57188284	0.00	0.00	0.00
	1,400.00	0.00	335.16	1,400.00	-1,966.40	0.00	0.00	0.00	398,479.22	777,142.01	32.09321027	-103.57188284	0.00	0.00	0.00
	1,500.00	0.00	335.16	1,500.00	-1,866.40	0.00	0.00	0.00	398,479.22	777,142.01	32.09321027	-103.57188284	0.00	0.00	0.00
	1,600.00	0.00	335.16	1,600.00	-1,766.40	0.00	0.00	0.00	398,479.22	777,142.01	32.09321027	-103.57188284	0.00	0.00	0.00
	1,700.00	0.00	335.16	1,700.00	-1,666.40	0.00	0.00	0.00	398,479.22	777,142.01	32.09321027	-103.57188284	0.00	0.00	0.00
	1,800.00	0.00	335.16	1,800.00	-1,566.40	0.00	0.00	0.00	398,479.22	777,142.01	32.09321027	-103.57188284	0.00	0.00	0.00
	1,900.00	0.00	335.16	1,900.00	-1,466.40	0.00	0.00	0.00	398,479.22	777,142.01	32.09321027	-103.57188284	0.00	0.00	0.00
Nudge, Build 2°/100ft	2,000.00	0.00	335.16	2,000.00	-1,366.40	0.00	0.00	0.00	398,479.22	777,142.01	32.09321027	-103.57188284	0.00	0.00	0.00
	2,100.00	2.00	335.16	2,099.98	-1,266.42	-1.59	1.58	-0.73	398,480.80	777,141.28	32.09321463	-103.57188517	2.00	2.00	0.00
	2,200.00	4.00	335.16	2,199.84	-1,166.56	-6.36	6.33	-2.93	398,485.55	777,139.08	32.09322773	-103.57189216	2.00	2.00	0.00
Hold	2,249.99	5.00	335.16	2,249.68	-1,116.72	-9.93	9.89	-4.58	398,489.11	777,137.43	32.09323754	-103.57189740	2.00	2.00	0.00
	2,300.00	5.00	335.16	2,299.49	-1,066.91	-13.90	13.85	-6.41	398,493.07	777,135.60	32.09324845	-103.57190322	0.00	0.00	0.00
	2,400.00	5.00	335.16	2,399.11	-967.29	-21.84	21.76	-10.07	398,500.97	777,131.94	32.09327026	-103.57191487	0.00	0.00	0.00
	2,500.00	5.00	335.16	2,498.73	-867.67	-29.78	29.66	-13.74	398,508.88	777,128.28	32.09329207	-103.57192651	0.00	0.00	0.00
	2,600.00	5.00	335.16	2,598.35	-768.05	-37.71	37.57	-17.40	398,516.79	777,124.61	32.09331388	-103.57193815	0.00	0.00	0.00
	2,700.00	5.00	335.16	2,697.97	-668.43	-45.65	45.48	-21.06	398,524.70	777,120.95	32.09333569	-103.57194980	0.00	0.00	0.00
	2,800.00	5.00	335.16	2,797.59	-568.81	-53.59	53.39	-24.72	398,532.61	777,117.29	32.09335750	-103.57196144	0.00	0.00	0.00
	2,900.00	5.00	335.16	2,897.21	-469.19	-61.53	61.30	-28.38	398,540.52	777,113.63	32.09337931	-103.57197308	0.00	0.00	0.00
	3,000.00	5.00	335.16	2,996.83	-369.57	-69.47	69.21	-32.04	398,548.43	777,109.97	32.09340112	-103.57198473	0.00	0.00	0.00
	3,100.00	5.00	335.16	3,096.45	-269.95	-77.41	77.12	-35.71	398,556.33	777,106.30	32.09342292	-103.57199637	0.00	0.00	0.00
	3,200.00	5.00	335.16	3,196.07	-170.33	-85.35	85.03	-39.37	398,564.24	777,102.64	32.09344473	-103.57200801	0.00	0.00	0.00
	3,300.00	5.00	335.16	3,295.69	-70.71	-93.28	92.93	-43.03	398,572.15	777,098.98	32.09346654	-103.57201966	0.00	0.00	0.00
	3,400.00	5.00	335.16	3,395.31	28.91	-101.22	100.84	-46.69	398,580.06	777,095.32	32.09348835	-103.57203130	0.00	0.00	0.00
	3,500.00	5.00	335.16	3,494.93	128.53	-109.16	108.75	-50.35	398,587.97	777,091.66	32.09351016	-103.57204294	0.00	0.00	0.00
	3,600.00	5.00	335.16	3,594.55	228.15	-117.10	116.66	-54.02	398,595.88	777,088.00	32.09353197	-103.57205459	0.00	0.00	0.00
	3,700.00	5.00	335.16	3,694.17	327.77	-125.04	124.57	-57.68	398,603.79	777,084.33	32.09355378	-103.57206623	0.00	0.00	0.00
	3,800.00	5.00	335.16	3,793.78	427.38	-132.98	132.48	-61.34	398,611.69	777,080.67	32.09357559	-103.57207787	0.00	0.00	0.00
	3,900.00	5.00	335.16	3,893.40	527.00	-140.92	140.39	-65.00	398,619.60	777,077.01	32.09359740	-103.57208952	0.00	0.00	0.00
	4,000.00	5.00	335.16	3,993.02	626.62	-148.86	148.30	-68.66	398,627.51	777,073.35	32.09361921	-103.57210116	0.00	0.00	0.00
	4,100.00	5.00	335.16	4,092.64	726.24	-156.79	156.20	-72.33	398,635.42	777,069.69	32.09364102	-103.57211280	0.00	0.00	0.00
	4,200.00	5.00	335.16	4,192.26	825.86	-164.73	164.11	-75.99	398,643.33	777,066.02	32.09366283	-103.57212445	0.00	0.00	0.00
	4,300.00	5.00	335.16	4,291.88	925.48	-172.67	172.02	-79.65	398,651.24	777,062.36	32.09368464	-103.57213609	0.00	0.00	0.00
	4,400.00	5.00	335.16	4,391.50	1,025.10	-180.61	179.93	-83.31	398,659.15	777,058.70	32.09370645	-103.57214773	0.00	0.00	0.00
	4,500.00	5.00	335.16	4,491.12	1,124.72	-188.55	187.84	-86.97	398,667.05	777,055.04	32.09372826	-103.57215938	0.00	0.00	0.00
	4,600.00	5.00	335.16	4,590.74	1,224.34	-196.49	195.75	-90.63	398,674.96	777,051.38	32.09375007	-103.57217102	0.00	0.00	0.00
	4,700.00	5.00	335.16	4,690.36	1,323.96	-204.43	203.66	-94.30	398,682.87	777,047.72	32.09377187	-103.57218266	0.00	0.00	0.00
	4,800.00	5.00	335.16	4,789.98	1,423.58	-212.36	211.57	-97.96	398,690.78	777,044.05	32.09379368	-103.57219431	0.00	0.00	0.00
	4,900.00	5.00	335.16	4,889.60	1,523.20	-220.30	219.47	-101.62	398,698.69	777,040.39	32.09381549	-103.57220595	0.00	0.00	0.00
Lamar□	4,925.50	5.00	335.16	4,915.00	1,548.60	-222.33	221.49	-102.55	398,700.70	777,039.46	32.09382105	-103.57220892	0.00	0.00	0.00
Bell Canyon□	4,950.59	5.00	335.16	4,940.00	1,573.60	-224.32	223.48	-103.47	398,702.69	777,038.54	32.09382653	-103.57221184	0.00	0.00	0.00
	5,000.00	5.00	335.16	4,989.22	1,622.82	-228.24	227.38	-105.28	398,706.60	777,036.73	32.09383730	-103.57221759	0.00	0.00	0.00
	5,100.00	5.00	335.16	5,088.84	1,722.44	-236.18	235.29	-108.94	398,714.51	777,033.07	32.09385911	-103.57222924	0.00	0.00	0.00
	5,200.00	5.00	335.16	5,188.46	1,822.06	-244.12	243.20	-112.61	398,722.41	777,029.41	32.09388092	-103.57224088	0.00	0.00	0.00
	5,300.00	5.00	335.16	5,288.08	1,921.68	-252.06	251.11	-116.27	398,730.32	777,025.75	32.09390273	-103.57225252	0.00	0.00	0.00
	5,400.00	5.00	335.16	5,387.70	2,021.30	-260.00	259.02	-119.93	398,738.23	777,022.08	32.09392454	-103.57226417	0.00	0.00	0.00
	5,500.00	5.00	335.16	5,487.32	2,120.92	-267.93	266.93	-123.59	398,746.14	777,018.42	32.09394635	-103.57227581	0.00	0.00	0.00
	5,600.00	5.00	335.16	5,586.94	2,220.54	-275.87	274.84	-127.25	398,754.05	777,014.76	32.09396816	-103.57228746	0.00	0.00	0.00
Drop 2°/100ft	5,636.04	5.00	335.16	5,622.84	2,256.44	-278.73	277.69	-128.57	398,756.90	777,013.44	32.09397602	-103.57229165	0.00	0.00	0.00
	5,700.00	3.72	335.16	5,686.61	2,320.21	-283.16	282.10	-130.62	398,761.31	777,011.40	32.09398819	-103.57229815	2.00	-2.00	0.00
	5,800.00	1.72	335.16	5,786.49	2,420.09	-287.49	286.41	-132.61	398,765.62	777,009.40	32.09400007	-103.57230449	2.00	-2.00	0.00
Hold	5,886.04	0.00	335.16	5,872.52	2,506.12	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	2.00	-2.00	0.00
	5,900.00	0.00	335.16	5,886.48	2,520.08	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
Cherry Canyon□	5,973.52	0.00	335.16	5,960.00	2,593.60	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
	6,000.00	0.00	335.16	5,986.48	2,620.08	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
	6,100.00	0.00	335.16	6,086.48	2,720.08	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
	6,200.00	0.00	335.16	6,186.48	2,820.08	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
	6,300.00	0.00	335.16	6,286.48	2,920.08	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
	6,400.00	0.00	335.16	6,386.48	3,020.08	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
	6,500.00	0.00	335.16	6,486.48	3,120.08	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
	6,600.00	0.00	335.16	6,586.48	3,220.08	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
	6,700.00	0.00	335.16	6,686.48	3,320.08	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
	6,800.00	0.00	335.16	6,786.48	3,420.08	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
	6,900.00	0.00	335.16	6,886.48	3,520.08	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
	7,000.00	0.00	335.16	6,986.48	3,620.08	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
	7,100.00	0.00	335.16	7,086.48	3,720.08	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
	7,200.00	0.00	335.16	7,186.48	3,820.08	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
	7,300.00	0.00	335.16	7,286.48	3,920.08	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
	7,400.00	0.00	335.16	7,386.48	4,020.08	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
Brushy Canyon□	7,493.52	0.00	335.16	7,480.00	4,113.60	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
	7,500.00	0.00	335.16	7,486.48	4,120.08	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
	7,600.00	0.00	335.16	7,586.48	4,220.08	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
	7,700.00	0.00	335.16	7,686.48	4,320.08	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
	7,800.00	0.00	335.16	7,786.48	4,420.08	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
	7,900.00	0.00	335.16	7,886.48	4,520.08	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
	8,000.00	0.00	335.16	7,986.48	4,620.08	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
	8,100.00	0.00	335.16	8,086.48	4,720.08	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
	8,200.00	0.00	335.16	8,186.48	4,820.08	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
	8,300.00	0.00	335.16	8,286.48	4,920.08	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
	8,400.00	0.00	335.16	8,386.48	5,020.08	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
	8,500.00	0.00	335.16	8,486.48	5,120.08	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
	8,600.00	0.00	335.16	8,586.48	5,220.08	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
	8,700.00	0.00	335.16	8,686.48	5,320.08	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
	8,800.00	0.00	335.16	8,786.48	5,420.08	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
Basal Brushy Canyon□	8,868.52	0.00	335.16	8,855.00	5,488.60	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
	8,900.00	0.00	335.16	8,886.48	5,520.08	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
	9,000.00	0.00	335.16	8,986.48	5,620.08	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
Bone Springs Lime□	9,053.52	0.00	335.16	9,040.00	5,673.60	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
Leonard□	9,078.52	0.00	335.16	9,065.00	5,698.60	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00

Comments	MD (ft)	Incl (°)	Azim (°)	TVD (ft)	TVDSS (ft)	VSEC (ft)	NS (ft)	EW (ft)	Northing (ftUS)	Easting (ftUS)	Latitude (°)	Longitude (°)	DLS (°/100ft)	BR (°/100ft)	TR (°/100ft)
	9,100.00	0.00	335.16	9,086.48	5,720.08	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
	9,200.00	0.00	335.16	9,186.48	5,820.08	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
	9,300.00	0.00	335.16	9,286.48	5,920.08	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
Avalon□	9,343.52	0.00	335.16	9,330.00	5,963.60	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
	9,400.00	0.00	335.16	9,386.48	6,020.08	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
	9,500.00	0.00	335.16	9,486.48	6,120.08	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
	9,600.00	0.00	335.16	9,586.48	6,220.08	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
	9,700.00	0.00	335.16	9,686.48	6,320.08	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
	9,800.00	0.00	335.16	9,786.48	6,420.08	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
	9,900.00	0.00	335.16	9,886.48	6,520.08	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
	10,000.00	0.00	335.16	9,986.48	6,620.08	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
1st BS SS □	10,048.52	0.00	335.16	10,035.00	6,668.60	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
	10,100.00	0.00	335.16	10,086.48	6,720.08	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
	10,200.00	0.00	335.16	10,186.48	6,820.08	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
2nd BS Carb□	10,248.52	0.00	335.16	10,235.00	6,868.60	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
	10,300.00	0.00	335.16	10,286.48	6,920.08	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
	10,400.00	0.00	335.16	10,386.48	7,020.08	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
KOP, Build 10°/100ft	10,456.04	0.00	335.16	10,442.52	7,076.12	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
	10,500.00	4.40	179.53	10,486.44	7,120.04	-286.98	285.89	-133.14	398,765.10	777,008.87	32.09399866	-103.57230621	10.00	10.00	0.00
	10,600.00	14.40	179.53	10,584.97	7,218.57	-270.67	269.59	-133.01	398,748.80	777,009.01	32.09395385	-103.57230615	10.00	10.00	0.00
2nd BS SS□	10,600.03	14.40	179.53	10,585.00	7,218.60	-270.67	269.58	-133.01	398,748.79	777,009.01	32.09395383	-103.57230615	10.00	10.00	0.00
	10,700.00	24.40	179.53	10,679.18	7,312.78	-237.50	236.42	-132.73	398,715.63	777,009.28	32.09386268	-103.57230603	10.00	10.00	0.00
	10,800.00	34.40	179.53	10,766.19	7,399.79	-188.48	187.40	-132.33	398,666.62	777,009.68	32.09372793	-103.57230584	10.00	10.00	0.00
	10,900.00	44.40	179.53	10,843.37	7,476.97	-125.10	124.02	-131.81	398,603.23	777,010.20	32.09355370	-103.57230561	10.00	10.00	0.00
	11,000.00	54.40	179.53	10,908.37	7,541.97	-49.27	48.19	-131.19	398,527.41	777,010.82	32.09334527	-103.57230533	10.00	10.00	0.00
	11,100.00	64.40	179.53	10,959.22	7,592.82	36.69	-37.77	-130.49	398,441.45	777,011.53	32.09310899	-103.57230501	10.00	10.00	0.00
	11,200.00	74.40	179.53	10,994.36	7,627.96	130.18	-131.25	-129.72	398,347.98	777,012.30	32.09285203	-103.57230467	10.00	10.00	0.00
Build 5°/100ft	11,206.04	75.00	179.53	10,995.95	7,629.55	136.00	-137.07	-129.67	398,342.15	777,012.34	32.09283602	-103.57230464	10.00	10.00	0.00
	11,300.00	79.70	179.53	11,016.53	7,650.13	227.66	-228.72	-128.92	398,250.50	777,013.10	32.09258409	-103.57230430	5.00	5.00	0.00
	11,400.00	84.70	179.53	11,030.10	7,663.70	326.70	-327.76	-128.10	398,151.47	777,013.91	32.09231185	-103.57230393	5.00	5.00	0.00
	11,500.00	89.70	179.53	11,034.98	7,668.58	426.55	-427.61	-127.28	398,051.62	777,014.73	32.09203739	-103.57230356	5.00	5.00	0.00
Landing Point	11,511.75	90.29	179.53	11,034.99	7,668.59	438.30	-439.36	-127.19	398,039.87	777,014.83	32.09200509	-103.57230351	5.00	5.00	0.00
	11,600.00	90.29	179.53	11,034.55	7,668.15	526.55	-527.60	-126.46	397,951.63	777,015.55	32.09176252	-103.57230318	0.00	0.00	0.00
	11,700.00	90.29	179.53	11,034.05	7,667.65	626.55	-627.60	-125.64	397,851.64	777,016.38	32.09148766	-103.57230280	0.00	0.00	0.00
	11,800.00	90.29	179.53	11,033.55	7,667.15	726.54	-727.60	-124.81	397,751.65	777,017.20	32.09121279	-103.57230242	0.00	0.00	0.00
	11,900.00	90.29	179.53	11,033.05	7,666.65	826.54	-827.59	-123.99	397,651.65	777,018.02	32.09093792	-103.57230204	0.00	0.00	0.00
	12,000.00	90.29	179.53	11,032.55	7,666.15	926.54	-927.59	-123.17	397,551.66	777,018.85	32.09066305	-103.57230166	0.00	0.00	0.00
	12,100.00	90.29	179.53	11,032.05	7,665.65	1,026.54	-1,027.58	-122.34	397,451.67	777,019.67	32.09038819	-103.57230128	0.00	0.00	0.00
	12,200.00	90.29	179.53	11,031.56	7,665.16	1,126.54	-1,127.58	-121.52	397,351.68	777,020.49	32.09011332	-103.57230090	0.00	0.00	0.00
	12,300.00	90.29	179.53	11,031.06	7,664.66	1,226.54	-1,227.57	-120.70	397,251.68	777,021.32	32.08983845	-103.57230052	0.00	0.00	0.00
	12,400.00	90.29	179.53	11,030.56	7,664.16	1,326.54	-1,327.57	-119.87	397,151.69	777,022.14	32.08956358	-103.57230014	0.00	0.00	0.00
	12,500.00	90.29	179.53	11,030.06	7,663.66	1,426.54	-1,427.56	-119.05	397,051.70	777,022.96	32.08928872	-103.57229976	0.00	0.00	0.00
	12,600.00	90.29	179.53	11,029.56	7,663.16	1,526.53	-1,527.56	-118.23	396,951.71	777,023.78	32.08901385	-103.57229938	0.00	0.00	0.00
	12,700.00	90.29	179.53	11,029.06	7,662.66	1,626.53	-1,627.55	-117.41	396,851.71	777,024.61	32.08873898	-103.57229900	0.00	0.00	0.00
	12,800.00	90.29	179.53	11,028.57	7,662.17	1,726.53	-1,727.55	-116.58	396,751.72	777,025.43	32.08846412	-103.57229863	0.00	0.00	0.00
	12,900.00	90.29	179.53	11,028.07	7,661.67	1,826.53	-1,827.54	-115.76	396,651.73	777,026.25	32.08818925	-103.57229825	0.00	0.00	0.00
	13,000.00	90.29	179.53	11,027.57	7,661.17	1,926.53	-1,927.54	-114.94	396,551.74	777,027.08	32.08791438	-103.57229787	0.00	0.00	0.00
	13,100.00	90.29	179.53	11,027.07	7,660.67	2,026.53	-2,027.54	-114.11	396,451.74	777,027.90	32.08763951	-103.57229749	0.00	0.00	0.00
	13,200.00	90.29	179.53	11,026.57	7,660.17	2,126.53	-2,127.53	-113.29	396,351.75	777,028.72	32.08736465	-103.57229711	0.00	0.00	0.00
	13,300.00	90.29	179.53	11,026.07	7,659.67	2,226.53	-2,227.53	-112.47	396,251.76	777,029.55	32.08708978	-103.57229673	0.00	0.00	0.00
	13,400.00	90.29	179.53	11,025.58	7,659.18	2,326.52	-2,327.52	-111.64	396,151.77	777,030.37	32.08681491	-103.57229635	0.00	0.00	0.00
	13,500.00	90.29	179.53	11,025.08	7,658.68	2,426.52	-2,427.52	-110.82	396,051.77	777,031.19	32.08654004	-103.57229597	0.00	0.00	0.00
	13,600.00	90.29	179.53	11,024.58	7,658.18	2,526.52	-2,527.51	-110.00	395,951.78	777,032.02	32.08626517	-103.57229559	0.00	0.00	0.00
	13,700.00	90.29	179.53	11,024.08	7,657.68	2,626.52	-2,627.51	-109.17	395,851.79	777,032.84	32.08599031	-103.57229521	0.00	0.00	0.00
	13,800.00	90.29	179.53	11,023.58	7,657.18	2,726.52	-2,727.50	-108.35	395,751.80	777,033.66	32.08571544	-103.57229483	0.00	0.00	0.00
	13,900.00	90.29	179.53	11,023.08	7,656.68	2,826.52	-2,827.50	-107.53	395,651.80	777,034.49	32.08544057	-103.57229445	0.00	0.00	0.00
	14,000.00	90.29	179.53	11,022.59	7,656.19	2,926.52	-2,927.49	-106.70	395,551.81	777,035.31	32.08516570	-103.57229407	0.00	0.00	0.00
	14,100.00	90.29	179.53	11,022.09	7,655.69	3,026.52	-3,027.49	-105.88	395,451.82	777,036.13	32.08489084	-103.57229369	0.00	0.00	0.00
	14,200.00	90.29	179.53	11,021.59	7,655.19	3,126.51	-3,127.48	-105.06	395,351.83	777,036.95	32.08461597	-103.57229331	0.00	0.00	0.00
	14,300.00	90.29	179.53	11,021.09	7,654.69	3,226.51	-3,227.48	-104.24	395,251.83	777,037.78	32.08434110	-103.57229293	0.00	0.00	0.00
	14,400.00	90.29	179.53	11,020.59	7,654.19	3,326.51	-3,327.47	-103.41	395,151.84	777,038.60	32.08406623	-103.57229255	0.00	0.00	0.00
	14,500.00	90.29	179.53	11,020.09	7,653.69	3,426.51	-3,427.47	-102.59	395,051.85	777,039.42	32.08379137	-103.57229217	0.00	0.00	0.00
	14,600.00	90.29	179.53	11,019.60	7,653.20	3,526.51	-3,527.47	-101.77	394,951.86	777,040.25	32.08351650	-103.57229179	0.00	0.00	0.00
	14,700.00	90.29	179.53	11,019.10	7,652.70	3,626.51	-3,627.46	-100.94	394,851.87	777,041.07	32.08324163	-103.57229141	0.00	0.00	0.00
	14,800.00	90.29	179.53	11,018.60	7,652.20	3,726.51	-3,727.46	-100.12	394,751.87	777,041.89	32.08296676	-103.57229103	0.00	0.00	0.00
	14,900.00	90.29	179.53	11,018.10	7,651.70	3,826.51	-3,827.45	-99.30	394,651.88	777,042.72	32.08269190	-103.57229065	0.00	0.00	0.00
	15,000.00	90.29	179.53	11,017.60	7,651.20	3,926.50	-3,927.45	-98.47	394,551.89	777,043.54	32.08241703	-103.57229027	0.00	0.00	0.00
	15,100.00	90.29	179.53	11,017.10	7,650.70	4,026.50	-4,027.44	-97.65	394,451.90	777,044.36	32.08214216	-103.57228989	0.00	0.00	0.00
	15,200.00	90.29	179.53	11,016.61	7,650.21	4,126.50	-4,127.44	-96.83	394,351.90	777,045.19	32.08186729	-103.57228951	0.00	0.00	0.00
	15,300.00	90.29	179.53	11,016.11	7,649.71	4,226.50	-4,227.43	-96.00	394,251.91	777,046.01	32.08159242	-103.57228914	0.00	0.00	0.00
	15,400.00	90.29	179.53	11,015.61	7,649.21	4,326.50	-4,327.43	-95.18	394,151.92	777,046.83	32.08131756	-103.57228876	0.00	0.00	0.00
	15,500.00	90.29	179.53	11,015.11	7,648.71	4,426.50	-4,427.42	-94.36	394,051.93	777,047.65	32.08104269	-103.57228838	0.00	0.00	0.00
	15,600.00	90.29	179.53	11,014.61	7,648.21	4,526.50	-4,527.42	-93.53	393,951.93	777,048.48	32.08076782	-103.57228800	0.00	0.00	0.00
	15,700.00	90.29	179.53	11,014.11	7,647.71	4,626.50	-4,627.41	-92.71	393,851.94	777,049.30	32.08049295	-103.57228762	0.00	0.00	0.00
	15,800.00	90.29	179.53	11,013.61	7,647.21	4,726.49	-4,727.41	-91.89	393,751.95	777,050.12	32.08021809	-103.57228724	0.00	0.00	0.00
	15,900.00	90.29	179.53	11,013.12	7,646.72	4,826.49	-4,827.41	-91.07	393,651.96	777,050.95	32.07994322	-103.57228686	0.00	0.00	0.00
	16,000.00	90.29	179.53	11,012.62	7,646.22	4,926.49	-4,927.40	-90.24	393,551.96	777,051.77	32.07966835	-103.57228648	0.00	0.00	0.00
	16,100.00	90.29	179.53	11,012.12	7,645.72	5,026.49	-5,027.40	-89.42	393,451.97	777,052.59	32.07939348	-103.57228610	0.00	0.00	0.00
	16,200.00	90.29	179.53	11,011.62	7,645.22	5,126.49	-5,127.39	-88.60	393,351.98	777,053.42	32.07911861	-103.57228572	0.00	0.00	0.00
	16,300.00	90.29	179.53	11,011.12	7,644.72	5,226.49	-5,227.39	-87.77	393,251.99	777,054.24	32.07884375	-103.57228534	0.00	0.00	0.00
	16,400.00	90.29	179.53	11,010.62	7,644.22	5,326.49	-5,327.38	-86.95	393,151.99	777,055.06	32.07856888	-103.57228496	0.00	0.00	0.00
	16,500.00	90.29	179.53	11,010.13	7,643.73	5,426.49	-5,427.38	-86.13	393,052.00	777,055.89	32.07829401	-103.57228458	0.00	0.00	0.00
	16,600.00	90.29	179.53	11,009.63	7,643.23	5,526.48	-5,527.37	-85.30	392,952.01	777,056.71	32.07801914	-103.57228420	0.00	0.00	0.00
	16,700.00	90.29	179.53	11,009.13	7,642.73	5,626.48	-5,627.37	-84.48	392,852.02	777,057.53	32.07774427	-103.57228382	0.00	0.00	0.00
	16,800.00	90.29	179.53	11,008.63	7,642.23	5,726.48	-5,727.36	-83.66	392,752.02	777,058.36	32.07746941	-103.57228344	0.00	0.00	0.00
	16,900.00	90.29	179.53	11,008.13	7,641.73	5,826.48	-5,827.36	-82.83	392,652.03	777,059.18	32.07719454	-103.57228306	0.00	0.00	0.00
	17,000.00	90.29	179.53	11,007.63	7,641.23	5,926.48	-5,927.35	-82.01	392,552.04	777,060.00	32.07691967	-103.57228268	0.00	0.00	0.00
	17,100.00	90.29	179.53	11,007.14	7,640.74	6,026.48	-6,027.35	-81.19	392,452.05	777,060.82	32.07664480	-103.57228230	0.00	0.00	0.00
	17,200.00	90.29	179.53	11,006.64	7,640.24	6,126.48	-6,127.35	-80.36	392,352.05	777,061.65	32.07636994	-103.57228192	0.00	0.00	0.00
	17,300.00	90.29	179.53	11,006.14	7,639.74	6,226.48	-6,227.34	-79.54	392,252.06	777,062.47	32.07609507	-103.57228154	0.00	0.00	0.00
	17,400.00	90.29	179.53	11,005.64	7,639.24	6,326.48	-6,327.34	-78.72	392,152.07	777,063.29	32.07582020	-103.57228116	0.00	0.00	0.00
	17,500.00	90.29	179.53	11,005.14	7,638.74	6,426.47	-6,427.33	-77.90	392,052.08	777,064.12	32.07554533	-103.57228078	0.00	0.00	0.00
	17,600.00	90.29	179.53	11,004.64	7,638.24	6,526.47	-6,527.33	-77.07	391,952.08	777,064.94	32.07527046	-103.57228040	0.00	0.00	0.00
	17,700.00	90.29	179.53	11,004.15	7,637.75	6,626.47	-6,627.32	-76.25	391,852.09	777,065.76	32.07499559	-103.57228002	0.00	0.00	0.00
	17,800.00	90.29	179.53	11,003.65	7,637.25	6,726.47	-6,727.32	-75.43	391,752.10	777,066.59	32.07472073	-103.57227964	0.00	0.00	0.00
	17,900.00	90.29	179.53	11,003.15	7,636.75	6,826.47	-6,827.31	-74.60	391,652.11	777,067.41	32.07444586	-103.57227926	0.00	0.00	0.00
	18,000.00	90.29	179.53	11,002.65	7,636.25	6,926.47	-6,927.31	-73.78	391,552.11	777,068.23	32.07417099	-103.57227888	0.00	0.00	0.00
	18,100.00	90.29	179.53	11,002.15	7,635.75	7,026.47	-7,027.30	-72.96	391,452.12	777,069.06	32.07389612	-103.57227850	0.00	0.00	0.00
	18,200.00	90.29	179.53	11,001.65	7,635.25	7,126.47	-7,127.30	-72.13	391,352.13	777,069.88	32.07362125	-103.57227811	0.00	0.00	0.00
	18,300.00	90.29	179.53	11,001.16	7,634.76	7,226.46	-7,227.29	-71.31	391,252.14	777,070.70	32.07334639	-103.57227773	0.00	0.00	0.00
	18,400.00	90.29	179.53	11,000.66	7,634.26	7,326.46	-7,327.29	-70.49	391,152.14	777,071.52	32.07307152	-103.57227735	0.00	0.00	0.00
	18,500.00	90.29	179.53	11,000.16	7,633.76	7,426.46	-7,427.29	-69.66	391,052.15	777,072.35	32.07279665	-103.57227697	0.00	0.00	0.00
	18,600.00	90.29	179.53	10,999.66	7,633.26	7,526.46	-7,527.28	-68.84	390,952.16	777,073.17	32.07252178	-103.57227659	0.00	0.00	0.00
	18,700.00	90.29	179.53	10,999.16	7,632.76	7,626.46	-7,627.28	-68.02	390,852.17	777,073.99	32.07224691	-103.57227621	0.00	0.00	0.00
	18,800.00	90.29	179.53	10,998.66	7,632.26	7,726.46	-7,727.27	-67.19	390,752.17	777,074.82	32.07197205	-103.57227583	0.00	0.00	0.00
	18,900.00	90.29	179.53	10,998.16	7,631.76	7,826.46	-7,827.27	-66.37	390,652.18	777,075.64	32.07169718	-103.57227545	0.00	0.00	0.00
	19,000.00	90.29	179.53	10,997.67	7,631.27	7,926.46	-7,927.26	-65.55	390,552.19	777,076.46	32.07142231	-103.57227507	0.00	0.00	0.00
	19,100.00	90.29	179.53	10,997.17	7,630.77	8,026.45	-8,027.26	-64.73	390,452.20	777,077.29	32.07114744	-103.57227469	0.00	0.00	0.00
	19,200.00	90.29	179.53	10,996.67	7,630.27	8,126.45	-8,127.25	-63.90	390,352.20	777,078.11	32.07087257	-103.57227431	0.00	0.00	0.00
	19,300.00	90.29	179.53	10,996.17	7,629.77	8,226.45	-8,227.25	-63.08	390,252.21	777,078.93	32.07059770	-103.57227393	0.00	0.00	0.00
	19,400.00	90.29	179.53	10,995.67	7,629.27	8,326.45	-8,327.24	-62.26	390,152.22	777,079.76	32.07032284	-103.57227355	0.00	0.00	0.00
	19,500.00	90.29	179.53	10,995.17	7,628.77	8,426.45	-8,427.24	-61.43	390,052.23	777,080.58	32.07004797	-103.57227317	0.00	0.00	0.00
	19,600.00	90.29	179.53	10,994.68	7,628.28	8,526.45	-8,527.23	-60.61	389,952.24	777,081.40	32.06977310	-103.57227279	0.00	0.00	0.00
	19,700.00	90.29	179.53	10,994.18	7,627.78	8,626.45	-8,627.23	-59.79	389,852.24	777,082.23	32.06949823	-103.57227241	0.00	0.00	0.00
	19,800.00	90.29	179.53	10,993.68	7,627.28	8,726.45	-8,727.22	-58.96	389,752.25	777,083.05	32.06922336	-103.57227203	0.00	0.00	0.00
	19,900.00	90.29	179.53	10,993.18	7,626.78	8,826.44	-8,827.22	-58.14	389,652.26	777,083.87	32.06894850	-103.57227165	0.00	0.00	0.00
	20,000.00	90.29	179.53	10,992.68	7,626.28	8,926.44	-8,927.22	-57.32	389,552.27	777,084.69	32.06867363	-103.57227127	0.00	0.00	0.00
	20,100.00	90.29	179.53	10,992.18	7,625.78	9,026.44	-9,027.21	-56.49	389,452.27	777,085.52	32.06839876	-103.57227089	0.00	0.00	0.00
	20,200.00	90.29	179.53	10,991.69	7,625.29	9,126.44	-9,127.21	-55.67	389,352.28	777,086.34	32.06812389	-103.57227051	0.00	0.00	0.00
	20,300.00	90.29	179.53	10,991.19	7,624.79	9,226.44	-9,227.20	-54.85	389,252.29	777,087.16	32.06784902	-103.57227013	0.00	0.00	0.00
	20,400.00	90.29	179.53	10,990.69	7,624.29	9,326.44	-9,327.20	-54.02	389,152.30	777,087.99	32.06757415	-103.57226975	0.00	0.00	0.00
	20,500.00	90.29	179.53	10,990.19	7,623.79	9,426.44	-9,427.19	-53.20	389,052.30	777,088.81	32.06729929	-103.57226937	0.00	0.00	0.00
	20,600.00	90.29	179.53	10,989.69	7,623.29	9,526.44	-9,527.19	-52.38	388,952.31	777,089.63	32.06702442	-103.57226899	0.00	0.00	0.00
	20,700.00	90.29	179.53	10,989.19	7,622.79	9,626.43	-9,627.18	-51.56	388,852.32	777,090.46	32.06674955	-103.57226860	0.00	0.00	0.00
	20,800.00	90.29	179.53	10,988.70	7,622.30	9,726.43	-9,727.18	-50.73	388,752.33	777,091.28	32.06647468	-103.57226822	0.00	0.00	0.00
	20,900.00	90.29	179.53	10,988.20	7,621.80	9,826.43	-9,827.17	-49.91	388,652.33	777,092.10	32.06619981	-103.57226784	0.00	0.00	0.00
	21,000.00	90.29	179.53	10,987.70	7,621.30	9,926.43	-9,927.17	-49.09	388,552.34	777,092.93	32.06592494	-103.57226746	0.00	0.00	0.00
	21,100.00	90.29	179.53	10,987.20	7,620.80	10,026.43	-10,027.16	-48.26	388,452.35	777,093.75	32.06565007	-103.57226708	0.00	0.00	0.00
Red Hills Unit 78H - BHL [100' F	21,140.24	90.29	179.53	10,987.00	7,620.60	10,066.67	-10,067.40	-47.93	388,412.11	777,094.08	32.06553946	-103.57226693	0.00	0.00	0.00

Comments	MD (ft)	Incl (°)	Azim (°)	TVD (ft)	TVDSS (ft)	VSEC (ft)	NS (ft)	EW (ft)	Northing (ftUS)	Easting (ftUS)	Latitude (°)	Longitude (°)	DLS (°/100ft)	BR (°/100ft)	TR (°/100ft)

Survey Type: Def Plan

Survey Error Model: ISCWSA0 3 - D 95 % Confidence 2.7955 sigma

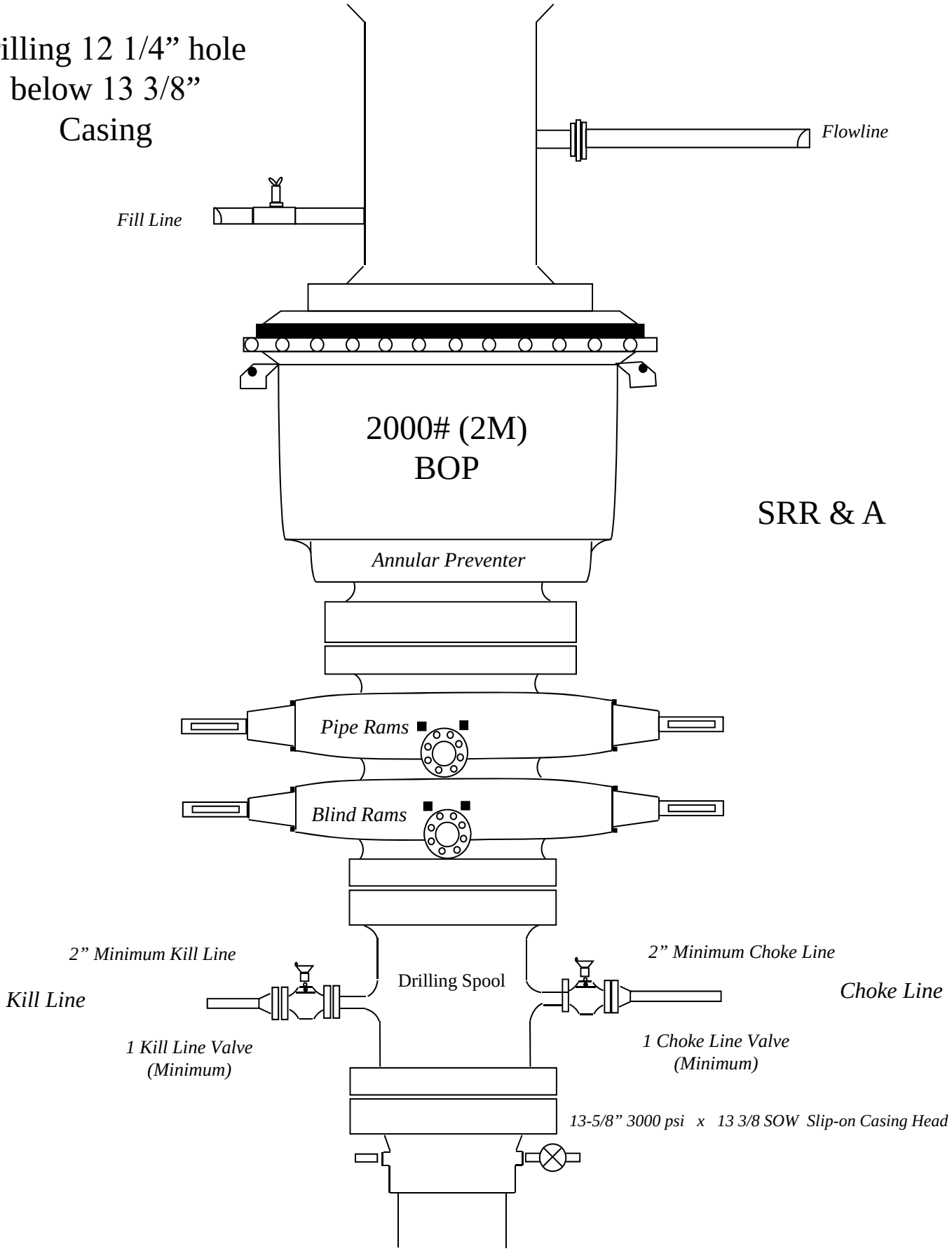
Survey Program:

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	10,400.000	1/100.000	14.75 – 9.875	10.75 – 7.625		A001Mb_MWD		Red Hills Unit 78H / Coterra Red Hills Unit 78H Rev
	1	10,400.000	21,140.241	1/100.000	9.875 – 6.75	7.625 – 6.75		A008Mb_MWD+IFR1+MS		Red Hills Unit 78H / Coterra Red Hills Unit 78H Rev

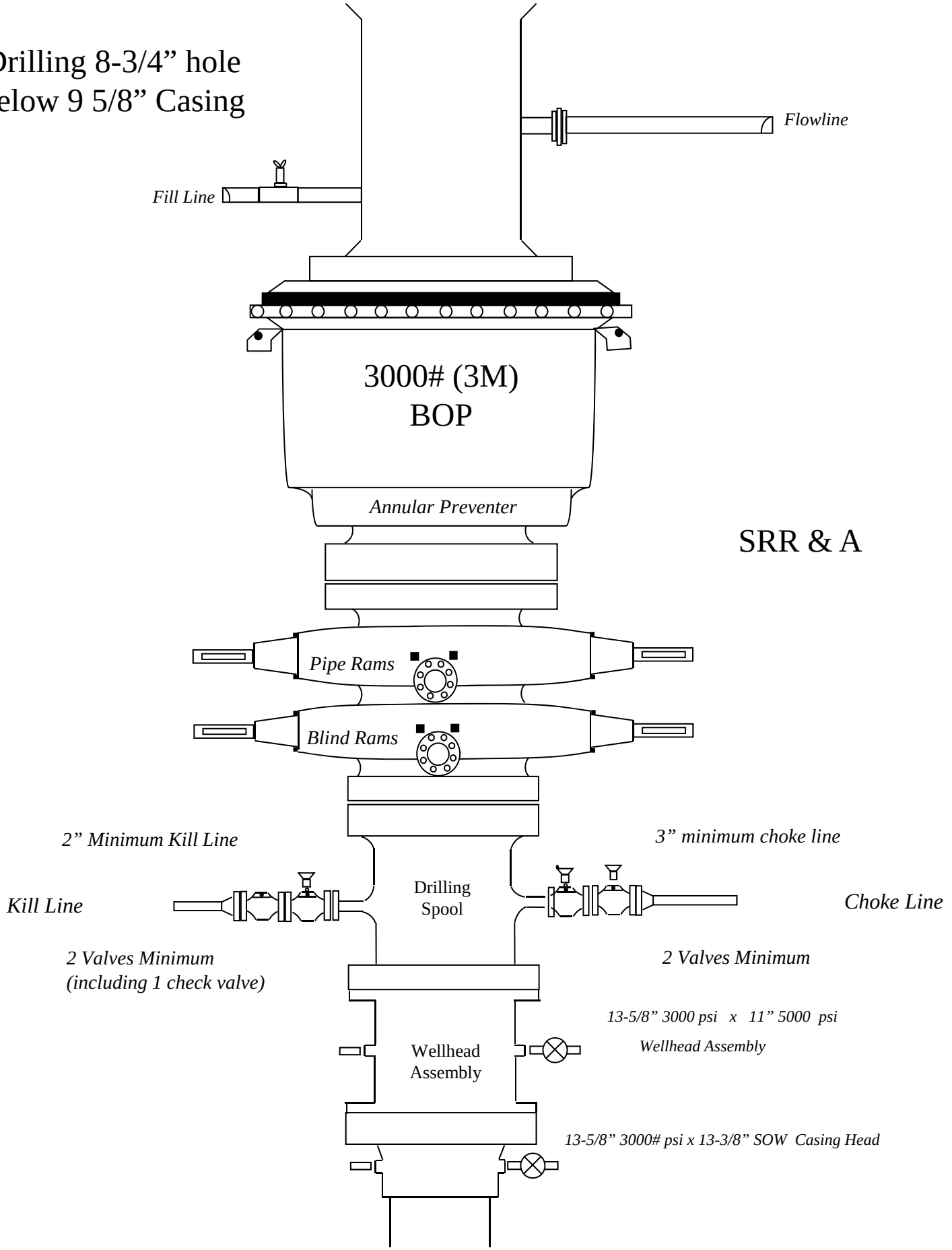
EOU Geometry:

End MD (ft)	Hole Size (in)	Casing Size (in)	Name
1,017.000	14.750	10.750	
12,217.000	9.875	7.625	
22,167.000	6.750		

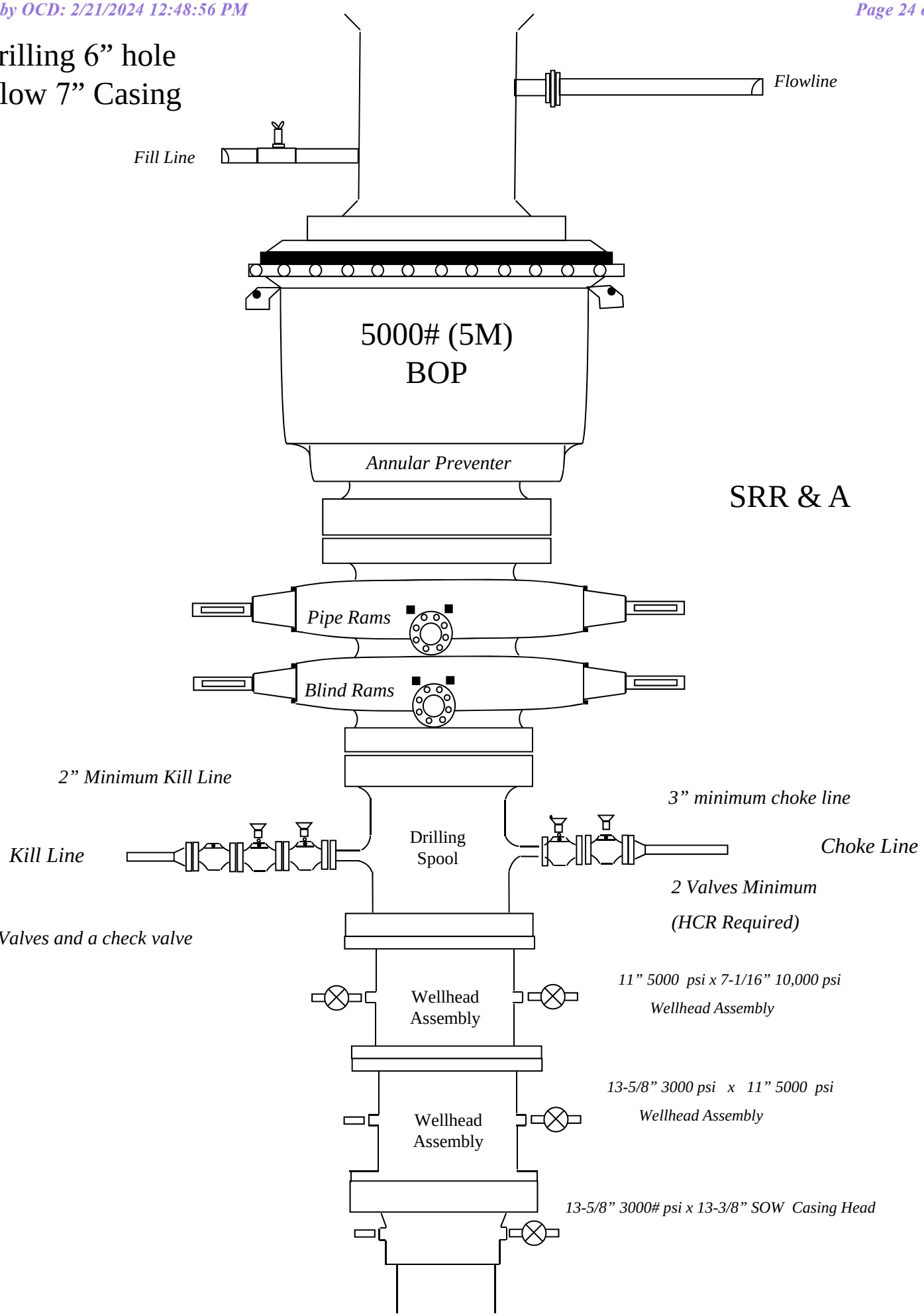
Drilling 12 1/4” hole below 13 3/8” Casing



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



Drilling 6” hole below 7” Casing



SRR & A

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

Sundry Print Report
02/16/2024

Well Name: RED HILLS UNIT	**Well Location:** T25S / R33E / SEC 33 / NENE /	**County or Parish/State:**
Well Number: 78H	**Type of Well:** OIL WELL	**Allottee or Tribe Name:**
Lease Number: NMNM005792	**Unit or CA Name:**	**Unit or CA Number:**
US Well Number: 3002551927	**Well Status:** Approved Application for Permit to Drill	**Operator:** CIMAREX ENERGY COMPANY

Notice of Intent

Sundry ID: 2768265

Type of Submission: Notice of Intent

Type of Action: APD Change

Date Sundry Submitted: 01/04/2024

Time Sundry Submitted: 02:47

Date proposed operation will begin: 03/01/2024

Procedure Description: Cimarex Energy Company respectfully requests the following drilling and directional changes be made to the existing and approved APD for the following well: Red Hills Unit 78H 1. Casing design change - Long String to Liner. 2. New bottom hole location. See attached.

NOI Attachments

Procedure Description

Red_Hills_Unit_78H_Sundry_Submittal_01042024_20240104141708.pdf

Conditions of Approval

Specialist Review

Red_Hills_Unit_78H_COA_20240117132616.pdf

Well Name: RED HILLS UNIT	**Well Location:** T25S / R33E / SEC 33 / NENE /	**County or Parish/State:**
Well Number: 78H	**Type of Well:** OIL WELL	**Allottee or Tribe Name:**
Lease Number: NMNM005792	**Unit or CA Name:**	**Unit or CA Number:**
US Well Number: 3002551927	**Well Status:** Approved Application for Permit to Drill	**Operator:** CIMAREX ENERGY COMPANY

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: SHELLY BOWEN

Signed on: JAN 04, 2024 02:17 PM

Name: CIMAREX ENERGY COMPANY

Title: Regulatory Analyst

Street Address: 6001 DEAUVILLE BLVD STE 300N

City: MIDLAND **State:** TX

Phone: (432) 620-1644

Email address: DL_PBUREGULATORY@COTERRA.COM

Field

Representative Name:

Street Address:

City: **State:** **Zip:**

Phone:

Email address:

BLM Point of Contact

BLM POC Name: ZOTA M STEVENS

BLM POC Title: Petroleum Engineer

BLM POC Phone: 5752345998

BLM POC Email Address: ZSTEVENS@BLM.GOV

Disposition: Sundry Received

Disposition Date: 01/04/2024

Signature: Zota Stevens

PECOS DISTRICT
DRILLING CONDITIONS OF APPROVAL

OPERATOR'S NAME:	**Cimarex Energy Company**
LEASE NO.:	**NMNM005792**
LOCATION:	Section 33, T.25 S., R.33 E., NMPM
COUNTY:	Lea County, New Mexico

WELL NAME & NO.:	**Red Hills Unit 78H**
SURFACE HOLE FOOTAGE:	388'/N & 969'/E
BOTTOM HOLE FOOTAGE	100'/S & 1100'/E
ATS/API ID:	**3002551927**
APD ID:	**10400059630**
Sundry ID:	**2768265**

COA

H2S	Yes		
Potash	None		
Cave/Karst Potential	Low		
Cave/Karst Potential	☐ Critical		
Variance	○ None	◉ Flex Hose	○ Other
Wellhead	Conventional and Multibowl		
Other	☐ 4 String	Capitan Reef: None	☐ WIPP
Other	Pilot Hole: None	☐ Open Annulus	
Cementing	Contingency Squeeze: None	Echo-Meter: None	Primary Cement Squeeze: None
Special Requirements	☐ Water Disposal/Injection	☐ COM	☑ Unit
Special Requirements	☐ Batch Sundry		
Special Requirements Variance	☐ Break Testing	☐ Offline Cementing	☐ Casing Clearance

A. HYDROGEN SULFIDE

A Hydrogen Sulfide (H2S) Drilling Plan shall be activated 500 feet prior to drilling into the **Bone Springs** formation. As a result, the Hydrogen Sulfide area must meet **43 CFR part 3170 Subpart 3176** requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, please provide measured values and formations to the BLM.

B. CASING

1. The **13-3/8** inch surface casing shall be set at approximately **1050 feet** (a minimum of **25 feet (Lea 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.

3. The minimum required fill of cement behind the **7** inch production casing is:

    - Cement should tie-back at least **200 feet** into previous casing string. Operator shall provide method of verification.

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

    - Cement should tie-back **100 feet** into the previous casing. Operator shall provide method of verification.
      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. 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.

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.

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 **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)

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.

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)

☑ 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 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.

LVO 2/16/2024

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.

SUBMIT IN TRIPLICATE *- Other instructions on page 2*

5. Lease Serial No. NMNM005792Z

6. If Indian, Allottee or Tribe Name

7. If Unit of CA/Agreement, Name and/or No.

1. Type of Well
☑ Oil Well ☐ Gas Well ☐ Other

8. Well Name and No. RED HILLS UNIT/78H

2. Name of Operator CIMAREX ENERGY COMPANY

9. API Well No. 3002551927

3a. Address 6001 DEAUVILLE BLVD STE 300N, MIDLAND, T

3b. Phone No. *(include area code)* (432) 571-7800

10. Field and Pool or Exploratory Area WC-025 G-06 S253329D/WC-025 G-06 S253329D

4. Location of Well *(Footage, Sec., T.,R.,M., or Survey Description)* SEC 33/T25S/R33E/NMP

11. Country or Parish, State LEA/NM

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

TYPE OF SUBMISSION	TYPE OF ACTION			
☑ Notice of Intent	☐ Acidize	☐ Deepen	☐ Production (Start/Resume)	☐ Water Shut-Off
	☐ Alter Casing	☐ Hydraulic Fracturing	☐ Reclamation	☐ Well Integrity
☐ Subsequent Report	☐ Casing Repair	☐ New Construction	☐ Recomplete	☐ Other
	☑ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon	
☐ Final Abandonment Notice	☐ Convert to Injection	☐ Plug Back	☐ 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 recomplete 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.)

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

Red Hills Unit 78H

1. Casing design change - Long String to Liner.
2. New bottom hole location.

See attached.

14. I hereby certify that the foregoing is true and correct. Name *(Printed/Typed)* SHELLY BOWEN / Ph: (432) 620-1644

Title Regulatory Analyst

Signature (Electronic Submission)

Date 01/04/2024

THE SPACE FOR FEDERAL OR STATE OFICE 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 ofthis form to U.S. Department ofthe Interior, Bureau ofLand 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: NENE / 388 FNL / 969 FEL / TWSP: 25S / RANGE: 33E / SECTION: 33 / LAT: 32.09321 / LONG: -103.571883 (TVD: 0 feet, MD: 0 feet)

PPP: NENE / 388 FNL / 440 FEL / TWSP: 25S / RANGE: 33E / SECTION: 33 / LAT: 32.093207 / LONG: -103.570174 (TVD: 11050 feet, MD: 11356 feet)

BHL: SESE / 100 FSL / 440 FEL / TWSP: 26S / RANGE: 33E / SECTION: 4 / LAT: 32.065536 / LONG: -103.570137 (TVD: 11050 feet, MD: 21018 feet)

Coterra Energy Inc. respectfully requests to submit the following sundry notice and directional changes be made to the existing and approved APD for the following well:

Sundry ID	Well Name	API	S/T/R	SHL Old	SHL New	S/T/R	BHL Old	BHL New
	Red Hills Unit 78H	30-025-51927	33/25S/33E	388 FNL 969 FEL	No Change	4/26S/33E	100 FSL 440 FEL	**100 FSL 1100 FEL**
		TVD Old	**TVD New**	**MD Old**	**MD New**	**Old Formation**	**New Formation**	**Producing Zone**
		11,050'	**11,035'**	21,018	**21,140**	Wolfcamp	**Lower 2nd Sand**	**WC G-09 S253335K;LOWER BONE SPRING**

Section 1 - Geologic Formations

See attached drilling plan/attached Geoprog

Section 2 - Blowout Prevention

Old	New
5M	**2M**
	3M
	5M

Old

Hole Size	Casing Depth From (MD)	Casing Depth To (MD)	Setting Depth (TVD)	Casing Size	Weight (lb/ft)	Grade	Conn
14 3/4	0	970	970	10-3/4"	40.50	J-55	BT&C
9 7/8	0	11220	11050	7-5/8"	29.70	L-80	BT&C
6 3/4	0	10556	10556	5-1/2"	20.00	L-80	LT&C
6 3/4	10556	21018	11050	5"	18.00	P-110	BT&C

New

Hole Size	Casing Depth From (MD)	Casing Depth To (MD)	Setting Depth (TVD)	Casing Size	Weight (lb/ft)	Grade	Conn
17 1/2	**0**	**1010**	**1010**	**13-3/8"**	**48.00**	**H-40**	**ST&C**
12 1/4	**0**	**4900**	**4890**	**9-5/8"**	**40.00**	**HCK-55**	**LT&C**
8 3/4	**0**	**10456**	**10456**	**7"**	**29.00**	**L-80**	**BT&C**
8 3/4	**10456**	**11206**	**10995**	**7"**	**29.00**	**L-80**	**BT&C**
6	**9956**	**21140**	**10897**	**4-1/2"**	**11.60**	**P-110**	**BT&C**

Section 4 - Cement

Old

Casing	# SKS
Surface	481
Intermediate	1460
Production	1349

New

Casing	# SKS
Surface	**620**
Intermediate	**1216**
Production	**479**
Completion System	**737**

Section 5 - Circulating Medium

Old

Depth	Type	Weight (ppg)	Viscosity
0' to 970'	Fresh Water	7.83 - 8.33	28
970' to 11220'	Brine Diesel Emulsion	8.50 - 9.00	30-35
11220' to 21018'	OBM	9.50 - 10.00	50-70

New

Depth	Type	Weight (ppg)	Viscosity
0' to 1010'	**Fresh Water**	**7.83 - 8.33**	**28**
1010' to 4900'	**Brine Water**	**9.50 - 10.00**	**30-32**
4900' to 11206'	**Cut Brine or OBM**	**8.50 - 9.00**	**27-70**
11512' to 21140'	**OBM**	**9.50 - 10.00**	**50-70**

Section 7 - Bottom Hole Pressure

Old	New
5746	**5666**

Section 10 - Variances

Variance Request #1: Skid Rig after Cementing Surface Casing

Coterra requests permission to skid the rig to the next well on the pad in order to begin operations immediately after the cement job for the surface casing has been completed. After the cement job is completed, no operations on the subject well will be conducted until at least 8 hours have elapsed, and both lead and tail slurries have achieved 500 psi compressive strength. While cement cures, the surface casing of the subject well will be suspended in the well by a mandrel and landing ring system, which is independent from the rig and ensures that casing remains centered while the rig is active on other wells.

Variance Request #4: Utilize Co-Flex Choke Line

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

District I
1625 N. French Dr., Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720
District III
1000 Rio Brazos Road, Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

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

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

1 API Number	2 Pool Code	3 Pool Name
30-025-51927	97741	WC G-09 S253335K;LOWER BONE SPRING

4 Property Code	5 Property Name	6 Well Number
	RED HILLS UNIT	78H
7 OGRID No. 215099	8 Operator Name CIMAREX ENERGY CO.	9 Elevation 3343.4'

10 Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
A	33	25S	33E		388	NORTH	969	EAST	LEA

11 Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
P	4	26S	33E		100	SOUTH	1100	EAST	LEA

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

No allowable will be assigned to this completion until all interests have been consolidated or a non-standard unit has been approved by the division.

16 NOTE:
- Distances referenced on plat to section lines are perpendicular.
- Basis of Bearing is a Transverse Mercator Projection with a Central Meridian of W-103°53'00" (NAD 83)

NAD 83 (SURFACE HOLE LOCATION)
LATITUDE = 32°05'35.56" (32.093210°)
LONGITUDE = -103°34'18.78" (-103.571883°)
NAD 27 (SURFACE HOLE LOCATION)
LATITUDE = 32°05'35.11" (32.093085°)
LONGITUDE = -103°34'17.09" (-103.571413°)
STATE PLANE NAD 83 (N.M. EAST)
N: 398479.22' E: 777142.01'
STATE PLANE NAD 27 (N.M. EAST)
N: 398421.61' E: 735955.49'

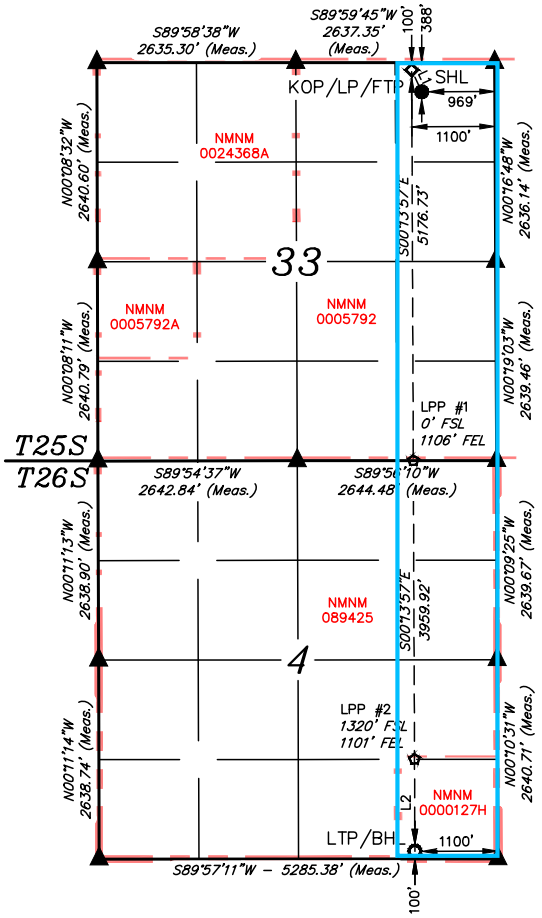
NAD 83 (KOP/LP/FTP)
LATITUDE = 32°05'38.41" (32.094003°)
LONGITUDE = -103°34'20.30" (-103.572306°)
NAD 27 (KOP/LP/FTP)
LATITUDE = 32°05'37.96" (32.093879°)
LONGITUDE = -103°34'18.61" (-103.571836°)
STATE PLANE NAD 83 (N.M. EAST)
N: 398766.79' E: 777008.86'
STATE PLANE NAD 27 (N.M. EAST)
N: 398709.18' E: 735822.36'

NAD 83 (LPP #1)
LATITUDE = 32°04'47.19" (32.079776°)
LONGITUDE = -103°34'20.23" (-103.572287°)
NAD 27 (LPP #1)
LATITUDE = 32°04'46.74" (32.079651°)
LONGITUDE = -103°34'18.54" (-103.571817°)
STATE PLANE NAD 83 (N.M. EAST)
N: 393591.12' E: 777051.46'
STATE PLANE NAD 27 (N.M. EAST)
N: 393533.64' E: 735864.71'

NAD 83 (LPP #2)
LATITUDE = 32°04'08.01" (32.068893°)
LONGITUDE = -103°34'20.18" (-103.572272°)
NAD 27 (LPP #2)
LATITUDE = 32°04'07.56" (32.068768°)
LONGITUDE = -103°34'18.49" (-103.571803°)
STATE PLANE NAD 83 (N.M. EAST)
N: 389632.01' E: 777084.05'
STATE PLANE NAD 27 (N.M. EAST)
N: 389574.63' E: 735897.11'

NAD 83 (LTP/BHL)
LATITUDE = 32°03'55.94" (32.065539°)
LONGITUDE = -103°34'20.16" (-103.572267°)
NAD 27 (LTP/BHL)
LATITUDE = 32°03'55.49" (32.065414°)
LONGITUDE = -103°34'18.47" (-103.571798°)
STATE PLANE NAD 83 (N.M. EAST)
N: 388412.11' E: 777094.08'
STATE PLANE NAD 27 (N.M. EAST)
N: 388354.75' E: 735907.09'

LINE TABLE		
LINE	DIRECTION	LENGTH
L1	N24°36'18"W	316.95'
L2	S00°13'57"E	1220.15'



● = SURFACE HOLE LOCATION
◇ = KICK OFF POINT/LANDING POINT /FIRST TAKE POINT
✿ = LEASE PENETRATION POINT
◎ = LAST TAKE POINT/BOTTOM HOLE LOCATION
▲ = SECTION CORNER LOCATED
▬ = LEASE LINE

2000' 1000' 0' 2000'
SCALE
DRAWN BY: T.S. 02-13-20
REV: 1 Z.L. 11-21-23 (UPDATE WELL BORE)

17 OPERATOR CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Shelly Bowen 1/4/24
Signature Date

Shelly Bowen
Printed Name

shelly.bowen@coterra.com
E-mail Address

18 SURVEYOR CERTIFICATION

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.

May 05, 2017
Date of Survey
Signature and Seal of Professional Surveyor:

Certificate Number:

1. Geological Formations

TVD of target 10,897
MD at TD 21,140

Pilot Hole TD N/A
Deepest expected fresh water

Formation	Depth (TVD) from KB	Water/Mineral Bearing/Target Zone	Hazards
Rustler	960	N/A	
Top of Salt	1270	N/A	
Base of Salt/Lamar	4915	N/A	
Top Delaware Sands/Bell Canyon	4940	Hydrocarbons	
Cherry Canyon	5960	Hydrocarbons	
Brushy Canyon	7480	Hydrocarbons	
Basal Brushy Canyon	8855	N/A	
Bone Spring Lime	9040	N/A	
Leonard/Avalon Sand	9065	Hydrocarbons	
Avalon Shale	9330	Hydrocarbons	
1st Bone Spring Sand	10035	Hydrocarbons	
2nd Bone Spring Shale	10235	Hydrocarbons	
2nd Bone Spring Sand	10585	Hydrocarbons	
Lower 2nd Sand - Target	11035	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	1010	1010	13-3/8"	48.00	H-40	ST&C	1.69	3.95	6.64
12 1/4	0	4900	4890	9-5/8"	40.00	HCK-55	LT&C	1.50	1.55	2.87
8 3/4	0	10456	10456	7"	29.00	L-80	BT&C	1.43	1.67	2.12
8 3/4	10456	11206	10995	7"	29.00	L-80	BT&C	1.36	1.59	43.25
6	9956	21140	10897	4-1/2"	11.60	P-110	BT&C	1.34	1.89	33.62
					BLM Minimum Safety Factor			1.125	1	1.6 Dry 1.8 Wet

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

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

3. Cementing Program

Casing	# Sks	Wt. lb/gal	Yld ft3/sack	H2O gal/sk	500# Comp. Strength (hours)	Slurry Description
Surface	489	13.50	1.72	9.15	15.5	Lead: Class C + Bentonite
	131	14.80	1.34	6.32	9.5	Tail: Class C + LCM
Intermediate	930	12.90	1.88	9.65	12	Lead: 35:65 (Poz:C) + Salt + Bentonite
	286	14.80	1.34	6.32	9.5	Tail: Class C + LCM
Production	354	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	737	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	49
Production	4700	25
Completion System	11006	10

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

4. Pressure Control Equipment

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

BOP installed and tested before drilling which hole?	Size	Min Required WP	Type		Tested To
12 1/4	13 5/8	2M	Annular	X	50% of working pressure
			Blind Ram		2M
			Pipe Ram		
			Double Ram	X	
			Other		
8 3/4	13 5/8	3M	Annular	X	50% of working pressure
			Blind Ram		3M
			Pipe Ram		
			Double Ram	X	
			Other		
6	13 5/8	5M	Annular	X	50% of working pressure
			Blind Ram		5M
			Pipe Ram	X	
			Double Ram	X	
			Other		

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

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

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

5. Mud Program

Depth	Type	Weight (ppg)	Viscosity	Water Loss
0' to 1010'	Fresh Water	7.83 - 8.33	28	N/C
1010' to 4900'	Brine Water	9.50 - 10.00	30-32	N/C
4900' to 11206'	Cut Brine or OBM	8.50 - 9.00	27-70	N/C
11512' to 21140'	OBM	9.50 - 10.00	50-70	N/C

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

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

6. Logging and Testing Procedures

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

Additional Logs Planned	Interval

7. Drilling Conditions

Condition	
BH Pressure at deepest TVD	5666 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

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 50% of working pressure. The pressure test will be repeated at least every 30 days, as per Onshore Order No. 2.

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

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

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

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

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

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

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

Geologic Prognosis

COTERRA

Well Information		Contact Information
Well Name: Red Hills Unit 78H	**County:** Lea	**Jenny Blake**
API #:	**State:** New Mexico	Office: (432) 571-7800
Dev/Exp: Development	**Field:**	Cell: (281) 639-4419
		Email: Jenny.Blake@coterra.com

Surface Hole Information					
Footages:	**Section:**	**Township:**	**Range:**	**Direction**	
388' FNL / 969' FEL	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' FEL	4	26S	33E		Email: Staci.Mueller@coterra.com

Target Information

2nd Bone Spring Sand — Landing TVD: ***11,035'*** — TD TVD: 10,987'

Generated By:	Jenny Blake	Date Generated:	12/11/2023
Est. GL Elevation:	3357		
Est. KB above GL	23	Rig:	
Est. KB Elevation:	3380		

Horizon	TVD top	TVD base	SSTVD top	Thickness	Lithology	Mineral Resource	Comments
Rustler	960	1270	2420	310	Anhydrite	Useable Water	Hardline 100' FSL/100' FNL & 330' FWL/FEL
Top Salt/Salado	1270	4915	2110	3645	Halite	N/A	
Base Salt/Lamar	4915	4940	-1535	25	Shale	N/A	
Top Delaware Sands/Bell Canyon	4940	5960	-1560	1020	Sandstone	Natural gas, oil	
Cherry Canyon	5960	7480	-2580	1520	Sandstone	Natural gas, oil	
Brushy Canyon	7480	8855	-4100	1375	Sandstone	Natural gas, oil	
Basal Brushy Canyon	8855	9040	-5475	185			
Bone Spring Lime	9040	9065	-5660	25	Limestone	N/A	
Leonard/Avalon Sand	9065	9330	-5685	265	Shale	Natural gas, oil	
Avalon Shale	9330	10035	-5950	705	Shale	Natural gas, oil	
1st Bone Spring Sand	10035	10235	-6655	200	Sandstone	Natural gas, oil	
2nd Bone Spring Shale	10235	10585	-6855	350	Shale	Natural gas, oil	
2nd Bone Spring Sand	10585	11,035	-7205	450	Sandstone	Natural gas, oil	
Lower 2nd Sand Target	**11,035**	---	**-7,655**	---			

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

Schlumberger

COTERRA

Rev1

COTERRA

Borehole:	Well:	Field:	Structure:
Red Hills Unit 78H	Red Hills Unit 78H	NM Lea County (NAD 83)	Coterra Red Hills Unit Pad 76-81

Gravity & Magnetic Parameters
Model: HDGM 2023 | Dip: 59.593° | Date: 21-Dec-2023
MagDec: 6.192° | FS: 47275.693nT | Gravity FS: 998.438mgn (9.80665 Based)

Surface Location NAD83 New Mexico State Plane, Eastern Zone, US Feet
Lat: N 32 5 35.56 | Northing: 398479.22ftUS | Grid Conv: 0.4046°
Lon: W 103 34 18.78 | Easting: 777142.01ftUS | Scale Fact: 0.99997278

Miscellaneous
Slot: Red Hills Unit 78H | TVD Ref: RKB (3366.400 ft above MSL)
Plan: Coterra Red Hills Unit 78H Rev1 kFc 21Dec23

Critical Points

Critical Point	MD	INCL	AZIM	TVD	VSEC	N(+)/S(-)	E(+)/W(-)	DLS
SHL [388' FNL, 969' FEL]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Rustler	960.00	0.00	335.16	960.00	0.00	0.00	0.00	0.00
Salado	1270.00	0.00	335.16	1270.00	0.00	0.00	0.00	0.00
Nudge, Build 2°/100ft	2000.00	0.00	335.16	2000.00	0.00	0.00	0.00	0.00
Hold	2249.99	5.00	335.16	2249.68	-9.93	9.89	-4.58	2.00
Lamar	4925.50	5.00	335.16	4915.00	-222.33	221.49	-102.55	0.00
Bell Canyon	4950.59	5.00	335.16	4940.00	-224.32	223.48	-103.47	0.00
Drop 2°/100ft	5636.04	5.00	335.16	5622.84	-278.73	277.69	-128.57	0.00
Hold	5886.04	0.00	335.16	5872.52	-288.66	287.58	-133.15	2.00
Cherry Canyon	5973.52	0.00	335.16	5960.00	-288.66	287.58	-133.15	0.00
Brushy Canyon	7493.52	0.00	335.16	7480.00	-288.66	287.58	-133.15	0.00
Basal Brushy Canyon	8868.52	0.00	335.16	8855.00	-288.66	287.58	-133.15	0.00
Bone Springs Lime	9053.52	0.00	335.16	9040.00	-288.66	287.58	-133.15	0.00
Leonard	9078.52	0.00	335.16	9065.00	-288.66	287.58	-133.15	0.00
Avalon	9343.52	0.00	335.16	9330.00	-288.66	287.58	-133.15	0.00
1st BS SS	10048.52	0.00	335.16	10035.00	-288.66	287.58	-133.15	0.00
2nd BS Carb	10248.52	0.00	335.16	10235.00	-288.66	287.58	-133.15	0.00
KOP, Build 10°/100ft	10456.04	0.00	335.16	10442.52	-288.66	287.58	-133.15	0.00
2nd BS SS	10600.03	14.40	179.53	10585.00	-270.67	269.58	-133.01	10.00
Build 5°/100ft	11206.04	75.00	179.53	10995.95	136.00	-137.07	-129.67	10.00
Landing Point	11511.75	90.29	179.53	11034.99	438.30	-439.36	-127.19	5.00
Red Hills Unit 78H - BHL [100' FSL, 1100' FEL]	21140.24	90.29	179.53	10987.00	10066.67	-10067.40	-47.93	0.00

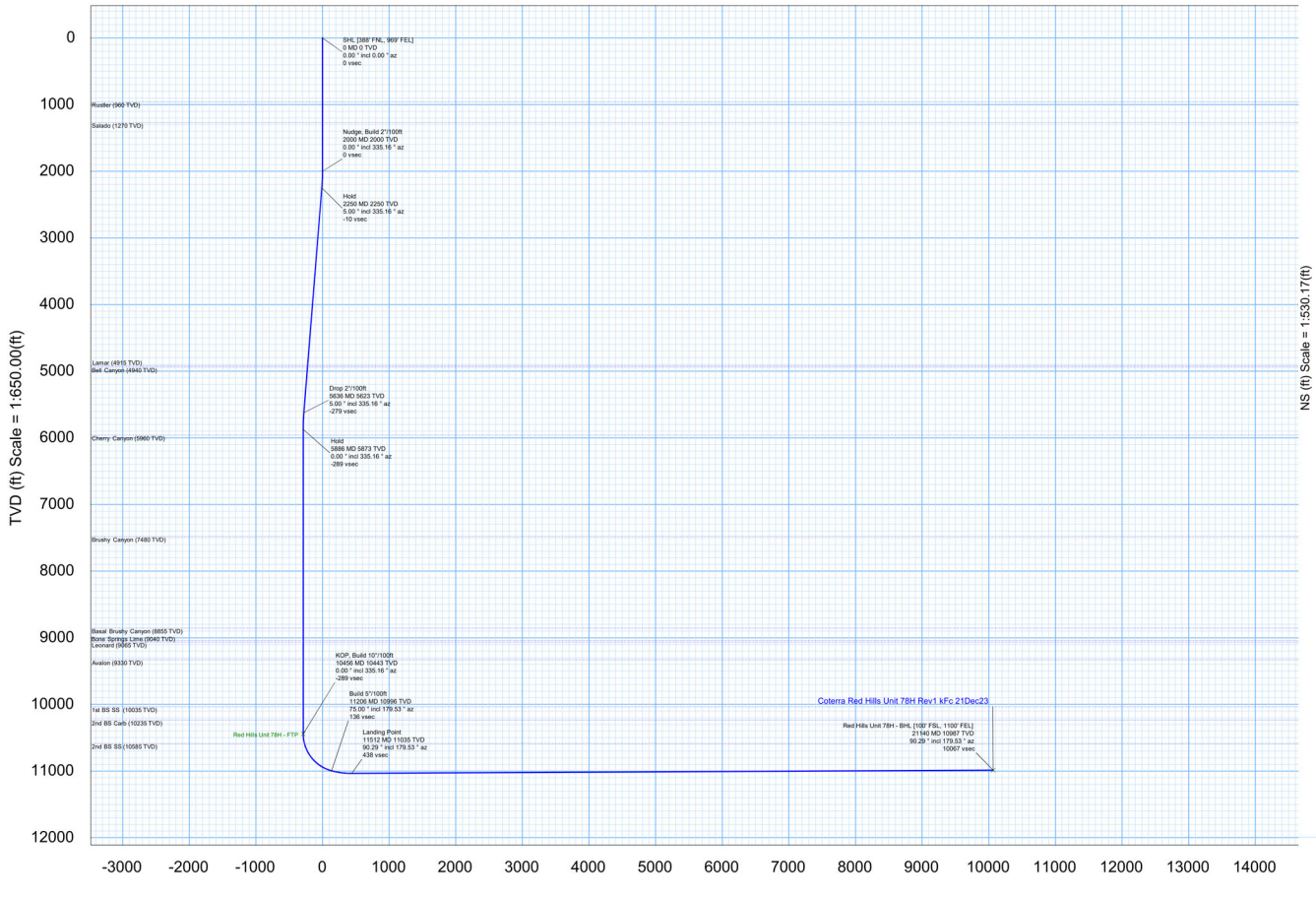
Grid
True
Mag
Grid North
Tot Corr (M->G 5.788°)
Mag Dec (6.192°)
Grid Conv (0.405°)

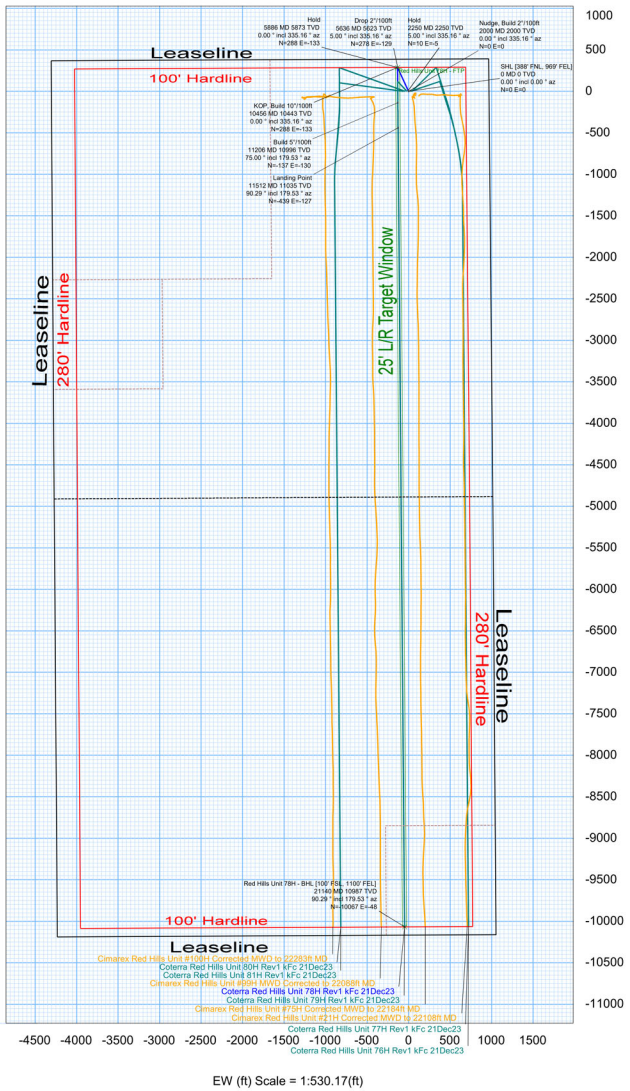
CONTROLLED

Plan ref	Coterra Red Hills Unit 78H Rev1 kFc 21Dec23
Drawing ref	
Copy number	of 3
Date	22-Dec-2023

1	Client	
2	Client	
3	Office	
4	Office	

Copy number for





Schlumberger

Coterra Red Hills Unit 78H Rev1 kFc 21Dec23 Anti-Collision Summary Report

Analysis Date-24hr Time:	December 22, 2023 - 04:08 PM (UTC 0)	**Analysis Method:**	3D Least Distance
Client:	COTERRA	**Reference Trajectory:**	Coterra Red Hills Unit 78H Rev1 kFc 21Dec23 (Def Plan)
Field:	NM Lea County (NAD 83)	**Depth Interval:**	Every 10.00 Measured Depth (ft)
Structure:	Coterra Red Hills Unit Pad 76-81	**Rule Set:**	NAL Procedure: D&M AntiCollision Standard S002
Slot:	Red Hills Unit 78H	**Min Pts:**	Absolute minima indicated.
Well:	Red Hills Unit 78H	**Engine Version:**	2023.1.0.1
Borehole:	Red Hills Unit 78H	**Database \ Project:**	Red Hills Unit 78H–COTERRA
Scan MD Range:	0.00ft ~ 21140.24ft		

Trajectory Error Model: ISCWSA0 3 - D 95 % Confidence 2.7955 sigma

Offset Trajectories Summary

Offset Selection Criteria

Bounding box scan: minimum Ct-Ct separation <= 2000ft

Selection filters: Definitive Surveys - Definitive Plans - Definitive surveys exclude definitive plans
- All Non-Def Surveys when no Def-Survey is set in a borehole - All Non-Def Plans when no Def-Plan is set in a borehole

9 out of 35 are selected

Offset Trajectory	Separation			Allow	Sep.	Controlling	Reference Trajectory		Risk Level			Alert	Status
	Ct-Ct (ft)	MAS (ft)	EOU (ft)	Dev. (ft)	Fact.	Rule	MD (ft)	TVD (ft)	Alert	Minor	Major		
Coterra Red Hills Unit 79H Rev1 kFc 21Dec23 (DefinitivePlan)													Fail Major
	20.01	16.21	18.95	3.80	N/A	MAS = 4.94 (m)	0.00	0.00	CtCt<=15m<15.00			Enter Alert	
	20.00	16.21	18.94	3.79	N/A	MAS = 4.94 (m)	23.00	23.00				WRP	
	20.00	20.05	6.31	-0.05	1.50	OSF1.50	1330.00	1330.00		OSF<1.50		Enter Minor	
	20.00	29.52	-0.01	-9.52	1.00	OSF1.50	1960.00	1960.00			OSF<1.00	Enter Major	
	18.19	33.39	-4.40	-15.21	0.80	OSF1.50	2218.35	2218.14				MinPt-CtCt	
	18.27	33.72	-4.54	-15.45	0.79	OSF1.50	2240.00	2239.72				MinPts	
	18.51	34.02	-4.49	-15.51	0.80	OSF1.50	2260.00	2259.64				MinPt-ADP	
	24.00	36.12	-0.41	-12.13	0.98	OSF1.50	2400.00	2399.11			OSF>1.00	Exit Major	
	39.77	40.02	12.76	-0.25	1.49	OSF1.50	2660.00	2658.12		OSF>1.50		Exit Minor	
	167.67	147.50	69.01	20.18	1.71	OSF1.50	9820.00	9806.48				MinPt-CtCt	
	167.68	147.58	68.97	20.11	1.71	OSF1.50	9830.00	9816.48				MinPts	
	414.89	125.40	330.96	289.49	4.99	OSF1.50	10480.00	10466.47	OSF>5.00			Exit Alert	
	612.96	184.63	489.55	428.33	5.00	OSF1.50	15880.00	11013.22	OSF<5.00			Enter Alert	
	592.30	346.45	361.01	245.85	2.57	OSF1.50	21140.24	10987.00				MinPts	
Coterra Red Hills Unit 77H Rev1 kFc 21Dec23 (DefinitivePlan)													Fail Minor
	19.99	16.21	18.93	3.79	N/A	MAS = 4.94 (m)	0.00	0.00	CtCt<=15m<15.00			Enter Alert	
	19.99	16.21	18.93	3.79	N/A	MAS = 4.94 (m)	23.00	23.00				WRP	
	19.99	20.05	6.30	-0.06	1.50	OSF1.50	1330.00	1330.00		OSF<1.50		Enter Minor	
	19.99	27.12	1.59	-7.13	1.09	OSF1.50	1800.00	1800.00				MinPt-CtCt	
	20.14	27.56	1.43	-7.43	1.08	OSF1.50	1830.00	1830.00				MinPts	
	20.40	27.86	1.50	-7.46	1.08	OSF1.50	1850.00	1850.00				MinPt-ADP	
	30.56	30.72	9.75	-0.16	1.49	OSF1.50	2050.00	2050.00		OSF>1.50		Exit Minor	
	147.19	45.02	116.84	102.16	4.98	OSF1.50	3010.00	3006.79	OSF>5.00			Exit Alert	
	535.39	153.43	432.77	381.95	5.26	OSF1.50	10230.00	10216.48				MinPts	
	535.66	153.57	432.95	382.08	5.26	OSF1.50	10250.00	10236.48				MinPt-SF	
	799.59	240.65	638.82	558.93	5.00	OSF1.50	16630.00	11009.48	OSF<5.00			Enter Alert	
	795.87	364.92	552.27	430.95	3.28	OSF1.50	21140.24	10987.00				MinPts	
Coterra Red Hills Unit 76H Rev1 kFc 21Dec23 (DefinitivePlan)													Warning Alert
	40.00	32.21	38.94	7.80	N/A	MAS = 9.82 (m)	0.00	0.00	CtCt<=15m<15.00			Enter Alert	
	39.99	32.21	38.93	7.79	N/A	MAS = 9.82 (m)	23.00	23.00				WRP	
	39.99	32.21	23.59	7.79	2.53	MAS = 9.82 (m)	1600.00	1600.00				MinPts	
	40.18	32.21	23.39	7.97	2.48	MAS = 9.82 (m)	1640.00	1640.00				MinPt-EOU	
	41.22	32.21	23.83	9.01	2.45	MAS = 9.82 (m)	1700.00	1700.00				MinPt-SF	
	131.44	40.17	104.33	91.27	4.99	OSF1.50	2680.00	2678.05	OSF>5.00			Exit Alert	
	466.15	140.62	372.08	325.53	5.00	OSF1.50	9310.00	9296.48	OSF<5.00			Enter Alert	
	466.15	157.76	360.64	308.38	4.45	OSF1.50	10500.00	10486.44				MinPt-CtCt	
	466.29	158.35	360.40	307.94	4.44	OSF1.50	10580.00	10565.52				MinPt-EOU	
	466.35	158.42	360.41	307.93	4.43	OSF1.50	10590.00	10575.26				MinPt-ADP	
	467.16	158.84	360.93	308.32	4.43	OSF1.50	10650.00	10632.80				MinPt-SF	
	529.76	160.10	422.70	369.66	4.98	OSF1.50	11020.00	10919.73	OSF>5.00			Exit Alert	
	879.70	264.69	702.91	615.01	5.00	OSF1.50	17590.00	11004.69	OSF<5.00			Enter Alert	
	884.78	364.98	641.14	519.81	3.64	OSF1.50	21140.24	10987.00				MinPts	
Coterra Red Hills Unit 80H Rev1 kFc 21Dec23 (DefinitivePlan)													Warning Alert
	40.00	32.21	38.94	7.79	N/A	MAS = 9.82 (m)	0.00	0.00	CtCt<=15m<15.00			Enter Alert	
	40.00	32.21	38.94	7.79	N/A	MAS = 9.82 (m)	23.00	23.00				WRP	
	40.00	32.21	21.60	7.79	2.24	MAS = 9.82 (m)	1800.00	1800.00				MinPts	
	40.14	32.21	21.44	7.93	2.21	MAS = 9.82 (m)	1830.00	1830.00				MinPt-EOU	
	40.78	32.21	21.69	8.57	2.20	MAS = 9.82 (m)	1870.00	1870.00				MinPt-SF	
	139.85	42.76	111.02	97.10	4.99	OSF1.50	2870.00	2867.32	OSF>5.00			Exit Alert	
	701.99	158.55	595.96	543.44	6.67	OSF1.50	10570.00	10555.73				MinPt-EOU	
	702.09	158.68	595.98	543.41	6.67	OSF1.50	10590.00	10575.26				MinPt-ADP	
	703.35	159.21	596.88	544.14	6.66	OSF1.50	10680.00	10660.82				MinPt-SF	
	869.23	261.66	694.45	607.56	5.00	OSF1.50	17480.00	11005.24	OSF<5.00			Enter Alert	
	874.86	365.13	631.11	509.72	3.60	OSF1.50	21140.00	10987.00				MinPts	
	874.86	365.13	631.11	509.72	3.60	OSF1.50	21140.24	10987.00				MinPt-SF	
Coterra Red Hills Unit 81H Rev1 kFc 21Dec23 (DefinitivePlan)													Warning Alert
	59.99	32.81	58.93	27.18	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	59.99	32.81	58.93	27.18	N/A	MAS = 10.00 (m)	23.00	23.00				WRP	
	59.99	32.81	47.20	27.18	5.00	MAS = 10.00 (m)	1240.00	1240.00	OSF<5.00			Enter Alert	
	59.99	32.81	43.59	27.18	3.83	MAS = 10.00 (m)	1600.00	1600.00				MinPts	
	60.14	32.81	43.45	27.33	3.77	MAS = 10.00 (m)	1630.00	1630.00				MinPt-EOU	
	62.03	32.81	44.56	29.22	3.70	MAS = 10.00 (m)	1710.00	1710.00				MinPt-SF	
	99.84	32.81	78.89	67.03	4.95	MAS = 10.00 (m)	2090.00	2089.99	OSF>5.00			Exit Alert	
	723.89	153.92	620.95	569.97	7.09	OSF1.50	10210.00	10196.48				MinPt-EOU	
	723.97	154.01	620.97	569.96	7.09	OSF1.50	10220.00	10206.48				MinPt-ADP	
	726.19	154.78	622.67	571.41	7.07	OSF1.50	10310.00	10296.48				MinPt-SF	
	769.69	150.34	669.14	619.35	7.72	OSF1.50	11280.00	11012.78				MinPt-CtCt	
	769.71	150.37	669.13	619.34	7.72	OSF1.50	11290.00	11014.70				MinPts	
	776.69	152.91	674.42	623.78	7.66	OSF1.50	11610.00	11034.50				MinPt-SF	
	808.21	243.31	645.67	564.89	5.00	OSF1.50	16760.00	11008.83	OSF<5.00			Enter Alert	
	804.00	364.00	561.01	440.01	3.32	OSF1.50	21140.00	10987.00				MinPt-CtCt	
	804.00	364.00	561.01	440.00	3.32	OSF1.50	21140.24	10987.00				MinPts	

Results highlighted in red: Sep-Factor <= 1.5

Result highlighted in boxed, red and bold: all local minima indicated.

Offset Trajectory	Separation			Allow	Sep.	Controlling	Reference Trajectory		Risk Level			Alert	Status
	Ct-Ct (ft)	MAS (ft)	EOU (ft)	Dev. (ft)	Fact.	Rule	MD (ft)	TVD (ft)	Alert	Minor	Major		
Cimarex Red Hills Unit #75H Corrected MWD to 22184ft MD (DefinitiveSurvey)													Warning Alert
	99.90	32.81	98.83	67.09	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	99.88	32.81	98.82	67.08	811074.55	MAS = 10.00 (m)	10.00	10.00				MinPts	
	99.89	32.81	98.82	67.08	133504.99	MAS = 10.00 (m)	23.00	23.00				WRP	
	75.07	32.81	59.50	42.26	5.08	MAS = 10.00 (m)	1763.99	1763.99				MinPts	
	75.19	32.81	59.40	42.38	5.01	MAS = 10.00 (m)	1790.00	1790.00				MinPt-EOU	
	75.28	32.81	59.41	42.47	4.99	MAS = 10.00 (m)	1800.00	1800.00	OSF<5.00			Enter Alert	
	80.73	32.81	62.26	47.92	4.56	MAS = 10.00 (m)	2100.00	2099.98				MinPt-SF	
	100.69	32.81	79.71	67.88	4.99	MAS = 10.00 (m)	2380.00	2379.19	OSF>5.00			Exit Alert	
	266.36	58.10	227.29	208.25	6.97	OSF1.50	4280.00	4271.96				MinPt-SF	
	345.17	72.01	296.83	273.16	7.27	OSF1.50	5230.00	5218.34				MinPt-SF	
	373.53	85.63	316.12	287.90	6.60	OSF1.50	6160.00	6146.48				MinPt-CtCt	
	374.49	89.07	314.78	285.41	6.36	OSF1.50	6400.00	6386.48				MinPt-EOU	
	379.96	96.81	315.10	283.16	5.93	OSF1.50	6930.00	6916.48				MinPt-EOU	
	384.21	104.78	314.02	279.42	5.54	OSF1.50	7470.00	7456.48				MinPt-CtCt	
	384.82	106.65	313.39	278.17	5.45	OSF1.50	7600.00	7586.48				MinPt-EOU	
	385.67	107.65	313.57	278.02	5.41	OSF1.50	7670.00	7656.48				MinPt-ADP	
	416.78	125.73	332.63	291.05	5.00	OSF1.50	8900.00	8886.48	OSF<5.00			Enter Alert	
	183.41	153.10	81.01	30.31	1.80	OSF1.50	11140.00	10975.23				MinPts	
	501.07	153.67	398.30	347.40	4.91	OSF1.50	11610.00	11034.50	OSF>5.00			Exit Alert	
	1480.89	115.10	1403.83	1365.79	19.45	OSF1.50	12690.00	11029.11				MinPt-CtCt	
	1480.97	115.40	1403.71	1365.57	19.40	OSF1.50	12720.00	11028.96				MinPt-EOU	
	1481.14	115.61	1403.74	1365.53	19.37	OSF1.50	12740.00	11028.87				MinPt-ADP	
	1479.62	128.98	1393.30	1350.64	17.33	OSF1.50	13560.00	11024.78				MinPt-CtCt	
	1486.36	148.34	1387.14	1338.02	15.12	OSF1.50	14460.00	11020.29				MinPt-CtCt	
	1488.82	163.83	1379.27	1324.98	13.70	OSF1.50	15100.00	11017.10				MinPt-CtCt	
	1488.82	166.37	1377.58	1322.45	13.49	OSF1.50	15200.00	11016.61				MinPt-CtCt	
	1490.11	173.39	1374.19	1316.72	12.96	OSF1.50	15490.00	11015.16				MinPt-EOU	
	1492.49	182.35	1370.60	1310.14	12.34	OSF1.50	15810.00	11013.56				MinPt-CtCt	
	1494.47	195.23	1363.99	1299.24	11.53	OSF1.50	16280.00	11011.22				MinPt-CtCt	
	1496.39	201.94	1361.43	1294.45	11.16	OSF1.50	16540.00	11009.93				MinPt-EOU	
	1498.09	208.53	1358.75	1289.57	10.82	OSF1.50	16750.00	11008.88				MinPt-CtCt	
	1494.37	231.28	1339.86	1263.10	9.73	OSF1.50	17540.00	11004.94				MinPt-CtCt	
	1491.46	243.04	1329.13	1248.44	9.24	OSF1.50	17940.00	11002.95				MinPt-CtCt	
	1490.84	248.99	1324.52	1241.85	9.01	OSF1.50	18140.00	11001.95				MinPt-CtCt	
	1493.68	260.37	1319.77	1233.31	8.63	OSF1.50	18520.00	11000.06				MinPt-CtCt	
	1497.22	279.19	1310.77	1218.03	8.07	OSF1.50	19140.00	10996.97				MinPt-CtCt	
	1488.24	325.15	1271.15	1163.09	6.88	OSF1.50	20630.00	10989.54				MinPt-CtCt	
	1488.39	332.67	1266.28	1155.72	6.73	OSF1.50	20870.00	10988.35				MinPt-CtCt	
	1487.58	338.37	1261.67	1149.21	6.61	OSF1.50	21050.00	10987.45				MinPt-CtCt	
	1487.78	339.14	1261.36	1148.64	6.60	OSF1.50	21090.00	10987.25				MinPt-EOU	
	1488.06	339.51	1261.39	1148.55	6.59	OSF1.50	21110.00	10987.15				MinPt-ADP	
	1488.71	340.05	1261.68	1148.66	6.58	OSF1.50	21140.24	10987.00				MinPt-SF	
Cimarex Red Hills Unit #99H MWD Corrected to 22088ft MD (DefinitiveSurvey)													Warning Alert
	1261.90	32.81	1260.84	1229.09	6111817.14	MAS = 10.00 (m)	0.00	0.00				MinPts	
	1261.92	32.81	1260.82	1229.11	41729.16	MAS = 10.00 (m)	23.00	23.00				WRP	
	1262.68	32.81	1260.53	1229.87	1160.14	MAS = 10.00 (m)	190.00	190.00				MinPt-EOU	
	1262.67	32.81	1257.95	1229.86	345.02	MAS = 10.00 (m)	450.00	450.00				MinPts	
	1262.78	32.81	1257.81	1229.97	322.67	MAS = 10.00 (m)	480.00	480.00				MinPt-EOU	
	452.68	120.45	372.05	332.23	5.67	OSF1.50	8340.00	8326.48				MinPt-CtCt	
	457.20	133.81	367.66	323.38	5.15	OSF1.50	9280.00	9266.48				MinPt-CtCt	
	457.56	135.17	367.12	322.40	5.10	OSF1.50	9380.00	9366.48				MinPt-EOU	
	459.51	138.56	366.81	320.95	5.00	OSF1.50	9620.00	9606.48	OSF<5.00			Enter Alert	
	459.68	138.84	366.79	320.84	4.99	OSF1.50	9640.00	9626.48				MinPt-EOU	
	461.09	140.82	366.88	320.27	4.94	OSF1.50	9780.00	9766.48				MinPt-EOU	
	463.33	143.47	367.36	319.86	4.87	OSF1.50	9970.00	9956.48				MinPt-ADP	
	475.21	150.00	374.88	325.21	4.77	OSF1.50	10456.04	10442.52				MinPt-SF	
	317.46	153.60	214.72	163.85	3.11	OSF1.50	11147.50	10977.94				MinPts	
	317.46	153.61	214.73	163.86	3.11	OSF1.50	11150.00	10978.83				MinPt-SF	
	506.54	154.08	403.48	352.45	4.95	OSF1.50	11550.00	11034.80	OSF>5.00			Exit Alert	
	1309.38	126.36	1224.82	1183.02	15.65	OSF1.50	13250.00	11026.32				MinPt-CtCt	
	1308.01	132.52	1219.33	1175.49	14.91	OSF1.50	13590.00	11024.63				MinPt-CtCt	
	1308.23	133.26	1219.06	1174.97	14.82	OSF1.50	13640.00	11024.38				MinPt-EOU	
	1309.79	135.59	1219.08	1174.21	14.59	OSF1.50	13760.00	11023.78				MinPt-EOU	
	1310.60	136.51	1219.27	1174.10	14.50	OSF1.50	13810.00	11023.53				MinPt-ADP	
	1313.73	144.32	1217.19	1169.41	13.74	OSF1.50	14150.00	11021.84				MinPt-CtCt	
	1312.66	155.53	1208.65	1157.13	12.73	OSF1.50	14650.00	11019.35				MinPt-CtCt	
	1314.54	160.79	1207.02	1153.75	12.33	OSF1.50	14890.00	11018.15				MinPt-EOU	
	1316.17	162.77	1207.33	1153.40	12.19	OSF1.50	14980.00	11017.70				MinPt-ADP	
	1320.22	176.17	1202.45	1144.05	11.30	OSF1.50	15500.00	11015.11				MinPt-EOU	
	1321.09	177.22	1202.62	1143.87	11.24	OSF1.50	15550.00	11014.86				MinPt-ADP	
	1322.04	201.66	1187.27	1120.38	9.87	OSF1.50	16440.00	11010.43				MinPt-CtCt	
	1322.32	202.59	1186.94	1119.74	9.83	OSF1.50	16490.00	11010.18				MinPt-EOU	
	1324.94	207.83	1186.06	1117.11	9.60	OSF1.50	16680.00	11009.23				MinPt-EOU	
	1329.65	225.05	1179.29	1104.60	8.89	OSF1.50	17250.00	11006.39				MinPt-CtCt	
	1330.13	226.55	1178.77	1103.58	8.84	OSF1.50	17320.00	11006.04				MinPt-EOU	
	1330.66	227.19	1178.87	1103.47	8.82	OSF1.50	17350.00	11005.89				MinPt-ADP	
	1330.36	243.69	1167.57	1086.67	8.22	OSF1.50	17890.00	11003.20				MinPt-CtCt	
	1331.52	246.92	1166.58	1084.60	8.12	OSF1.50	18020.00	11002.55				MinPt-EOU	
	1331.70	247.12	1166.62	1084.58	8.11	OSF1.50	18030.00	11002.50				MinPt-ADP	
	1339.54	263.63	1163.46	1075.91	7.64	OSF1.50	18560.00	10999.86				MinPt-CtCt	
	1337.40	277.06	1152.36	1060.34	7.26	OSF1.50	19010.00	10997.62				MinPt-CtCt	
	1335.54	283.40	1146.28	1052.14	7.09	OSF1.50	19220.00	10996.57				MinPt-CtCt	
	1331.53	297.61	1132.79	1033.92	6.73	OSF1.50	19690.00	10994.23				MinPt-CtCt	
	1331.05	304.05	1128.02	1026.99	6.58	OSF1.50	19900.00	10993.18				MinPt-CtCt	
	1331.76	306.25	1127.27	1025.51	6.54	OSF1.50	19990.00	10992.73				MinPt-EOU	
	1323.08	342.31	1094.54	980.77	5.81	OSF1.50	21130.00	10987.05				MinPt-CtCt	
	1323.10	342.34	1094.54	980.75	5.81	OSF1.50	21140.00	10987.00				MinPts	
	1323.10	342.35	1094.54	980.75	5.81	OSF1.50	21140.24	10987.00				MinPt-SF	
Cimarex Red Hills Unit #21H Corrected MWD to 22108ft MD (DefinitiveSurvey)													Pass
	134.15	32.81	133.09	101.34	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	134.14	32.81	133.08	101.33	271091.86	MAS = 10.00 (m)	10.00	10.00				MinPts	
	134.14	32.81	133.08	101.34	44067.96	MAS = 10.00 (m)	23.00	23.00				WRP	
	133.74	32.81	124.71	100.93	16.65	MAS = 10.00 (m)	887.35	887.35				MinPts	
	133.84	32.81	124.59	101.03	16.21	MAS = 10.00 (m)	910.00	910.00				MinPt-EOU	
	158.51	32.81	139.48	125.70	8.73	MAS = 10.00 (m)	2160.00	2159.92				MinPt-SF	
	811.33	147.23	712.85	664.10	8.31	OSF1.50	10330.00	10316.48				MinPt-CtCt	
	811.62	148.45	712.32	663.17	8.25	OSF1.50	10420.00	10406.48				MinPt-EOU	
	811.91	148.82	712.37	663.09	8.23	OSF1.50	10456.04	10442.52				MinPt-ADP	
	742.19	153.01	639.86	589.18	7.31	OSF1.50	11120.00	10967.54				MinPts	

Offset Trajectory	Separation			Allow	Sep.	Controlling	Reference Trajectory		Risk Level			Alert	Status
	Ct-Ct (ft)	MAS (ft)	EOU (ft)	Dev. (ft)	Fact.	Rule	MD (ft)	TVD (ft)	Alert	Minor	Major		
	742.48	153.11	640.08	589.38	7.31	OSF1.50	11140.00	10975.23				MinPt-SF	
	1506.95	126.56	1422.25	1380.39	17.99	OSF1.50	12570.00	11029.71				MinPt-EOU	
	1507.03	126.65	1422.27	1380.38	17.98	OSF1.50	12580.00	11029.66				MinPt-ADP	
	1506.86	138.07	1414.49	1368.80	16.48	OSF1.50	13400.00	11025.58				MinPt-CtCt	
	1506.34	143.14	1410.58	1363.20	15.88	OSF1.50	13680.00	11024.18				MinPt-CtCt	
	1506.83	144.61	1410.10	1362.22	15.73	OSF1.50	13770.00	11023.73				MinPt-EOU	
	1505.14	154.23	1401.99	1350.91	14.72	OSF1.50	14240.00	11021.39				MinPt-CtCt	
	1504.99	159.43	1398.37	1345.56	14.24	OSF1.50	14480.00	11020.19				MinPt-CtCt	
	1505.81	185.82	1381.60	1319.99	12.21	OSF1.50	15590.00	11014.66				MinPt-CtCt	
	1506.06	186.52	1381.38	1319.53	12.17	OSF1.50	15630.00	11014.46				MinPt-EOU	
	1506.35	186.88	1381.43	1319.47	12.15	OSF1.50	15650.00	11014.36				MinPt-ADP	
	1510.23	193.64	1380.80	1316.58	11.75	OSF1.50	15890.00	11013.17				MinPt-CtCt	
	1512.31	209.41	1372.37	1302.90	10.88	OSF1.50	16480.00	11010.23				MinPt-CtCt	
	1512.61	216.22	1368.13	1296.38	10.53	OSF1.50	16730.00	11008.98				MinPt-CtCt	
	1514.00	225.41	1363.39	1288.58	10.11	OSF1.50	17080.00	11007.24				MinPt-EOU	
	1512.37	232.35	1357.14	1280.02	9.80	OSF1.50	17310.00	11006.09				MinPt-CtCt	
	1508.51	241.68	1347.06	1266.83	9.39	OSF1.50	17640.00	11004.44				MinPt-CtCt	
	1508.67	244.82	1345.13	1263.85	9.27	OSF1.50	17750.00	11003.90				MinPt-CtCt	
	1509.69	247.97	1344.05	1261.72	9.16	OSF1.50	17880.00	11003.25				MinPt-EOU	
	1510.70	249.15	1344.27	1261.55	9.13	OSF1.50	17930.00	11003.00				MinPt-ADP	
	1512.68	253.21	1343.54	1259.46	8.99	OSF1.50	18040.00	11002.45				MinPt-CtCt	
	1512.98	254.20	1343.19	1258.78	8.96	OSF1.50	18090.00	11002.20				MinPt-EOU	
	1513.29	254.59	1343.24	1258.70	8.94	OSF1.50	18110.00	11002.10				MinPt-ADP	
	1516.87	259.41	1343.60	1257.46	8.80	OSF1.50	18270.00	11001.30				MinPt-EOU	
	1517.84	260.59	1343.78	1257.25	8.76	OSF1.50	18320.00	11001.06				MinPt-ADP	
	1528.96	264.25	1352.46	1264.71	8.71	OSF1.50	18530.00	11000.01				MinPt-SF	
	1531.37	284.16	1341.60	1247.21	8.11	OSF1.50	19080.00	10997.27				MinPt-CtCt	
	1531.77	285.45	1341.15	1246.33	8.07	OSF1.50	19140.00	10996.97				MinPt-EOU	
	1532.29	286.09	1341.24	1246.21	8.06	OSF1.50	19170.00	10996.82				MinPt-ADP	
	1512.84	319.93	1299.23	1192.92	7.11	OSF1.50	20290.00	10991.24				MinPt-CtCt	
	1513.69	328.20	1294.55	1185.48	6.93	OSF1.50	20560.00	10989.89				MinPt-CtCt	
	1514.35	330.38	1293.77	1183.98	6.89	OSF1.50	20650.00	10989.44				MinPt-EOU	
	1517.31	339.90	1290.38	1177.41	6.71	OSF1.50	20940.00	10988.00				MinPt-CtCt	
	1518.92	346.01	1287.91	1172.91	6.60	OSF1.50	21140.24	10987.00				MinPt	
Cimarex Red Hills Unit #100H Corrected MWD to 22283ft MD (DefinitiveSurvey)													Pass
	1281.86	32.81	1280.80	1249.05	#########	MAS = 10.00 (m)	0.00	0.00				Surface	
	1281.84	32.81	1280.73	1249.03	28198.04	MAS = 10.00 (m)	23.00	23.00				WRP	
	1281.47	32.81	1279.64	1248.66	1669.52	MAS = 10.00 (m)	140.00	140.00				MinPts	
	1281.65	32.81	1279.48	1248.85	1146.51	MAS = 10.00 (m)	180.00	180.00				MinPt-EOU	
	1279.15	32.81	1269.99	1246.34	157.94	MAS = 10.00 (m)	880.00	880.00				MinPts	
	1279.30	32.81	1269.07	1246.50	139.41	MAS = 10.00 (m)	990.00	990.00				MinPt-EOU	
	1279.62	32.81	1268.79	1246.81	129.84	MAS = 10.00 (m)	1080.00	1080.00				MinPt-EOU	
	882.11	93.69	819.32	788.42	14.26	OSF1.50	6630.00	6616.48				MinPt-CtCt	
	882.41	94.63	819.00	787.79	14.12	OSF1.50	6700.00	6686.48				MinPt-EOU	
	885.76	99.00	819.44	786.77	13.54	OSF1.50	7010.00	6996.48				MinPt-ADP	
	870.42	152.34	768.53	718.08	8.62	OSF1.50	11091.39	10955.44				MinPts	
	870.58	152.40	768.65	718.18	8.61	OSF1.50	11110.00	10963.46				MinPt-SF	
	1705.52	130.59	1618.13	1574.93	19.73	OSF1.50	12630.00	11029.41				MinPt-CtCt	
	1705.69	131.11	1617.95	1574.57	19.65	OSF1.50	12680.00	11029.16				MinPt-EOU	
	1706.82	133.70	1617.36	1573.12	19.28	OSF1.50	12880.00	11028.17				MinPt-EOU	
	1699.56	146.99	1601.24	1552.57	17.45	OSF1.50	13720.00	11023.98				MinPt-CtCt	
	1698.49	152.33	1596.61	1546.16	16.82	OSF1.50	14010.00	11022.54				MinPt-CtCt	
	1693.61	164.89	1583.36	1528.72	15.49	OSF1.50	14620.00	11019.50				MinPt-CtCt	
	1693.98	165.94	1583.03	1528.05	15.40	OSF1.50	14680.00	11019.20				MinPt-EOU	
	1698.12	171.80	1583.26	1526.32	14.90	OSF1.50	14930.00	11017.95				MinPt-EOU	
	1702.85	177.36	1584.29	1525.50	14.47	OSF1.50	15170.00	11016.75				MinPt-ADP	
	1706.96	183.85	1584.07	1523.11	13.99	OSF1.50	15420.00	11015.51				MinPt-EOU	
	1712.55	193.92	1582.94	1518.63	13.31	OSF1.50	15820.00	11013.52				MinPt-EOU	
	1713.38	197.55	1581.35	1515.83	13.07	OSF1.50	15940.00	11012.92				MinPt-CtCt	
	1710.35	217.53	1565.00	1492.81	11.84	OSF1.50	16700.00	11009.13				MinPt-CtCt	
	1711.14	222.21	1562.67	1488.93	11.60	OSF1.50	16870.00	11008.28				MinPt-CtCt	
	1712.35	232.21	1557.22	1480.14	11.10	OSF1.50	17250.00	11006.39				MinPt-EOU	
	1713.60	246.47	1548.97	1467.14	10.46	OSF1.50	17730.00	11004.00				MinPt-CtCt	
	1714.86	254.75	1544.69	1460.10	10.13	OSF1.50	18020.00	11002.55				MinPt-CtCt	
	1713.52	293.89	1517.27	1419.63	8.77	OSF1.50	19360.00	10995.87				MinPt-CtCt	
	1719.00	310.50	1511.67	1408.50	8.33	OSF1.50	19910.00	10993.13				MinPt-CtCt	
	1720.09	328.98	1500.44	1391.11	7.86	OSF1.50	20520.00	10990.09				MinPt-CtCt	
	1721.63	334.74	1498.14	1386.88	7.73	OSF1.50	20730.00	10989.04				MinPt-EOU	
	1729.07	347.68	1496.96	1381.39	7.48	OSF1.50	21140.24	10987.00				MinPts	

Schlumberger

Coterra Red Hills Unit 78H Rev1 kFc 21Dec23 Proposal Geodetic Report

Def Plan

Report Date:	December 22, 2023 - 04:07 PM (UTC 0)	**Survey / DLS Computation:**	Minimum Curvature / Lubinski
Client:	COTERRA	**Vertical Section Azimuth:**	179.529 °(GRID North)
Field:	NM Lea County (NAD 83)	**Vertical Section Origin:**	0.000 ft, 0.000 ft
Structure / Slot:	Coterra Red Hills Unit Pad 76-81 / Red Hills Unit 78H	**TVD Reference Datum:**	RKB
Well:	Red Hills Unit 78H	**TVD Reference Elevation:**	3366.400 ft above MSL
Borehole:	Red Hills Unit 78H	**Seabed / Ground Elevation:**	3343.400 ft above MSL
UBHI / API#:	Unknown / Unknown	**Magnetic Declination:**	6.192°
Survey Name:	Coterra Red Hills Unit 78H Rev1 kFc 21Dec23	**Total Gravity Field Strength:**	998.4378mgn (9.80665 Based)
Survey Date:	December 22, 2023	**Gravity Model:**	GARM
Tort / AHD / DDI / ERD Ratio:	100.285 ° / 10672.242 ft / 6.312 / 0.967	**Total Magnetic Field Strength:**	47275.693 nT
Coordinate Reference System:	NAD83 New Mexico State Plane, Eastern Zone, US Feet	**Magnetic Dip Angle:**	59.593°
Location Lat / Long:	32°5'35.55695"N , 103°34'18.77822"W	**Declination Date:**	December 21, 2023
Location Grid N/E Y/X:	N 398479.220 ftUS , E 777142.010 ftUS	**Magnetic Declination Model:**	HDGM 2023
CRS Grid Convergence Angle:	0.405°	**North Reference:**	Grid North
Grid Scale Factor:	0.99997278	**Grid Convergence Used:**	0.405°
Version / Patch:	2023.1.0.1	**Total Corr Mag North->Grid North:**	5.788°
		Local Coord Referenced To:	Well Head

Comments	MD (ft)	Incl (°)	Azim (°)	TVD (ft)	TVDSS (ft)	VSEC (ft)	NS (ft)	EW (ft)	Northing (ftUS)	Easting (ftUS)	Latitude (°)	Longitude (°)	DLS (°/100ft)	BR (°/100ft)	TR (°/100ft)
SHL [388' FNL, 969' FEL]	0.00	0.00	0.00	0.00	-3,366.40	0.00	0.00	0.00	398,479.22	777,142.01	32.09321027	-103.57188284			
Nudge, Build 2°/100ft	2,000.00	0.00	335.16	2,000.00	-1,366.40	0.00	0.00	0.00	398,479.22	777,142.01	32.09321027	-103.57188284	0.00	0.00	0.00
Hold	2,249.99	5.00	335.16	2,249.68	-1,116.72	-9.93	9.89	-4.58	398,489.11	777,137.43	32.09323754	-103.57189740	2.00	2.00	0.00
Drop 2°/100ft	5,636.04	5.00	335.16	5,622.84	2,256.44	-278.73	277.69	-128.57	398,756.90	777,013.44	32.09397602	-103.57229165	0.00	0.00	0.00
Hold	5,886.04	0.00	335.16	5,872.52	2,506.12	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	2.00	-2.00	0.00
KOP, Build 10°/100ft	10,456.04	0.00	335.16	10,442.52	7,076.12	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
Build 5°/100ft	11,206.04	75.00	179.53	10,995.95	7,629.55	136.00	-137.07	-129.67	398,342.15	777,012.34	32.09283602	-103.57230464	10.00	10.00	0.00
Landing Point	11,511.75	90.29	179.53	11,034.99	7,668.59	438.30	-439.36	-127.19	398,039.87	777,014.83	32.09200509	-103.57230351	5.00	5.00	0.00
Red Hills Unit 78H - BHL [100' FSL, 1100' FEL]	21,140.24	90.29	179.53	10,987.00	7,620.60	10,066.67	-10,067.40	-47.93	388,412.11	777,094.08	32.06553946	-103.57226693	0.00	0.00	0.00

Survey Type: Def Plan

Survey Error Model: ISCWSA0 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	10,400.000	1/100.000	14.75 – 9.875	10.75 – 7.625		A001Mb_MWD		Red Hills Unit 78H / Coterra Red Hills Unit 78H Re
	1	10,400.000	21,140.241	1/100.000	9.875 – 6.75	7.625 – 6.75		A008Mb_MWD+IFR1+MS		Red Hills Unit 78H / Coterra Red Hills Unit 78H Re

EOU Geometry:

End MD (ft)	Hole Size (in)	Casing Size (in)	Name
1,017.000	14.750	10.750	
12,217.000	9.875	7.625	
22,167.000	6.750		

Schlumberger

Coterra Red Hills Unit 78H Rev1 kFc 21Dec23 Proposal Geodetic Report

Def Plan

Report Date:	December 22, 2023 - 04:08 PM (UTC 0)	**Survey / DLS Computation:**	Minimum Curvature / Lubinski
Client:	COTERRA	**Vertical Section Azimuth:**	179.529 °(GRID North)
Field:	NM Lea County (NAD 83)	**Vertical Section Origin:**	0.000 ft, 0.000 ft
Structure / Slot:	Coterra Red Hills Unit Pad 76-81 / Red Hills Unit 78H	**TVD Reference Datum:**	RKB
Well:	Red Hills Unit 78H	**TVD Reference Elevation:**	3366.400 ft above MSL
Borehole:	Red Hills Unit 78H	**Seabed / Ground Elevation:**	3343.400 ft above MSL
UBHI / API#:	Unknown / Unknown	**Magnetic Declination:**	6.192°
Survey Name:	Coterra Red Hills Unit 78H Rev1 kFc 21Dec23	**Total Gravity Field Strength:**	998.4378mgn (9.80665 Based)
Survey Date:	December 22, 2023	**Gravity Model:**	GARM
Tort / AHD / DDI / ERD Ratio:	100.285 ° / 10672.242 ft / 6.312 / 0.967	**Total Magnetic Field Strength:**	47275.693 nT
Coordinate Reference System:	NAD83 New Mexico State Plane, Eastern Zone, US Feet	**Magnetic Dip Angle:**	59.593°
Location Lat / Long:	32°5'35.55695"N , 103°34'18.77822"W	**Declination Date:**	December 21, 2023
Location Grid N/E Y/X:	N 398479.220 ftUS , E 777142.010 ftUS	**Magnetic Declination Model:**	HDGM 2023
CRS Grid Convergence Angle:	0.405°	**North Reference:**	Grid North
Grid Scale Factor:	0.99997278	**Grid Convergence Used:**	0.405°
Version / Patch:	2023.1.0.1	**Total Corr Mag North->Grid North:**	5.788°
		Local Coord Referenced To:	Well Head

Comments	MD (ft)	Incl (°)	Azim (°)	TVD (ft)	TVDSS (ft)	VSEC (ft)	NS (ft)	EW (ft)	Northing (ftUS)	Easting (ftUS)	Latitude (°)	Longitude (°)	DLS (°/100ft)	BR (°/100ft)	TR (°/100ft)
SHL [388' FNL, 969' FEL]	0.00	0.00	0.00	0.00	-3,366.40	0.00	0.00	0.00	398,479.22	777,142.01	32.09321027	-103.57188284			
	100.00	0.00	335.16	100.00	-3,266.40	0.00	0.00	0.00	398,479.22	777,142.01	32.09321027	-103.57188284	0.00	0.00	0.00
	200.00	0.00	335.16	200.00	-3,166.40	0.00	0.00	0.00	398,479.22	777,142.01	32.09321027	-103.57188284	0.00	0.00	0.00
	300.00	0.00	335.16	300.00	-3,066.40	0.00	0.00	0.00	398,479.22	777,142.01	32.09321027	-103.57188284	0.00	0.00	0.00
	400.00	0.00	335.16	400.00	-2,966.40	0.00	0.00	0.00	398,479.22	777,142.01	32.09321027	-103.57188284	0.00	0.00	0.00
	500.00	0.00	335.16	500.00	-2,866.40	0.00	0.00	0.00	398,479.22	777,142.01	32.09321027	-103.57188284	0.00	0.00	0.00
	600.00	0.00	335.16	600.00	-2,766.40	0.00	0.00	0.00	398,479.22	777,142.01	32.09321027	-103.57188284	0.00	0.00	0.00
	700.00	0.00	335.16	700.00	-2,666.40	0.00	0.00	0.00	398,479.22	777,142.01	32.09321027	-103.57188284	0.00	0.00	0.00
	800.00	0.00	335.16	800.00	-2,566.40	0.00	0.00	0.00	398,479.22	777,142.01	32.09321027	-103.57188284	0.00	0.00	0.00
	900.00	0.00	335.16	900.00	-2,466.40	0.00	0.00	0.00	398,479.22	777,142.01	32.09321027	-103.57188284	0.00	0.00	0.00
Rustler□	960.00	0.00	335.16	960.00	-2,406.40	0.00	0.00	0.00	398,479.22	777,142.01	32.09321027	-103.57188284	0.00	0.00	0.00
	1,000.00	0.00	335.16	1,000.00	-2,366.40	0.00	0.00	0.00	398,479.22	777,142.01	32.09321027	-103.57188284	0.00	0.00	0.00
	1,100.00	0.00	335.16	1,100.00	-2,266.40	0.00	0.00	0.00	398,479.22	777,142.01	32.09321027	-103.57188284	0.00	0.00	0.00
	1,200.00	0.00	335.16	1,200.00	-2,166.40	0.00	0.00	0.00	398,479.22	777,142.01	32.09321027	-103.57188284	0.00	0.00	0.00
Salado□	1,270.00	0.00	335.16	1,270.00	-2,096.40	0.00	0.00	0.00	398,479.22	777,142.01	32.09321027	-103.57188284	0.00	0.00	0.00
	1,300.00	0.00	335.16	1,300.00	-2,066.40	0.00	0.00	0.00	398,479.22	777,142.01	32.09321027	-103.57188284	0.00	0.00	0.00
	1,400.00	0.00	335.16	1,400.00	-1,966.40	0.00	0.00	0.00	398,479.22	777,142.01	32.09321027	-103.57188284	0.00	0.00	0.00
	1,500.00	0.00	335.16	1,500.00	-1,866.40	0.00	0.00	0.00	398,479.22	777,142.01	32.09321027	-103.57188284	0.00	0.00	0.00
	1,600.00	0.00	335.16	1,600.00	-1,766.40	0.00	0.00	0.00	398,479.22	777,142.01	32.09321027	-103.57188284	0.00	0.00	0.00
	1,700.00	0.00	335.16	1,700.00	-1,666.40	0.00	0.00	0.00	398,479.22	777,142.01	32.09321027	-103.57188284	0.00	0.00	0.00
	1,800.00	0.00	335.16	1,800.00	-1,566.40	0.00	0.00	0.00	398,479.22	777,142.01	32.09321027	-103.57188284	0.00	0.00	0.00
	1,900.00	0.00	335.16	1,900.00	-1,466.40	0.00	0.00	0.00	398,479.22	777,142.01	32.09321027	-103.57188284	0.00	0.00	0.00
Nudge, Build 2°/100ft	2,000.00	0.00	335.16	2,000.00	-1,366.40	0.00	0.00	0.00	398,479.22	777,142.01	32.09321027	-103.57188284	0.00	0.00	0.00
	2,100.00	2.00	335.16	2,099.98	-1,266.42	-1.59	1.58	-0.73	398,480.80	777,141.28	32.09321463	-103.57188517	2.00	2.00	0.00
	2,200.00	4.00	335.16	2,199.84	-1,166.56	-6.36	6.33	-2.93	398,485.55	777,139.08	32.09322773	-103.57189216	2.00	2.00	0.00
Hold	2,249.99	5.00	335.16	2,249.68	-1,116.72	-9.93	9.89	-4.58	398,489.11	777,137.43	32.09323754	-103.57189740	2.00	2.00	0.00
	2,300.00	5.00	335.16	2,299.49	-1,066.91	-13.90	13.85	-6.41	398,493.07	777,135.60	32.09324845	-103.57190322	0.00	0.00	0.00
	2,400.00	5.00	335.16	2,399.11	-967.29	-21.84	21.76	-10.07	398,500.97	777,131.94	32.09327026	-103.57191487	0.00	0.00	0.00
	2,500.00	5.00	335.16	2,498.73	-867.67	-29.78	29.66	-13.74	398,508.88	777,128.28	32.09329207	-103.57192651	0.00	0.00	0.00
	2,600.00	5.00	335.16	2,598.35	-768.05	-37.71	37.57	-17.40	398,516.79	777,124.61	32.09331388	-103.57193815	0.00	0.00	0.00
	2,700.00	5.00	335.16	2,697.97	-668.43	-45.65	45.48	-21.06	398,524.70	777,120.95	32.09333569	-103.57194980	0.00	0.00	0.00
	2,800.00	5.00	335.16	2,797.59	-568.81	-53.59	53.39	-24.72	398,532.61	777,117.29	32.09335750	-103.57196144	0.00	0.00	0.00
	2,900.00	5.00	335.16	2,897.21	-469.19	-61.53	61.30	-28.38	398,540.52	777,113.63	32.09337931	-103.57197308	0.00	0.00	0.00
	3,000.00	5.00	335.16	2,996.83	-369.57	-69.47	69.21	-32.04	398,548.43	777,109.97	32.09340112	-103.57198473	0.00	0.00	0.00
	3,100.00	5.00	335.16	3,096.45	-269.95	-77.41	77.12	-35.71	398,556.33	777,106.30	32.09342292	-103.57199637	0.00	0.00	0.00
	3,200.00	5.00	335.16	3,196.07	-170.33	-85.35	85.03	-39.37	398,564.24	777,102.64	32.09344473	-103.57200801	0.00	0.00	0.00
	3,300.00	5.00	335.16	3,295.69	-70.71	-93.28	92.93	-43.03	398,572.15	777,098.98	32.09346654	-103.57201966	0.00	0.00	0.00
	3,400.00	5.00	335.16	3,395.31	28.91	-101.22	100.84	-46.69	398,580.06	777,095.32	32.09348835	-103.57203130	0.00	0.00	0.00
	3,500.00	5.00	335.16	3,494.93	128.53	-109.16	108.75	-50.35	398,587.97	777,091.66	32.09351016	-103.57204294	0.00	0.00	0.00
	3,600.00	5.00	335.16	3,594.55	228.15	-117.10	116.66	-54.02	398,595.88	777,088.00	32.09353197	-103.57205459	0.00	0.00	0.00
	3,700.00	5.00	335.16	3,694.17	327.77	-125.04	124.57	-57.68	398,603.79	777,084.33	32.09355378	-103.57206623	0.00	0.00	0.00
	3,800.00	5.00	335.16	3,793.78	427.38	-132.98	132.48	-61.34	398,611.69	777,080.67	32.09357559	-103.57207787	0.00	0.00	0.00
	3,900.00	5.00	335.16	3,893.40	527.00	-140.92	140.39	-65.00	398,619.60	777,077.01	32.09359740	-103.57208952	0.00	0.00	0.00
	4,000.00	5.00	335.16	3,993.02	626.62	-148.86	148.30	-68.66	398,627.51	777,073.35	32.09361921	-103.57210116	0.00	0.00	0.00
	4,100.00	5.00	335.16	4,092.64	726.24	-156.79	156.20	-72.33	398,635.42	777,069.69	32.09364102	-103.57211280	0.00	0.00	0.00
	4,200.00	5.00	335.16	4,192.26	825.86	-164.73	164.11	-75.99	398,643.33	777,066.02	32.09366283	-103.57212445	0.00	0.00	0.00
	4,300.00	5.00	335.16	4,291.88	925.48	-172.67	172.02	-79.65	398,651.24	777,062.36	32.09368464	-103.57213609	0.00	0.00	0.00
	4,400.00	5.00	335.16	4,391.50	1,025.10	-180.61	179.93	-83.31	398,659.15	777,058.70	32.09370645	-103.57214773	0.00	0.00	0.00
	4,500.00	5.00	335.16	4,491.12	1,124.72	-188.55	187.84	-86.97	398,667.05	777,055.04	32.09372826	-103.57215938	0.00	0.00	0.00
	4,600.00	5.00	335.16	4,590.74	1,224.34	-196.49	195.75	-90.63	398,674.96	777,051.38	32.09375007	-103.57217102	0.00	0.00	0.00
	4,700.00	5.00	335.16	4,690.36	1,323.96	-204.43	203.66	-94.30	398,682.87	777,047.72	32.09377187	-103.57218266	0.00	0.00	0.00
	4,800.00	5.00	335.16	4,789.98	1,423.58	-212.36	211.57	-97.96	398,690.78	777,044.05	32.09379368	-103.57219431	0.00	0.00	0.00
	4,900.00	5.00	335.16	4,889.60	1,523.20	-220.30	219.47	-101.62	398,698.69	777,040.39	32.09381549	-103.57220595	0.00	0.00	0.00
Lamar□	4,925.50	5.00	335.16	4,915.00	1,548.60	-222.33	221.49	-102.55	398,700.70	777,039.46	32.09382105	-103.57220892	0.00	0.00	0.00
Bell Canyon□	4,950.59	5.00	335.16	4,940.00	1,573.60	-224.32	223.48	-103.47	398,702.69	777,038.54	32.09382653	-103.57221184	0.00	0.00	0.00
	5,000.00	5.00	335.16	4,989.22	1,622.82	-228.24	227.38	-105.28	398,706.60	777,036.73	32.09383730	-103.57221759	0.00	0.00	0.00
	5,100.00	5.00	335.16	5,088.84	1,722.44	-236.18	235.29	-108.94	398,714.51	777,033.07	32.09385911	-103.57222924	0.00	0.00	0.00
	5,200.00	5.00	335.16	5,188.46	1,822.06	-244.12	243.20	-112.61	398,722.41	777,029.41	32.09388092	-103.57224088	0.00	0.00	0.00
	5,300.00	5.00	335.16	5,288.08	1,921.68	-252.06	251.11	-116.27	398,730.32	777,025.75	32.09390273	-103.57225252	0.00	0.00	0.00
	5,400.00	5.00	335.16	5,387.70	2,021.30	-260.00	259.02	-119.93	398,738.23	777,022.08	32.09392454	-103.57226417	0.00	0.00	0.00
	5,500.00	5.00	335.16	5,487.32	2,120.92	-267.93	266.93	-123.59	398,746.14	777,018.42	32.09394635	-103.57227581	0.00	0.00	0.00
	5,600.00	5.00	335.16	5,586.94	2,220.54	-275.87	274.84	-127.25	398,754.05	777,014.76	32.09396816	-103.57228746	0.00	0.00	0.00
Drop 2°/100ft	5,636.04	5.00	335.16	5,622.84	2,256.44	-278.73	277.69	-128.57	398,756.90	777,013.44	32.09397602	-103.57229165	0.00	0.00	0.00
	5,700.00	3.72	335.16	5,686.61	2,320.21	-283.16	282.10	-130.62	398,761.31	777,011.40	32.09398819	-103.57229815	2.00	-2.00	0.00
	5,800.00	1.72	335.16	5,786.49	2,420.09	-287.49	286.41	-132.61	398,765.62	777,009.40	32.09400007	-103.57230449	2.00	-2.00	0.00
Hold	5,886.04	0.00	335.16	5,872.52	2,506.12	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	2.00	-2.00	0.00
	5,900.00	0.00	335.16	5,886.48	2,520.08	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
Cherry Canyon□	5,973.52	0.00	335.16	5,960.00	2,593.60	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
	6,000.00	0.00	335.16	5,986.48	2,620.08	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
	6,100.00	0.00	335.16	6,086.48	2,720.08	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
	6,200.00	0.00	335.16	6,186.48	2,820.08	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
	6,300.00	0.00	335.16	6,286.48	2,920.08	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
	6,400.00	0.00	335.16	6,386.48	3,020.08	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
	6,500.00	0.00	335.16	6,486.48	3,120.08	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
	6,600.00	0.00	335.16	6,586.48	3,220.08	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
	6,700.00	0.00	335.16	6,686.48	3,320.08	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
	6,800.00	0.00	335.16	6,786.48	3,420.08	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
	6,900.00	0.00	335.16	6,886.48	3,520.08	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
	7,000.00	0.00	335.16	6,986.48	3,620.08	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
	7,100.00	0.00	335.16	7,086.48	3,720.08	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
	7,200.00	0.00	335.16	7,186.48	3,820.08	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
	7,300.00	0.00	335.16	7,286.48	3,920.08	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
	7,400.00	0.00	335.16	7,386.48	4,020.08	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
Brushy Canyon□	7,493.52	0.00	335.16	7,480.00	4,113.60	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
	7,500.00	0.00	335.16	7,486.48	4,120.08	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
	7,600.00	0.00	335.16	7,586.48	4,220.08	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
	7,700.00	0.00	335.16	7,686.48	4,320.08	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
	7,800.00	0.00	335.16	7,786.48	4,420.08	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
	7,900.00	0.00	335.16	7,886.48	4,520.08	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
	8,000.00	0.00	335.16	7,986.48	4,620.08	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
	8,100.00	0.00	335.16	8,086.48	4,720.08	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
	8,200.00	0.00	335.16	8,186.48	4,820.08	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
	8,300.00	0.00	335.16	8,286.48	4,920.08	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
	8,400.00	0.00	335.16	8,386.48	5,020.08	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
	8,500.00	0.00	335.16	8,486.48	5,120.08	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
	8,600.00	0.00	335.16	8,586.48	5,220.08	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
	8,700.00	0.00	335.16	8,686.48	5,320.08	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
	8,800.00	0.00	335.16	8,786.48	5,420.08	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
Basal Brushy Canyon□	8,868.52	0.00	335.16	8,855.00	5,488.60	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
	8,900.00	0.00	335.16	8,886.48	5,520.08	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
	9,000.00	0.00	335.16	8,986.48	5,620.08	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
Bone Springs Lime□	9,053.52	0.00	335.16	9,040.00	5,673.60	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
Leonard□	9,078.52	0.00	335.16	9,065.00	5,698.60	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00

Comments	MD (ft)	Incl (°)	Azim (°)	TVD (ft)	TVDSS (ft)	VSEC (ft)	NS (ft)	EW (ft)	Northing (ftUS)	Easting (ftUS)	Latitude (°)	Longitude (°)	DLS (°/100ft)	BR (°/100ft)	TR (°/100ft)
	9,100.00	0.00	335.16	9,086.48	5,720.08	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
	9,200.00	0.00	335.16	9,186.48	5,820.08	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
	9,300.00	0.00	335.16	9,286.48	5,920.08	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
Avalon□	9,343.52	0.00	335.16	9,330.00	5,963.60	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
	9,400.00	0.00	335.16	9,386.48	6,020.08	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
	9,500.00	0.00	335.16	9,486.48	6,120.08	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
	9,600.00	0.00	335.16	9,586.48	6,220.08	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
	9,700.00	0.00	335.16	9,686.48	6,320.08	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
	9,800.00	0.00	335.16	9,786.48	6,420.08	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
	9,900.00	0.00	335.16	9,886.48	6,520.08	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
	10,000.00	0.00	335.16	9,986.48	6,620.08	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
1st BS SS □	10,048.52	0.00	335.16	10,035.00	6,668.60	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
	10,100.00	0.00	335.16	10,086.48	6,720.08	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
	10,200.00	0.00	335.16	10,186.48	6,820.08	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
2nd BS Carb□	10,248.52	0.00	335.16	10,235.00	6,868.60	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
	10,300.00	0.00	335.16	10,286.48	6,920.08	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
	10,400.00	0.00	335.16	10,386.48	7,020.08	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
KOP, Build 10°/100ft	10,456.04	0.00	335.16	10,442.52	7,076.12	-288.66	287.58	-133.15	398,766.79	777,008.86	32.09400330	-103.57230622	0.00	0.00	0.00
	10,500.00	4.40	179.53	10,486.44	7,120.04	-286.98	285.89	-133.14	398,765.10	777,008.87	32.09399866	-103.57230621	10.00	10.00	0.00
	10,600.00	14.40	179.53	10,584.97	7,218.57	-270.67	269.59	-133.01	398,748.80	777,009.01	32.09395385	-103.57230615	10.00	10.00	0.00
2nd BS SS□	10,600.03	14.40	179.53	10,585.00	7,218.60	-270.67	269.58	-133.01	398,748.79	777,009.01	32.09395383	-103.57230615	10.00	10.00	0.00
	10,700.00	24.40	179.53	10,679.18	7,312.78	-237.50	236.42	-132.73	398,715.63	777,009.28	32.09386268	-103.57230603	10.00	10.00	0.00
	10,800.00	34.40	179.53	10,766.19	7,399.79	-188.48	187.40	-132.33	398,666.62	777,009.68	32.09372793	-103.57230584	10.00	10.00	0.00
	10,900.00	44.40	179.53	10,843.37	7,476.97	-125.10	124.02	-131.81	398,603.23	777,010.20	32.09355370	-103.57230561	10.00	10.00	0.00
	11,000.00	54.40	179.53	10,908.37	7,541.97	-49.27	48.19	-131.19	398,527.41	777,010.82	32.09334527	-103.57230533	10.00	10.00	0.00
	11,100.00	64.40	179.53	10,959.22	7,592.82	36.69	-37.77	-130.49	398,441.45	777,011.53	32.09310899	-103.57230501	10.00	10.00	0.00
	11,200.00	74.40	179.53	10,994.36	7,627.96	130.18	-131.25	-129.72	398,347.98	777,012.30	32.09285203	-103.57230467	10.00	10.00	0.00
Build 5°/100ft	11,206.04	75.00	179.53	10,995.95	7,629.55	136.00	-137.07	-129.67	398,342.15	777,012.34	32.09283602	-103.57230464	10.00	10.00	0.00
	11,300.00	79.70	179.53	11,016.53	7,650.13	227.66	-228.72	-128.92	398,250.50	777,013.10	32.09258409	-103.57230430	5.00	5.00	0.00
	11,400.00	84.70	179.53	11,030.10	7,663.70	326.70	-327.76	-128.10	398,151.47	777,013.91	32.09231185	-103.57230393	5.00	5.00	0.00
	11,500.00	89.70	179.53	11,034.98	7,668.58	426.55	-427.61	-127.28	398,051.62	777,014.73	32.09203739	-103.57230356	5.00	5.00	0.00
Landing Point	11,511.75	90.29	179.53	11,034.99	7,668.59	438.30	-439.36	-127.19	398,039.87	777,014.83	32.09200509	-103.57230351	5.00	5.00	0.00
	11,600.00	90.29	179.53	11,034.55	7,668.15	526.55	-527.60	-126.46	397,951.63	777,015.55	32.09176252	-103.57230318	0.00	0.00	0.00
	11,700.00	90.29	179.53	11,034.05	7,667.65	626.55	-627.60	-125.64	397,851.64	777,016.38	32.09148766	-103.57230280	0.00	0.00	0.00
	11,800.00	90.29	179.53	11,033.55	7,667.15	726.54	-727.60	-124.81	397,751.65	777,017.20	32.09121279	-103.57230242	0.00	0.00	0.00
	11,900.00	90.29	179.53	11,033.05	7,666.65	826.54	-827.59	-123.99	397,651.65	777,018.02	32.09093792	-103.57230204	0.00	0.00	0.00
	12,000.00	90.29	179.53	11,032.55	7,666.15	926.54	-927.59	-123.17	397,551.66	777,018.85	32.09066305	-103.57230166	0.00	0.00	0.00
	12,100.00	90.29	179.53	11,032.05	7,665.65	1,026.54	-1,027.58	-122.34	397,451.67	777,019.67	32.09038819	-103.57230128	0.00	0.00	0.00
	12,200.00	90.29	179.53	11,031.56	7,665.16	1,126.54	-1,127.58	-121.52	397,351.68	777,020.49	32.09011332	-103.57230090	0.00	0.00	0.00
	12,300.00	90.29	179.53	11,031.06	7,664.66	1,226.54	-1,227.57	-120.70	397,251.68	777,021.32	32.08983845	-103.57230052	0.00	0.00	0.00
	12,400.00	90.29	179.53	11,030.56	7,664.16	1,326.54	-1,327.57	-119.87	397,151.69	777,022.14	32.08956358	-103.57230014	0.00	0.00	0.00
	12,500.00	90.29	179.53	11,030.06	7,663.66	1,426.54	-1,427.56	-119.05	397,051.70	777,022.96	32.08928872	-103.57229976	0.00	0.00	0.00
	12,600.00	90.29	179.53	11,029.56	7,663.16	1,526.53	-1,527.56	-118.23	396,951.71	777,023.78	32.08901385	-103.57229938	0.00	0.00	0.00
	12,700.00	90.29	179.53	11,029.06	7,662.66	1,626.53	-1,627.55	-117.41	396,851.71	777,024.61	32.08873898	-103.57229900	0.00	0.00	0.00
	12,800.00	90.29	179.53	11,028.57	7,662.17	1,726.53	-1,727.55	-116.58	396,751.72	777,025.43	32.08846412	-103.57229863	0.00	0.00	0.00
	12,900.00	90.29	179.53	11,028.07	7,661.67	1,826.53	-1,827.54	-115.76	396,651.73	777,026.25	32.08818925	-103.57229825	0.00	0.00	0.00
	13,000.00	90.29	179.53	11,027.57	7,661.17	1,926.53	-1,927.54	-114.94	396,551.74	777,027.08	32.08791438	-103.57229787	0.00	0.00	0.00
	13,100.00	90.29	179.53	11,027.07	7,660.67	2,026.53	-2,027.54	-114.11	396,451.74	777,027.90	32.08763951	-103.57229749	0.00	0.00	0.00
	13,200.00	90.29	179.53	11,026.57	7,660.17	2,126.53	-2,127.53	-113.29	396,351.75	777,028.72	32.08736465	-103.57229711	0.00	0.00	0.00
	13,300.00	90.29	179.53	11,026.07	7,659.67	2,226.53	-2,227.53	-112.47	396,251.76	777,029.55	32.08708978	-103.57229673	0.00	0.00	0.00
	13,400.00	90.29	179.53	11,025.58	7,659.18	2,326.52	-2,327.52	-111.64	396,151.77	777,030.37	32.08681491	-103.57229635	0.00	0.00	0.00
	13,500.00	90.29	179.53	11,025.08	7,658.68	2,426.52	-2,427.52	-110.82	396,051.77	777,031.19	32.08654004	-103.57229597	0.00	0.00	0.00
	13,600.00	90.29	179.53	11,024.58	7,658.18	2,526.52	-2,527.51	-110.00	395,951.78	777,032.02	32.08626517	-103.57229559	0.00	0.00	0.00
	13,700.00	90.29	179.53	11,024.08	7,657.68	2,626.52	-2,627.51	-109.17	395,851.79	777,032.84	32.08599031	-103.57229521	0.00	0.00	0.00
	13,800.00	90.29	179.53	11,023.58	7,657.18	2,726.52	-2,727.50	-108.35	395,751.80	777,033.66	32.08571544	-103.57229483	0.00	0.00	0.00
	13,900.00	90.29	179.53	11,023.08	7,656.68	2,826.52	-2,827.50	-107.53	395,651.80	777,034.49	32.08544057	-103.57229445	0.00	0.00	0.00
	14,000.00	90.29	179.53	11,022.59	7,656.19	2,926.52	-2,927.49	-106.70	395,551.81	777,035.31	32.08516570	-103.57229407	0.00	0.00	0.00
	14,100.00	90.29	179.53	11,022.09	7,655.69	3,026.52	-3,027.49	-105.88	395,451.82	777,036.13	32.08489084	-103.57229369	0.00	0.00	0.00
	14,200.00	90.29	179.53	11,021.59	7,655.19	3,126.51	-3,127.48	-105.06	395,351.83	777,036.95	32.08461597	-103.57229331	0.00	0.00	0.00
	14,300.00	90.29	179.53	11,021.09	7,654.69	3,226.51	-3,227.48	-104.24	395,251.83	777,037.78	32.08434110	-103.57229293	0.00	0.00	0.00
	14,400.00	90.29	179.53	11,020.59	7,654.19	3,326.51	-3,327.47	-103.41	395,151.84	777,038.60	32.08406623	-103.57229255	0.00	0.00	0.00
	14,500.00	90.29	179.53	11,020.09	7,653.69	3,426.51	-3,427.47	-102.59	395,051.85	777,039.42	32.08379137	-103.57229217	0.00	0.00	0.00
	14,600.00	90.29	179.53	11,019.60	7,653.20	3,526.51	-3,527.47	-101.77	394,951.86	777,040.25	32.08351650	-103.57229179	0.00	0.00	0.00
	14,700.00	90.29	179.53	11,019.10	7,652.70	3,626.51	-3,627.46	-100.94	394,851.87	777,041.07	32.08324163	-103.57229141	0.00	0.00	0.00
	14,800.00	90.29	179.53	11,018.60	7,652.20	3,726.51	-3,727.46	-100.12	394,751.87	777,041.89	32.08296676	-103.57229103	0.00	0.00	0.00
	14,900.00	90.29	179.53	11,018.10	7,651.70	3,826.51	-3,827.45	-99.30	394,651.88	777,042.72	32.08269190	-103.57229065	0.00	0.00	0.00
	15,000.00	90.29	179.53	11,017.60	7,651.20	3,926.50	-3,927.45	-98.47	394,551.89	777,043.54	32.08241703	-103.57229027	0.00	0.00	0.00
	15,100.00	90.29	179.53	11,017.10	7,650.70	4,026.50	-4,027.44	-97.65	394,451.90	777,044.36	32.08214216	-103.57228989	0.00	0.00	0.00
	15,200.00	90.29	179.53	11,016.61	7,650.21	4,126.50	-4,127.44	-96.83	394,351.90	777,045.19	32.08186729	-103.57228951	0.00	0.00	0.00
	15,300.00	90.29	179.53	11,016.11	7,649.71	4,226.50	-4,227.43	-96.00	394,251.91	777,046.01	32.08159242	-103.57228914	0.00	0.00	0.00
	15,400.00	90.29	179.53	11,015.61	7,649.21	4,326.50	-4,327.43	-95.18	394,151.92	777,046.83	32.08131756	-103.57228876	0.00	0.00	0.00
	15,500.00	90.29	179.53	11,015.11	7,648.71	4,426.50	-4,427.42	-94.36	394,051.93	777,047.65	32.08104269	-103.57228838	0.00	0.00	0.00
	15,600.00	90.29	179.53	11,014.61	7,648.21	4,526.50	-4,527.42	-93.53	393,951.93	777,048.48	32.08076782	-103.57228800	0.00	0.00	0.00
	15,700.00	90.29	179.53	11,014.11	7,647.71	4,626.50	-4,627.41	-92.71	393,851.94	777,049.30	32.08049295	-103.57228762	0.00	0.00	0.00
	15,800.00	90.29	179.53	11,013.61	7,647.21	4,726.49	-4,727.41	-91.89	393,751.95	777,050.12	32.08021809	-103.57228724	0.00	0.00	0.00
	15,900.00	90.29	179.53	11,013.12	7,646.72	4,826.49	-4,827.41	-91.07	393,651.96	777,050.95	32.07994322	-103.57228686	0.00	0.00	0.00
	16,000.00	90.29	179.53	11,012.62	7,646.22	4,926.49	-4,927.40	-90.24	393,551.96	777,051.77	32.07966835	-103.57228648	0.00	0.00	0.00
	16,100.00	90.29	179.53	11,012.12	7,645.72	5,026.49	-5,027.40	-89.42	393,451.97	777,052.59	32.07939348	-103.57228610	0.00	0.00	0.00
	16,200.00	90.29	179.53	11,011.62	7,645.22	5,126.49	-5,127.39	-88.60	393,351.98	777,053.42	32.07911861	-103.57228572	0.00	0.00	0.00
	16,300.00	90.29	179.53	11,011.12	7,644.72	5,226.49	-5,227.39	-87.77	393,251.99	777,054.24	32.07884375	-103.57228534	0.00	0.00	0.00
	16,400.00	90.29	179.53	11,010.62	7,644.22	5,326.49	-5,327.38	-86.95	393,151.99	777,055.06	32.07856888	-103.57228496	0.00	0.00	0.00
	16,500.00	90.29	179.53	11,010.13	7,643.73	5,426.49	-5,427.38	-86.13	393,052.00	777,055.89	32.07829401	-103.57228458	0.00	0.00	0.00
	16,600.00	90.29	179.53	11,009.63	7,643.23	5,526.48	-5,527.37	-85.30	392,952.01	777,056.71	32.07801914	-103.57228420	0.00	0.00	0.00
	16,700.00	90.29	179.53	11,009.13	7,642.73	5,626.48	-5,627.37	-84.48	392,852.02	777,057.53	32.07774427	-103.57228382	0.00	0.00	0.00
	16,800.00	90.29	179.53	11,008.63	7,642.23	5,726.48	-5,727.36	-83.66	392,752.02	777,058.36	32.07746941	-103.57228344	0.00	0.00	0.00
	16,900.00	90.29	179.53	11,008.13	7,641.73	5,826.48	-5,827.36	-82.83	392,652.03	777,059.18	32.07719454	-103.57228306	0.00	0.00	0.00
	17,000.00	90.29	179.53	11,007.63	7,641.23	5,926.48	-5,927.35	-82.01	392,552.04	777,060.00	32.07691967	-103.57228268	0.00	0.00	0.00
	17,100.00	90.29	179.53	11,007.14	7,640.74	6,026.48	-6,027.35	-81.19	392,452.05	777,060.82	32.07664480	-103.57228230	0.00	0.00	0.00
	17,200.00	90.29	179.53	11,006.64	7,640.24	6,126.48	-6,127.35	-80.36	392,352.05	777,061.65	32.07636994	-103.57228192	0.00	0.00	0.00
	17,300.00	90.29	179.53	11,006.14	7,639.74	6,226.48	-6,227.34	-79.54	392,252.06	777,062.47	32.07609507	-103.57228154	0.00	0.00	0.00
	17,400.00	90.29	179.53	11,005.64	7,639.24	6,326.48	-6,327.34	-78.72	392,152.07	777,063.29	32.07582020	-103.57228116	0.00	0.00	0.00
	17,500.00	90.29	179.53	11,005.14	7,638.74	6,426.47	-6,427.33	-77.90	392,052.08	777,064.12	32.07554533	-103.57228078	0.00	0.00	0.00
	17,600.00	90.29	179.53	11,004.64	7,638.24	6,526.47	-6,527.33	-77.07	391,952.08	777,064.94	32.07527046	-103.57228040	0.00	0.00	0.00
	17,700.00	90.29	179.53	11,004.15	7,637.75	6,626.47	-6,627.32	-76.25	391,852.09	777,065.76	32.07499559	-103.57228002	0.00	0.00	0.00
	17,800.00	90.29	179.53	11,003.65	7,637.25	6,726.47	-6,727.32	-75.43	391,752.10	777,066.59	32.07472073	-103.57227964	0.00	0.00	0.00
	17,900.00	90.29	179.53	11,003.15	7,636.75	6,826.47	-6,827.31	-74.60	391,652.11	777,067.41	32.07444586	-103.57227926	0.00	0.00	0.00
	18,000.00	90.29	179.53	11,002.65	7,636.25	6,926.47	-6,927.31	-73.78	391,552.11	777,068.23	32.07417099	-103.57227888	0.00	0.00	0.00
	18,100.00	90.29	179.53	11,002.15	7,635.75	7,026.47	-7,027.30	-72.96	391,452.12	777,069.06	32.07389612	-103.57227850	0.00	0.00	0.00
	18,200.00	90.29	179.53	11,001.65	7,635.25	7,126.47	-7,127.30	-72.13	391,352.13	777,069.88	32.07362125	-103.57227811	0.00	0.00	0.00
	18,300.00	90.29	179.53	11,001.16	7,634.76	7,226.46	-7,227.29	-71.31	391,252.14	777,070.70	32.07334639	-103.57227773	0.00	0.00	0.00
	18,400.00	90.29	179.53	11,000.66	7,634.26	7,326.46	-7,327.29	-70.49	391,152.14	777,071.52	32.07307152	-103.57227735	0.00	0.00	0.00
	18,500.00	90.29	179.53	11,000.16	7,633.76	7,426.46	-7,427.29	-69.66	391,052.15	777,072.35	32.07279665	-103.57227697	0.00	0.00	0.00
	18,600.00	90.29	179.53	10,999.66	7,633.26	7,526.46	-7,527.28	-68.84	390,952.16	777,073.17	32.07252178	-103.57227659	0.00	0.00	0.00
	18,700.00	90.29	179.53	10,999.16	7,632.76	7,626.46	-7,627.28	-68.02	390,852.17	777,073.99	32.07224691	-103.57227621	0.00	0.00	0.00
	18,800.00	90.29	179.53	10,998.66	7,632.26	7,726.46	-7,727.27	-67.19	390,752.17	777,074.82	32.07197205	-103.57227583	0.00	0.00	0.00
	18,900.00	90.29	179.53	10,998.16	7,631.76	7,826.46	-7,827.27	-66.37	390,652.18	777,075.64	32.07169718	-103.57227545	0.00	0.00	0.00
	19,000.00	90.29	179.53	10,997.67	7,631.27	7,926.46	-7,927.26	-65.55	390,552.19	777,076.46	32.07142231	-103.57227507	0.00	0.00	0.00
	19,100.00	90.29	179.53	10,997.17	7,630.77	8,026.45	-8,027.26	-64.73	390,452.20	777,077.29	32.07114744	-103.57227469	0.00	0.00	0.00
	19,200.00	90.29	179.53	10,996.67	7,630.27	8,126.45	-8,127.25	-63.90	390,352.20	777,078.11	32.07087257	-103.57227431	0.00	0.00	0.00
	19,300.00	90.29	179.53	10,996.17	7,629.77	8,226.45	-8,227.25	-63.08	390,252.21	777,078.93	32.07059770	-103.57227393	0.00	0.00	0.00
	19,400.00	90.29	179.53	10,995.67	7,629.27	8,326.45	-8,327.24	-62.26	390,152.22	777,079.76	32.07032284	-103.57227355	0.00	0.00	0.00
	19,500.00	90.29	179.53	10,995.17	7,628.77	8,426.45	-8,427.24	-61.43	390,052.23	777,080.58	32.07004797	-103.57227317	0.00	0.00	0.00
	19,600.00	90.29	179.53	10,994.68	7,628.28	8,526.45	-8,527.23	-60.61	389,952.24	777,081.40	32.06977310	-103.57227279	0.00	0.00	0.00
	19,700.00	90.29	179.53	10,994.18	7,627.78	8,626.45	-8,627.23	-59.79	389,852.24	777,082.23	32.06949823	-103.57227241	0.00	0.00	0.00
	19,800.00	90.29	179.53	10,993.68	7,627.28	8,726.45	-8,727.22	-58.96	389,752.25	777,083.05	32.06922336	-103.57227203	0.00	0.00	0.00
	19,900.00	90.29	179.53	10,993.18	7,626.78	8,826.44	-8,827.22	-58.14	389,652.26	777,083.87	32.06894850	-103.57227165	0.00	0.00	0.00
	20,000.00	90.29	179.53	10,992.68	7,626.28	8,926.44	-8,927.22	-57.32	389,552.27	777,084.69	32.06867363	-103.57227127	0.00	0.00	0.00
	20,100.00	90.29	179.53	10,992.18	7,625.78	9,026.44	-9,027.21	-56.49	389,452.27	777,085.52	32.06839876	-103.57227089	0.00	0.00	0.00
	20,200.00	90.29	179.53	10,991.69	7,625.29	9,126.44	-9,127.21	-55.67	389,352.28	777,086.34	32.06812389	-103.57227051	0.00	0.00	0.00
	20,300.00	90.29	179.53	10,991.19	7,624.79	9,226.44	-9,227.20	-54.85	389,252.29	777,087.16	32.06784902	-103.57227013	0.00	0.00	0.00
	20,400.00	90.29	179.53	10,990.69	7,624.29	9,326.44	-9,327.20	-54.02	389,152.30	777,087.99	32.06757415	-103.57226975	0.00	0.00	0.00
	20,500.00	90.29	179.53	10,990.19	7,623.79	9,426.44	-9,427.19	-53.20	389,052.30	777,088.81	32.06729929	-103.57226937	0.00	0.00	0.00
	20,600.00	90.29	179.53	10,989.69	7,623.29	9,526.44	-9,527.19	-52.38	388,952.31	777,089.63	32.06702442	-103.57226899	0.00	0.00	0.00
	20,700.00	90.29	179.53	10,989.19	7,622.79	9,626.43	-9,627.18	-51.56	388,852.32	777,090.46	32.06674955	-103.57226860	0.00	0.00	0.00
	20,800.00	90.29	179.53	10,988.70	7,622.30	9,726.43	-9,727.18	-50.73	388,752.33	777,091.28	32.06647468	-103.57226822	0.00	0.00	0.00
	20,900.00	90.29	179.53	10,988.20	7,621.80	9,826.43	-9,827.17	-49.91	388,652.33	777,092.10	32.06619981	-103.57226784	0.00	0.00	0.00
	21,000.00	90.29	179.53	10,987.70	7,621.30	9,926.43	-9,927.17	-49.09	388,552.34	777,092.93	32.06592494	-103.57226746	0.00	0.00	0.00
	21,100.00	90.29	179.53	10,987.20	7,620.80	10,026.43	-10,027.16	-48.26	388,452.35	777,093.75	32.06565007	-103.57226708	0.00	0.00	0.00
Red Hills Unit 78H - BHL [100' F	21,140.24	90.29	179.53	10,987.00	7,620.60	10,066.67	-10,067.40	-47.93	388,412.11	777,094.08	32.06553946	-103.57226693	0.00	0.00	0.00

Comments	MD (ft)	Incl (°)	Azim (°)	TVD (ft)	TVDSS (ft)	VSEC (ft)	NS (ft)	EW (ft)	Northing (ftUS)	Easting (ftUS)	Latitude (°)	Longitude (°)	DLS (°/100ft)	BR (°/100ft)	TR (°/100ft)

Survey Type: Def Plan

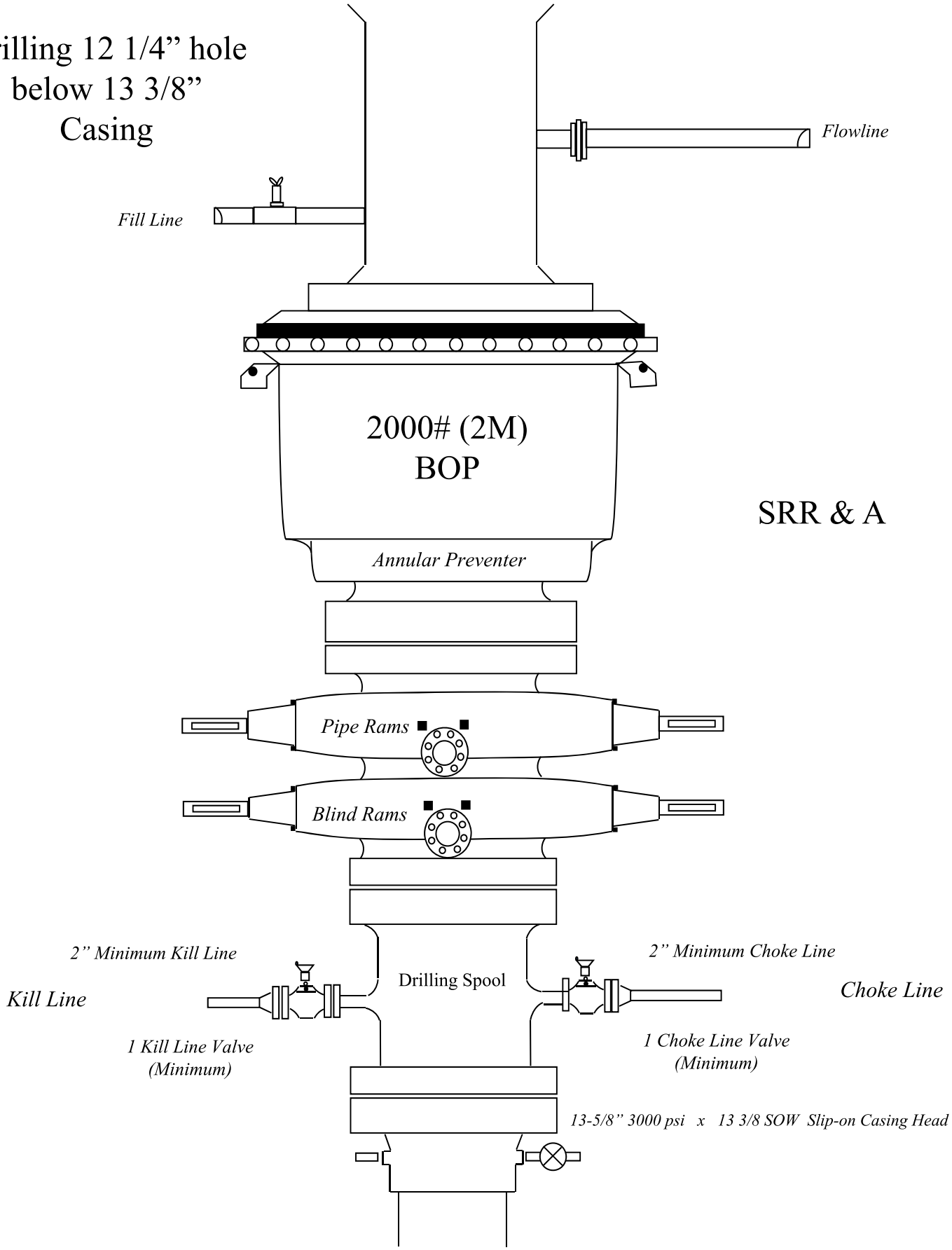
Survey Error Model: ISCWSA0 3 - D 95 % Confidence 2.7955 sigma

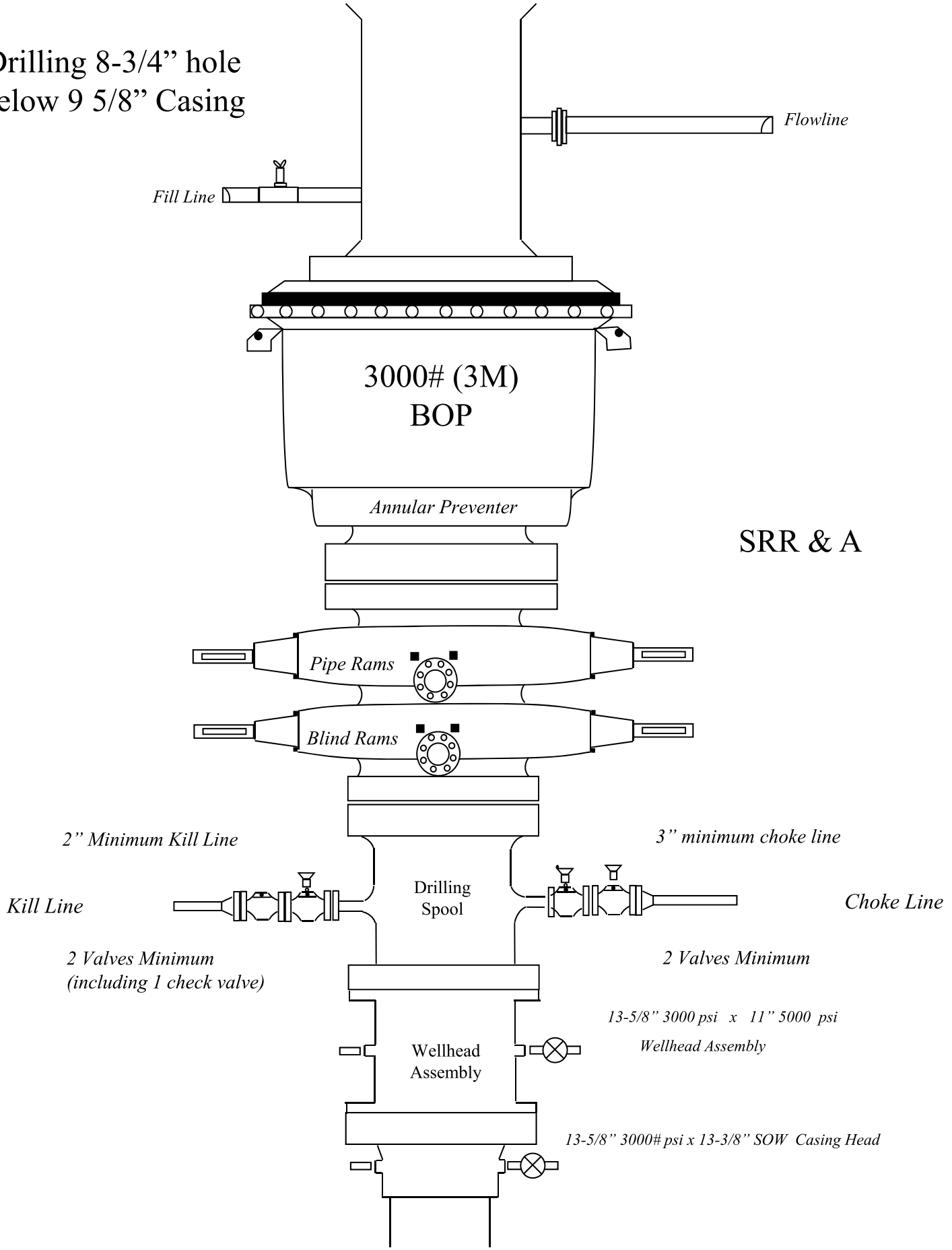
Survey Program:

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	10,400.000	1/100.000	14.75 – 9.875	10.75 – 7.625		A001Mb_MWD		Red Hills Unit 78H / Coterra Red Hills Unit 78H Rev
	1	10,400.000	21,140.241	1/100.000	9.875 – 6.75	7.625 – 6.75		A008Mb_MWD+IFR1+MS		Red Hills Unit 78H / Coterra Red Hills Unit 78H Rev

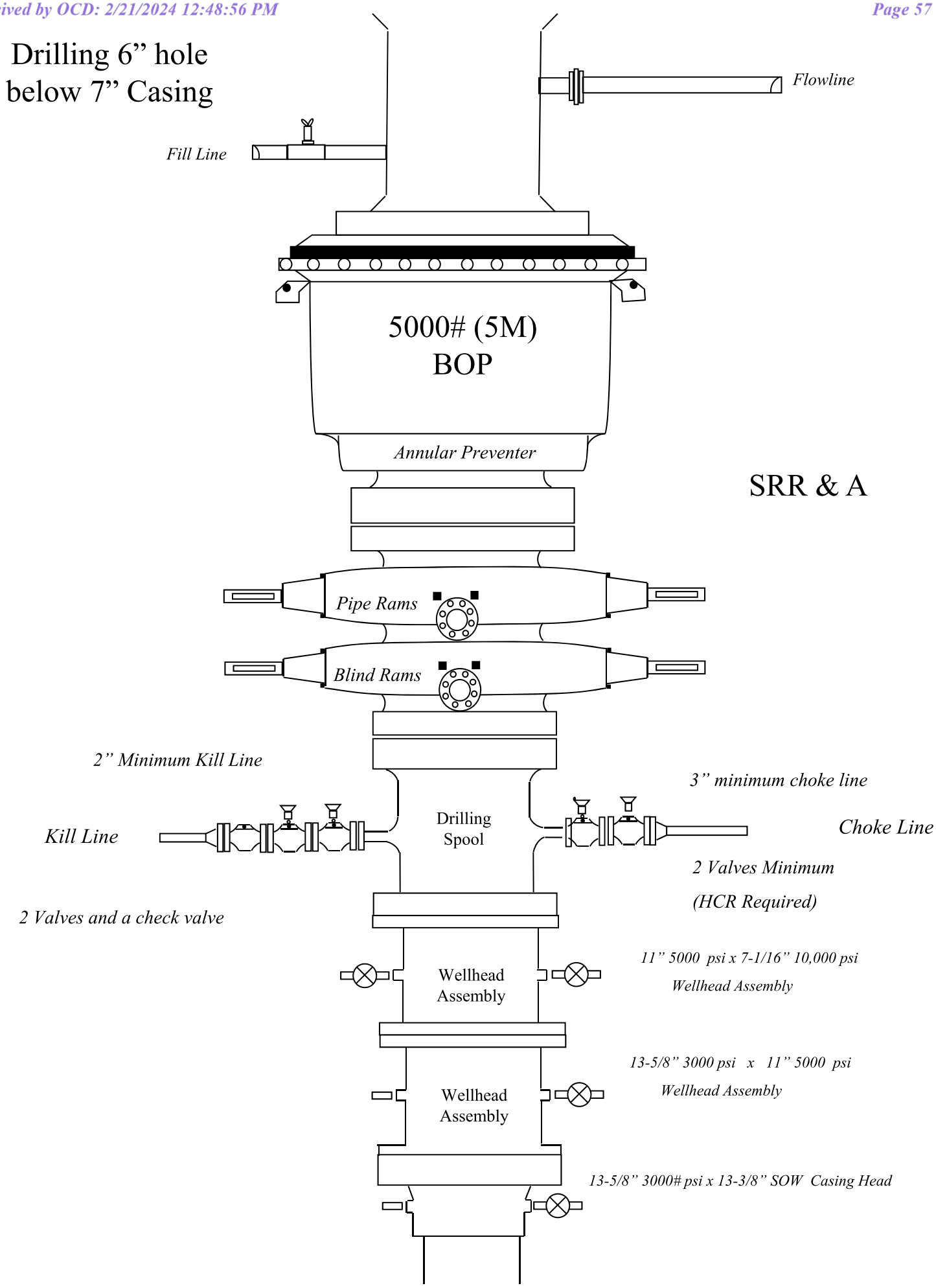
EOU Geometry:

End MD (ft)	Hole Size (in)	Casing Size (in)	Name
1,017.000	14.750	10.750	
12,217.000	9.875	7.625	
22,167.000	6.750		


Drilling 12 1/4" hole below 13 3/8" Casing
Flowline
Fill Line
2000# (2M) BOP
SRR & A
Annular Preventer
Pipe Rams
Blind Rams
2" Minimum Kill Line
Kill Line
Drilling Spool
2" Minimum Choke Line
Choke Line
1 Kill Line Valve (Minimum)
1 Choke Line Valve (Minimum)
13-5/8" 3000 psi x 13 3/8 SOW Slip-on Casing Head


Drilling 8-3/4" hole
below 9 5/8" Casing
Flowline
Fill Line
3000# (3M)
BOP
Annular Preventer
SRR & A
Pipe Rams
Blind Rams
2" Minimum Kill Line
3" minimum choke line
Kill Line
Drilling
Spool
Choke Line
2 Valves Minimum
(including 1 check valve)
2 Valves Minimum
13-5/8" 3000 psi x 11" 5000 psi
Wellhead Assembly
Wellhead
Assembly
13-5/8" 3000# psi x 13-3/8" SOW Casing Head

Drilling 6” hole below 7” Casing



PECOS DISTRICT
DRILLING CONDITIONS OF APPROVAL

OPERATOR'S NAME:	Cimarex
LEASE NO.:	**NMNM5792**
LOCATION:	Section 33, T.25 S, R.33 E., NMPM
COUNTY:	Lea County, New Mexico
WELL NAME & NO.:	Red Hills Unit 78H
SURFACE HOLE FOOTAGE:	388'/N & 969'/E
BOTTOM HOLE FOOTAGE:	100'/S & 1100'/E

*Changes approved through engineering via **Sundry 2768265** on **1-17-2023**. Any previous COAs not addressed within the updated COAs still apply.*

COA

H_2S	◉ Yes	○ No		
Potash / WIPP	◉ None	○ Secretary	○ R-111-P	☐ WIPP
Cave / Karst	◉ Low	○ Medium	○ High	○ Critical
Wellhead	○ Conventional	◉ Multibowl	○ Both	○ Diverter
Cementing	☐ Primary Squeeze	☐ Cont. Squeeze	☐ EchoMeter	☐ DV Tool
Special Req	☐ Break Testing	☐ Water Disposal	☐ COM	☑ Unit
Variance	☑ Flex Hose	☐ Casing Clearance	☐ Pilot Hole	☐ Capitan Reef
Variance	☐ Four-String	☐ Offline Cementing	☐ Fluid-Filled	☐ Open Annulus
☐ **Batch APD / Sundry**				

A. HYDROGEN SULFIDE

A Hydrogen Sulfide (H2S) Drilling Plan shall be activated 500 feet prior to drilling into the **Bell Canyon, Bone Springs** formation. As a result, 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, please provide measured values and formations to the BLM.

B. CASING

1. The **13-3/8** inch surface casing shall be set at approximately **1000** 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 tail 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 tail 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 be 11%. 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 intergrity test can be done (prior to the cement setting up) immediately after bumping the plug.

3. Wait on cement (WOC) for Water Basin: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi at the shoe, 2) until cement has been in place at least 8 hours. 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 1/17/2024

33-25-33-A Sundry ID 2768265 Red Hills Unit 78H Lea NM005792 CIMAREX ENERGY COMPANY 13-22g 1-30-2024 LV

Red Hills Unit 78H

13 3/8	surface csg in a	17 1/2	inch hole.	Design Factors			Surface			
Segment	#/ft	Grade	Coupling	Joint	Collapse	Burst	Length	B@s	a-B	a-C	Weight
"A"	48.00	h 40	stc	6.39	1.69	0.68	1,050	4	1.18	3.45	50,400
"B"			stc				0				0
	w/8.4#/g mud, 30min Sfc Csg Test psig: 753		Tail Cmt	does not	circ to sfc.	Totals:	1,050				50,400

Comparison of Proposed to Minimum Required Cement Volumes

Hole	Annular	1 Stage	1 Stage	Min	1 Stage	Drilling	Calc	Req'd	Min Dist
Size	Volume	Cmt Sx	CuFt Cmt	Cu Ft	% Excess	Mud Wt	MASP	BOPE	Hole-Cplg
17 1/2	0.6946	620	1017	729	39	8.33	1467	2M	1.56

Burst Frac Gradient(s) for Segment(s) A, B = , b All > 0.70, OK.

Site plat (pipe racks S or E) as per O.O.3 III.D.4.i. not found

9 5/8	casing inside the	13 3/8		Design Factors			Int 1			
Segment	#/ft	Grade	Coupling	Body	Collapse	Burst	Length	B@s	a-B	a-C	Weight
"A"	40.00	hck 55	ltc	3.21	1.66	0.77	4,900	2	1.45	2.88	196,000
"B"							0				0
	w/8.4#/g mud, 30min Sfc Csg Test psig: 627					Totals:	4,900				196,000
	The cement volume(s) are intended to achieve a top of			0	ft from surface or a		1050				overlap.

Hole	Annular	1 Stage	1 Stage	Min	1 Stage	Drilling	Calc	Req'd	Min Dist
Size	Volume	Cmt Sx	CuFt Cmt	Cu Ft	% Excess	Mud Wt	MASP	BOPE	Hole-Cplg
12 1/4	0.3132	1216	2132	1601	33	10.00	2722	3M	0.81
r D V Tool(s):							sum of sx	Σ CuFt	Σ%excess
t by stage % :		#VALUE!	#VALUE!				1216	2132	33

Class 'H' tail cmt yld > 1.20

Burst Frac Gradient(s) for Segment(s): A, B, C, D = 0.81, b, c, d All > 0.70, OK.

7	casing inside the	9 5/8		Design Factors			Prod 1			
Segment	#/ft	Grade	Coupling	Body	Collapse	Burst	Length	B@s	a-B	a-C	Weight
"A"	29.00	l 80	btc	2.12	1.37	1.59	11,206	2	3.00	2.58	324,974
"B"							0				0
"C"							0				0
"D"							0				0
	w/8.4#/g mud, 30min Sfc Csg Test psig: 914					Totals:	11,206				324,974
	The cement volume(s) are intended to achieve a top of			4700	ft from surface or a		200				overlap.

Hole	Annular	1 Stage	1 Stage	Min	1 Stage	Drilling	Calc	Req'd	Min Dist
Size	Volume	Cmt Sx	CuFt Cmt	Cu Ft	% Excess	Mud Wt	MASP	BOPE	Hole-Cplg
8 3/4	0.1503	479	1459	980	49	9.00	3263	5M	0.55

Class 'C' tail cmt yld > 1.35

4 1/2	Liner w/top @	9956		Design Factors			Liner 1			
Segment	#/ft	Grade	Coupling	Body	Collapse	Burst	Length	B@s	a-B	a-C	Weight
"A"	11.60	p 110	btc	2.90	1.34	1.89	11,184	2	3.28	2.32	129,734
"B"							0				0
	w/8.4#/g mud, 30min Sfc Csg Test psig: 2,397					Totals:	11,184				129,734
	The cement volume(s) are intended to achieve a top of			9956	ft from surface or a		1250				overlap.

Hole	Annular	1 Stage	1 Stage	Min	1 Stage	Drilling	Calc	Req'd	Min Dist
Size	Volume	Cmt Sx	CuFt Cmt	Cu Ft	% Excess	Mud Wt	MASP	BOPE	Hole-Cplg
6	0.0859	737	958	863	11	10.00			0.50

Class 'H' tail cmt yld > 1.20 Capitan Reef est top XXXX.

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 316348

CONDITIONS

Operator: CIMAREX ENERGY CO. 6001 Deauville Blvd Midland, TX 79706	OGRID: 215099
	Action Number: 316348
	Action Type: [C-103] NOI Change of Plans (C-103A)

CONDITIONS

Created By	Condition	Condition Date
pkautz	None	3/18/2024