

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

OCD-ARTESIA

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.

FORM APPROVED  
OMB No 1004-0135  
Expires July 31, 1996

5. Lease Serial No

NM-34657

6 If Indian, Allottee or Tribe Name

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

Pending

8. Well Name and No.

Penny Pincher Federal Com No. 1

9 API Well No.

30-015-37699

10. Field and Pool, or Exploratory Area

Lusk; Bone Spring, West

11. County or Parish, State

Eddy County, NM

SUBMIT IN TRIPLICATE - Other instructions on reverse side

1. Type of Well

☒ Oil Well ☐ Gas Well ☐ Other

2 Name of Operator

Cimarex Energy Co. of Colorado

3a. Address

600 N. Marienfeld St., Ste. 600; Midland, TX 79701

3b.

Phone No. (include area code)

432-571-7800

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

660 FNL &amp; 990 FWL

21-19S-31E

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

## TYPE OF SUBMISSION

## TYPE OF ACTION

☒ Notice of Intent☐ Subsequent Report☐ Final Abandonment Notice☐ Acidize☒ Alter Casing☐ Casing Repair☒ Change Plans☐ Convert to Injection☐ Deepen☐ Fracture Treat☐ New Construction☐ Plug and Abandon☐ Plug Back☐ Production (Start/Resume)☐ Reclamation☐ Recomplete☐ Temporarily Abandon☐ Water Disposal☐ Water Shut-Off☐ Well Integrity☐ Other

13. Describe Proposed or Completed Operation (clearly state all pertinent details, included estimated starting date of any proposed work and approximate duration thereof.

If the proposal is to deepen directionally or recomple 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 performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports shall be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recomple in a new interval, a Form 3160-4 shall be filed once testing has been completed. Final Abandonment Notices shall be filed only after all requirements, including reclamation, have been completed, and the operator has determined that the site is ready for final inspection.)

Cimarex has changed drilling plans on the Penny Pincher Fed Com 1. Instead of drilling as a vertical Bone Spring well in NWNW 21-19S-31E, Cimarex will now drill the well as a horizontal Bone Spring in the entire W2W2 21-19S-31E. Revised drilling plans below. Preliminary directional survey and revised C-102 attached.

Casing Plan on APD 18 5/8 87.5#

Surface 1: 26" hole, 20" 94# J/K-55 BTC to 565'

Surface 2: 17 1/2" hole, 13 3/8" 61# J-55 BTC to 2600'

Intermediate: 12 1/4" hole, 9 5/8" 40# J/K-55 LTC to 4200'

Production: 8 3/4" hole, 7" 26# P-110 LTC to 8690'

Fiberglass: 8 3/4" hole, 2 3/8" 2.18# IJ from 8690-9100'

Proposed Casing Plan

Surface 1: 26" hole, 20" 94# J/K-55 BTC to 565'

Surface 2: 17 1/2" hole, 13 3/8" 61# J-55 BTC to 2600'

Intermediate: 12 1/4" hole, 9 5/8" 40# J/K-55 LTC to 4200'

Production: 8 3/4" hole, 7" 26# P-110 LTC to 8690'

Fiberglass: 8 3/4" hole, 2 3/8" 2.18# IJ from 8690-9100'

Lateral Pt. 1: 6 1/2" hole, 4 1/2" 11.6# BTC from 8660-9058'

Lateral Pt. 2: 6 1/2" hole, 4 1/2" 11.6# BTC from 9058-13209'

After drilling and setting Surface 1, Surface 2, and intermediate casing, drill to vertical TD 9100' and log. Set 7" casing to 8690' and cross over to 2 3/8" 2000 psi IJ fiberglass tubing underneath to 9100' and cement in place. Drill out of the bottom of the 7" with a 6 1/2" bit and through cement and fiberglass to KOP @ 8760' and kick off to drill the lateral. The fiberglass effectively circulates cement to surface and plugs back the open hole.

Drill to lateral TD (13209' MD, 9000' TVD). Run 4 1/2" PEAK liner from RBP packer @ 8660' to TD @ 13209'. Request a 100' tieback for lateral casing string in order to be able to set the pump as deep as possible.

14 I hereby certify that the foregoing is true and correct

Name (Printed/Typed)

Natalie Krueger

Signature

Title

Regulatory

Date

March 22, 2010

SEE ATTACHED FOR  
CONDITIONS OF APPROVAL

Approved by

Title

Office

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.

Title 18 U.S.C. Section 1001, makes 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 reverse)

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

APPROVED

Date

MAR 31 2010

/s/ Chris Walls

BUREAU OF LAND MANAGEMENT  
CARLSBAD FIELD OFFICEDGA  
4-6-10

# State of New Mexico

Energy, Minerals and Natural Resources Department

## DISTRICT I

1625 N. FRENCH DR., BOBBS, NM 88240

## DISTRICT II

1301 W. GRAND AVENUE, ARTESIA, NM 88210

## DISTRICT III

1000 Rio Brazos Rd., Aztec, NM 87410

## DISTRICT IV

1220 S. ST. FRANCIS DR., SANTA FE, NM 87505

## OIL CONSERVATION DIVISION

1220 SOUTH ST. FRANCIS DR.  
Santa Fe, New Mexico 87505

Form C-102

Revised October 12, 2005

Submit to Appropriate District Office

State Lease - 4 Copies

Fee Lease - 3 Copies

## WELL LOCATION AND ACREAGE DEDICATION PLAT

☐ AMENDED REPORT

API Number	Pool Code 41480	Pool Name Lusk; Bone Spring, W
Property Code	Property Name PENNY PINCHER FEDERAL COM	Well Number 1
GRID No. 162683	Operator Name CIMAREX ENERGY CO.	Elevation 3480'

### Surface Location

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
D	21	19-S	31-E		660	NORTH	990	WEST	EDDY

### 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
M	21	19-S	31-E		330	SOUTH	330	WEST	EDDY

Dedicated Acres	Joint or Infill	Consolidation Code	Order No.
160			

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

SHL & P.P. Bone Spring  
660 FNL & 990 FWL

EOC  
847 FNL & 963 FWL

GEODETIC COORDINATES  
NAD 27 NME  
SURFACE LOCATION  
Y=600930.8 N  
X=639790.6 E

LAT.=32.651239° N  
LONG.=103.879151° W

BOTTOM HOLE LOCATION  
Y=596637.4 N  
X=639163.8 E

Proposed Producing Interval

BHL  
330 FSL & 330 FWL

GRID. AZ. = 38°18'17"  
HORZ. DIST. = 4340.0

NM-34657

330' LC-063622

### OPERATOR CERTIFICATION

I hereby certify that the information 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 mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

*Zeno Farris* 3/22/2010  
Signature Date

Zeno Farris  
Printed Name

### 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.

*GARY G. EIDSON*  
Date Surveyed: AUGUST 10, 2006  
Signature & Seal of Professional Surveyor  
10/30/09  
10/30/09

Certificate No. GARY EIDSON 12841  
RON EIDSON 3239



# Cimarex Energy Co.

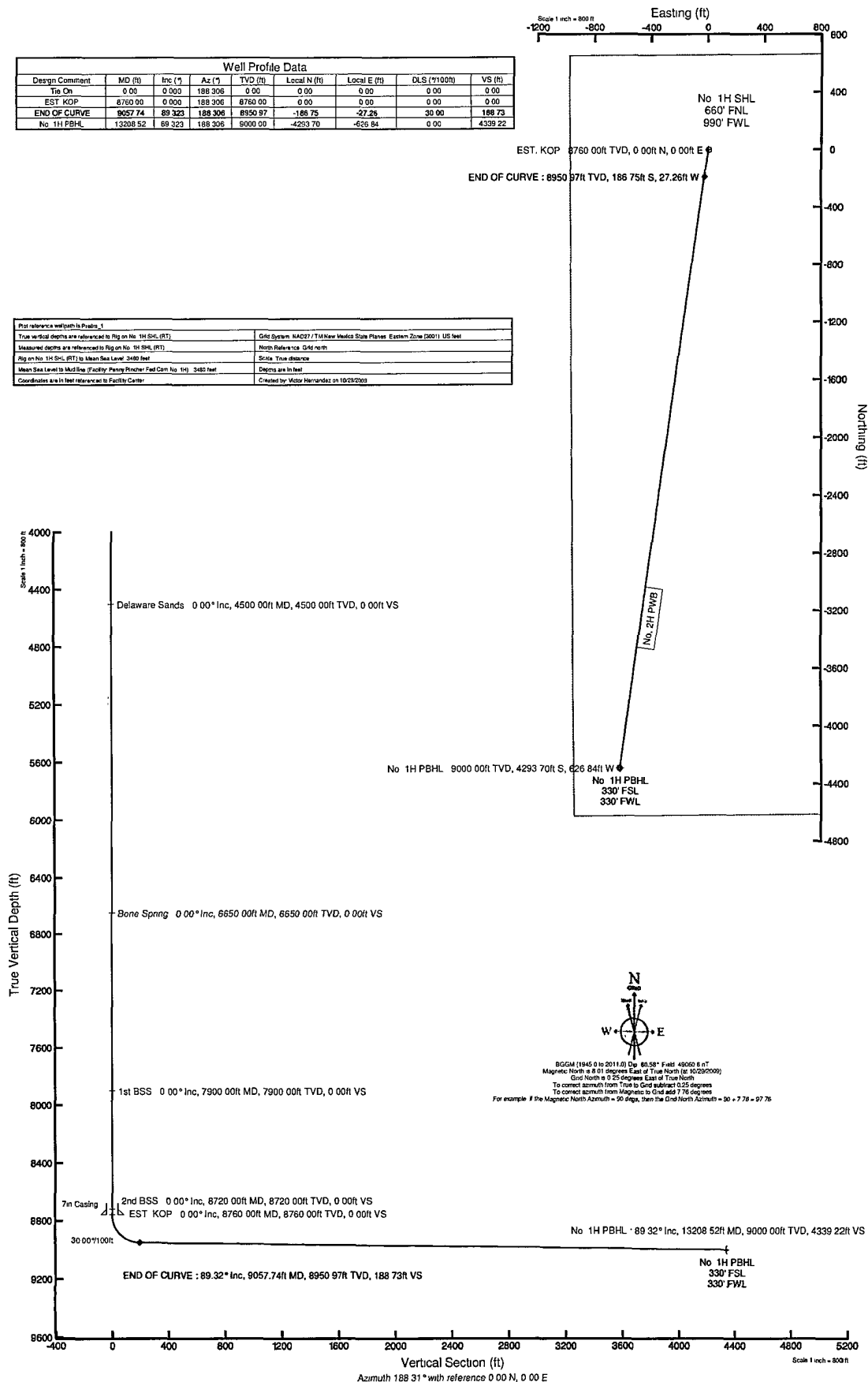
Location: Eddy County, NM  
Field: (Penny) Sec 21, T19S, R31E  
Facility: Penny Pincher Fed Com No 1H

Slot: No. 1H SHL  
Well: No. 1H  
Wellbore: No. 1H PWB



Well Profile Data							
Design Comment	MD (ft)	Inc (°)	Az (°)	TVD (ft)	Local N (ft)	Local E (ft)	VS (ft)
Tie On	0 00	0 000	188 306	0 00	0 00	0 00	0 00
EST KOP	8760 00	0 000	188 306	8760 00	0 00	0 00	0 00
END OF CURVE	9057 74	89 323	188 306	8950 97	-186 75	-27 26	188 73
No. 1H PBHL	13208 52	89 323	188 306	9000 00	-4293 70	-626 84	4339 22

True vertical depth is referenced to Rig on No. 1H SHL (RT)		Grid System: NAD83 / T19N New Mexico State Planes Eastern Zone 50011 US feet
Measured depths are referenced to Rig on No. 1H SHL (RT)		North Reference: Grid north
Rig on No. 1H SHL (RT) to Mean Sea Level: 3480 feet		Scale: True distance
Mean Sea Level to Mudline (Facility Penny Pincher Fed Com No. 1H): 3480 feet		Depths are in feet
Coordinates are in feet referenced to Facility Center		Created by Victor Hernandez on 10/29/2003





# Planned Wellpath Report

Prelim\_1  
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REFERENCE WELLPATH IDENTIFICATION			
Operator	Cimarex Energy Co.	Slot	No. 1H SHL
Area	Eddy County, NM	Well	No. 1H
Field	(Penny) Sec 21, T19S, R31E	Wellbore	No. 1H PWB
Facility	Penny Pincher Fed Com No. 1H		

REPORT SETUP INFORMATION			
Projection System	NAD27 / TM New Mexico State Planes, Eastern Zone (3001), US feet	Software System	WellArchitect® 2.0
North Reference	Grid	User	Victor Hernandez
Scale	0.999931	Report Generated	10/30/2009 at 10:52:19 AM
Convergence at slot	0.25° East	Database/Source file	WA_Midland/No. 1H_PWB.xml

WELLPATH LOCATION						
	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[USft]	Northing[USft]	Latitude	Longitude
Slot Location	0.00	0.00	639790.60	600930.80	32°39'04.459"N	103°52'44.943"W
Facility Reference Pt			639790.60	600930.80	32°39'04.459"N	103°52'44.943"W
Field Reference Pt			639790.60	600930.80	32°39'04.459"N	103°52'44.943"W

WELLPATH DATUM			
Calculation method	Minimum curvature	Rig on No. 1H SHL (RT) to Facility Vertical Datum	0.00ft
Horizontal Reference Pt	Facility Center	Rig on No. 1H SHL (RT) to Mean Sea Level	3480.00ft
Vertical Reference Pt	Rig on No. 1H SHL (RT)	Facility Vertical Datum to Mud Line (Facility)	0.00ft
MD Reference Pt	Rig on No. 1H SHL (RT)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	188.31°



# Planned Wellpath Report

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REFERENCE WELLPATH IDENTIFICATION			
Operator	Cimarex Energy Co.	Slot	No. 1H SHL
Area	Eddy County, NM	Well	No. 1H
Field	(Penny) Sec 21, T19S, R31E	Wellbore	No. 1H PWB
Facility	Penny Pincher Fed Com No. 1H		

WELLPATH DATA (52 stations) † = interpolated/extrapolated station										
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [srv ft]	Grid North [srv ft]	DLS [°/100ft]	Comments
0.00	0.000	188.306	0.00	0.00	0.00	0.00	639790.60	600930.80	0.00	Tie On
4500.00†	0.000	188.306	4500.00	0.00	0.00	0.00	639790.60	600930.80	0.00	Delaware Sands
6650.00†	0.000	188.306	6650.00	0.00	0.00	0.00	639790.60	600930.80	0.00	Bone Spring
7900.00†	0.000	188.306	7900.00	0.00	0.00	0.00	639790.60	600930.80	0.00	1st BSS
8720.00†	0.000	188.306	8720.00	0.00	0.00	0.00	639790.60	600930.80	0.00	2nd BSS
8760.00	0.000	188.306	8760.00	0.00	0.00	0.00	639790.60	600930.80	0.00	EST. KOP
8860.00†	30.000	188.306	8855.49	25.59	-25.32	-3.70	639786.90	600905.48	30.00	
8960.00†	60.000	188.306	8925.40	95.49	-94.49	-13.79	639776.81	600836.32	30.00	
9057.74	89.323	188.306	8950.97	188.73	-186.75	-27.26	639763.34	600744.06	30.00	END OF CURVE
9060.00†	89.323	188.306	8951.00	190.99	-188.98	-27.59	639763.01	600741.83	0.00	
9160.00†	89.323	188.306	8952.18	290.98	-287.93	-42.03	639748.57	600642.89	0.00	
9260.00†	89.323	188.306	8953.36	390.97	-386.87	-56.48	639734.12	600543.96	0.00	
9360.00†	89.323	188.306	8954.54	490.96	-485.81	-70.92	639719.68	600445.02	0.00	
9460.00†	89.323	188.306	8955.72	590.96	-584.76	-85.37	639705.24	600346.08	0.00	
9560.00†	89.323	188.306	8956.91	690.95	-683.70	-99.81	639690.79	600247.14	0.00	
9660.00†	89.323	188.306	8958.09	790.94	-782.65	-114.26	639676.35	600148.21	0.00	
9760.00†	89.323	188.306	8959.27	890.94	-881.59	-128.70	639661.90	600049.27	0.00	
9860.00†	89.323	188.306	8960.45	990.93	-980.54	-143.15	639647.46	599950.33	0.00	
9960.00†	89.323	188.306	8961.63	1090.92	-1079.48	-157.59	639633.02	599851.40	0.00	
10060.00†	89.323	188.306	8962.81	1190.92	-1178.42	-172.04	639618.57	599752.46	0.00	
10160.00†	89.323	188.306	8963.99	1290.91	-1277.37	-186.48	639604.13	599653.52	0.00	
10260.00†	89.323	188.306	8965.17	1390.90	-1376.31	-200.93	639589.68	599554.58	0.00	
10360.00†	89.323	188.306	8966.35	1490.90	-1475.26	-215.37	639575.24	599455.65	0.00	
10460.00†	89.323	188.306	8967.54	1590.89	-1574.20	-229.82	639560.80	599356.71	0.00	
10560.00†	89.323	188.306	8968.72	1690.88	-1673.14	-244.26	639546.35	599257.77	0.00	
10660.00†	89.323	188.306	8969.90	1790.87	-1772.09	-258.71	639531.91	599158.84	0.00	
10760.00†	89.323	188.306	8971.08	1890.87	-1871.03	-273.15	639517.46	599059.90	0.00	
10860.00†	89.323	188.306	8972.26	1990.86	-1969.98	-287.60	639503.02	598960.96	0.00	
10960.00†	89.323	188.306	8973.44	2090.85	-2068.92	-302.05	639488.58	598862.02	0.00	
11060.00†	89.323	188.306	8974.62	2190.85	-2167.87	-316.49	639474.13	598763.09	0.00	



# Planned Wellpath Report

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INTEQ

REFERENCE WELLPATH IDENTIFICATION			
Operator	Cimarex Energy Co.	Slot	No. 1H SHL
Area	Eddy County, NM	Well	No. 1H
Field	(Penny) Sec 21, T19S, R31E	Wellbore	No. 1H PWB
Facility	Penny Pincher Fed Com No. 1H		

WELLPATH DATA (52 stations) † = interpolated/extrapolated station										
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [srv ft]	Grid North [srv ft]	DLS [°/100ft]	Comments
11160.00†	89.323	188.306	8975.80	2290.84	-2266.81	-330.94	639459.69	598664.15	0.00	
11260.00†	89.323	188.306	8976.98	2390.83	-2365.75	-345.38	639445.24	598565.21	0.00	
11360.00†	89.323	188.306	8978.17	2490.83	-2464.70	-359.83	639430.80	598466.28	0.00	
11460.00†	89.323	188.306	8979.35	2590.82	-2563.64	-374.27	639416.36	598367.34	0.00	
11560.00†	89.323	188.306	8980.53	2690.81	-2662.59	-388.72	639401.91	598268.40	0.00	
11660.00†	89.323	188.306	8981.71	2790.80	-2761.53	-403.16	639387.47	598169.46	0.00	
11760.00†	89.323	188.306	8982.89	2890.80	-2860.47	-417.61	639373.02	598070.53	0.00	
11860.00†	89.323	188.306	8984.07	2990.79	-2959.42	-432.05	639358.58	597971.59	0.00	
11960.00†	89.323	188.306	8985.25	3090.78	-3058.36	-446.50	639344.14	597872.65	0.00	
12060.00†	89.323	188.306	8986.43	3190.78	-3157.31	-460.94	639329.69	597773.72	0.00	
12160.00†	89.323	188.306	8987.62	3290.77	-3256.25	-475.39	639315.25	597674.78	0.00	
12260.00†	89.323	188.306	8988.80	3390.76	-3355.20	-489.83	639300.80	597575.84	0.00	
12360.00†	89.323	188.306	8989.98	3490.76	-3454.14	-504.28	639286.36	597476.90	0.00	
12460.00†	89.323	188.306	8991.16	3590.75	-3553.08	-518.72	639271.92	597377.97	0.00	
12560.00†	89.323	188.306	8992.34	3690.74	-3652.03	-533.17	639257.47	597279.03	0.00	
12660.00†	89.323	188.306	8993.52	3790.73	-3750.97	-547.61	639243.03	597180.09	0.00	
12760.00†	89.323	188.306	8994.70	3890.73	-3849.92	-562.06	639228.58	597081.16	0.00	
12860.00†	89.323	188.306	8995.88	3990.72	-3948.86	-576.50	639214.14	596982.22	0.00	
12960.00†	89.323	188.306	8997.06	4090.71	-4047.80	-590.95	639199.70	596883.28	0.00	
13060.00†	89.323	188.306	8998.25	4190.71	-4146.75	-605.39	639185.25	596784.34	0.00	
13160.00†	89.323	188.306	8999.43	4290.70	-4245.69	-619.84	639170.81	596685.41	0.00	
13208.52	89.323	188.306	9000.00†	4339.22	-4293.70	-626.84	639163.80	596637.40	0.00	No. 1H PBHL

HOLE & CASING SECTIONS Ref Wellbore: No. 1H PWB Ref Wellpath: Prelim 1									
String/Diameter	Start MD [ft]	End MD [ft]	Interval [ft]	Start TVD [ft]	End TVD [ft]	Start N/S [ft]	Start E/W [ft]	End N/S [ft]	End E/W [ft]
7in Casing	0.00	8760.00	8760.00	0.00	8760.00	0.00	0.00	0.00	0.00
6.125in Open Hole	8760.00	13208.52	4448.52	8760.00	9000.00	0.00	0.00	-4293.70	-626.84



# Planned Wellpath Report

Prelim\_1  
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REFERENCE WELLPATH IDENTIFICATION			
Operator	Cimarex Energy Co.	Slot	No. 1H SHL
Area	Eddy County, NM	Well	No. 1H
Field	(Penny) Sec 21, T19S, R31E	Wellbore	No. 1H PWB
Facility	Penny Pincher Fed Com No. 1H		

TARGETS									
Name	MD [ft]	TVD [ft]	North [ft]	East [ft]	Grid East [srv ft]	Grid North [srv ft]	Latitude	Longitude	Shape
1) No. 1H PBHL	13208.52	9000.00	-4293.70	-626.84	639163.80	596637.40	32°38'22.001"N	103°52'52.488"W	point

SURVEY PROGRAM Ref Wellbore: No. 1H PWB Ref Wellpath: Prelim_1				
Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
0.00	13208.52	NaviTrak (Standard)		No. 1H PWB

## CONDITIONS OF APPROVAL

<b>OPERATOR'S NAME:</b>	<b>Cimarex Energy Co of Colorado</b>
<b>LEASE NO.:</b>	<b>NMNM-34657</b>
<b>WELL NAME &amp; NO.:</b>	<b>Penny Pincher Federal Com #1</b>
<b>SURFACE HOLE FOOTAGE:</b>	<b>660' FNL &amp; 990' FWL</b>
<b>BOTTOM HOLE FOOTAGE:</b>	<b>330' FSL &amp; 330' FWL</b>
<b>LOCATION:</b>	<b>Section 21, T. 19 S., R 31 E., NMPM</b>
<b>COUNTY:</b>	<b>Eddy County, New Mexico</b>

### I. DRILLING

#### A. DRILLING OPERATIONS REQUIREMENTS

The BLM is to be notified a minimum of 4 hours in advance for a representative to witness:

- a. Spudding well
- b. Setting and/or Cementing of all casing strings
- c. BOPE tests

☒ **Eddy County**

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

1. A Hydrogen Sulfide (H<sub>2</sub>S) Drilling Plan should be activated 500 feet prior to drilling into the **Queen** formation. **As a result, the Hydrogen Sulfide area must meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, please provide measured values and formations to the BLM.**
2. 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.
3. 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.



4. The record of the drilling rate along with the CAL/GR/N well log run from TD to surface will 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.

## **B. CASING**

Changes to the approved APD casing and cement program require submitting a sundry and receiving approval prior to work. Failure to obtain approval prior to work will result in an Incident of Non-Compliance being issued.

**Centralizers required on surface casing per Onshore Order 2.III.B.1.f.**

**Wait on cement (WOC) time for a primary cement job will be a minimum 18 hours for a water basin, 24 hours in the potash area, or 500 pounds compressive strength, whichever is greater for all casing strings. Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. See individual casing strings for details regarding lead cement slurry requirements.**

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

**Possible water/brine flows in the Artesia and Salado Groups.**

**Possible water flows in the Capitan Reef.**

**Possible lost circulation in the Artesia Group and Capitan Reef.**

1. The 20 inch surface casing shall be set at **approximately 595 feet (a minimum of 25 feet into the Rustler Anhydrite and above the salt)** and cemented to the surface.  
**Freshwater mud to be used to setting depth.**
  - 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 is to include the lead cement slurry.**
  - 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.**

4. **The record of the drilling rate along with the CAL/GR/N well log run from TD to surface will 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.**

## **B. CASING**

**Changes to the approved APD casing and cement program require submitting a sundry and receiving approval prior to work. Failure to obtain approval prior to work will result in an Incident of Non-Compliance being issued.**

**Centralizers required on surface casing per Onshore Order 2.III.B.1.f.**

**Wait on cement (WOC) time for a primary cement job will be a minimum 18 hours for a water basin, 24 hours in the potash area, or 500 pounds compressive strength, whichever is greater for all casing strings. Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. See individual casing strings for details regarding lead cement slurry requirements.**

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

**Possible water/brine flows in the Artesia and Salado Groups.**

**Possible water flows in the Capitan Reef.**

**Possible lost circulation in the Artesia Group and Capitan Reef.**

1. **The 18-5/8 inch surface casing shall be set at approximately 595 feet (a minimum of 25 feet into the Rustler Anhydrite and above the salt) and cemented to the surface. Freshwater mud to be used to setting depth.**
  - 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 is to include the lead cement slurry.**
  - 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 13-3/8 inch intermediate casing is:
  - ☒ Cement to surface. If cement does not circulate see B.1.a, c-d above.  
**Set within the Seven Rivers, above the Capitan Reef. Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to the Capitan Reef.**
3. The minimum required fill of cement behind the 9-5/8 inch 2<sup>nd</sup> intermediate casing is:
  - ☒ Cement to surface. If cement does not circulate see B.1.a, c-d above.  
**Set within the base of the Capitan Reef. Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to the Capitan Reef. Additional cement may be required as the excess calculates to 5%.**
4. The minimum required fill of cement behind the 7 inch production casing is:
  - ☒ Cement should tie-back at least 200 feet into the intermediate casing string to cover the Capitan Reef. Operator shall provide method of verification. **May require additional cement as the excess calculates to 11%.**
5. 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.

## **C. PRESSURE CONTROL**

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API RP 53 Sec. 17.
2. **A variance is granted for the use of a diverter on the 20" surface casing.**
3. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the 13-3/8 inch intermediate casing shoe shall be **3000 (3M) psi. Operator is using a 5M system and testing as a 3M.**

4. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.
  - a. Casing cut-off and BOP installation will not be initiated until the cement has had a minimum of 8 hours setup time for a water basin. The casing shall remain stationary and under pressure for at least eight hours after the operator places the cement. In the potash area, the minimum time is 12 hours and the casing shall remain stationary and under pressure during this time period. Casing shall be under pressure if the operator uses some acceptable means of holding pressure or if the operator employs one or more float valves to hold the cement in place. Testing the BOP/BOPE against a plug can commence after meeting the above conditions plus the BOP installation time.
  - b. The tests shall be done by an independent service company utilizing a test plug.
  - c. The results of the test shall be reported to the appropriate BLM office.
  - d. 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.**
  - e. 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.

#### **D. DRILL STEM TEST**

If drill stem tests are performed, Onshore Order 2.III.D shall be followed.

**CRW 033110**