

HOBBS OCD
OCT 01 2012

~~OCD-ARTESIA~~

ATS-11-698

R-111-POTASH

Form 3160-3
(April 2004)

OCD Hobbs

RECEIVED

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

FORM APPROVED
OMB No 1004-0137
Expires March 31, 2007

5 Lease Serial No.
SHL NM-0202296, BHL NM-10470
6. If Indian, Allottee or Tribe Name

1a. Type of Work: ☒ DRILL ☐ REENTER

7 If Unit or CA Agreement, Name and No

Pending

1b Type of Well. ☒ Oil Well ☐ Gas Well ☐ Other ☒ Single Zone ☐ Multiple Zone

8. Lease Name and Well No. <38843>
Hat Mesa 10 Federal Com No. 4 H

2 Name of Operator
Cimarex Energy Co. of Colorado

9. API Well No
30-025- 40805

3a Address
600 N. Marienfeld St., Ste. 600; Midland, TX 79701

3b Phone No. (include area code)
<162683>
432-571-7800

10. Field and Pool, or Exploratory
Bone Spring Wildcat <97921>

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

At Surface 660 FSL & 330 FEL Unit P

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

At proposed prod. Zone 660 FSL & 330 FWL Unit M Horizontal Bone Spring test

10-215-32E

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

12 County or Parish

13 State

Eddy Lea

NM

15 Distance from proposed*
location to nearest
property or lease line, ft
(Also to nearest drg unit line if
any) 330'

16 No of acres in lease
NM-0202296 - 560.2 acres
NM-10470 - 959.48 acres

17 Spacing Unit dedicated to this well
S2S2 160 acres

18 Distance from proposed location*
to nearest well, drilling, completed,
applied for, on this lease, ft
1285

19. Proposed Depth
MD 15050 TVD 10550

20 BLM/BIA Bond No. on File
NM-2575

21 Elevations (Show whether DF, KDB, RT, GL, etc)

3827' GR

22 Approximate date work will start*

08.01.11

23 Estimated duration

25-30 days

24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No. 1, shall be attached to this form.

- 1 Well plat certified by a registered surveyor
- 2 A Drilling Plan
- 3 A Surface Use Plan (if the location is on National Forest System Lands, the SUPO shall be filed with the appropriate Forest Service Office)

- 4 Bond to cover the operations unless covered by an existing bond on file (see Item 20 above)
- 5 Operator Certification
- 6 Such other site specific information and/or plans as may be required by the authorized officer.

25. Signature

Zeno Farris

Name (Printed/Typed)

Zeno Farris

Date

07.07.11

Title

Manager Operations Administration

Approved By (Signature)

/s/ Aden L Seidlitz

Name (Printed/Typed)

SEP 24 2012

Title

STATE DIRECTOR

Office

NM STATE OFFICE

Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon

APPROVAL FOR TWO YEARS

Conditions of approval, if any, are attached

Title 18 U.S.S. 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)

Ka 10/02/12

Approval Subject to General Requirements
& Special Stipulations Attached

Capitan Controlled Water Basin
SEE ATTACHED FOR
CONDITIONS OF APPROVAL

OCT 03 2012

Application to Drill
Hat Mesa 10 Federal Com No. 4 *14*
Cimarex Energy Co. of Colorado
Unit P, Section 10
T21S-R32E; Lea County, NM

In response to questions asked under Section II B of Bulletin NTL-6, the following information is provided for your consideration:

- 1 Location: SHL 660 FSL & 330 FEL
BHL 660 FSL & 330 FWL
- 2 Elevation above sea level: 3827 GR
- 3 Geologic name of surface formation: Quaternary Alluvium Deposits
- 4 Drilling tools and associated equipment: Conventional rotary drilling rig using fluid as a circulating medium for solids removal.
- 5 Proposed drilling depth: MD 15050 TVD 10550
- 6 Estimated tops of geological markers:

Rustler	1450
T. Salt	1880
B. Salt	3417
Capitan	3470
Delaware	5210
Cherry Canyon	5600
Bone Spring	8720
Upper Bone Spring Shale	9030
- 7 Possible mineral bearing formation:

Delaware	Oil
Bone Spring	Oil

8 Proposed Mud Circulating System:

** See COA*

Depth	Mud Wt	Visc	Fluid Loss	Type Mud
0' to 1475'	8.4 - 8.6	28	NC	FW
1475' to 3450'	10.0	30-32	NC	Brine water
3450' to 5210'	10.0	30-32	NC	FW, Brine <i>* See COA</i>
5210' to 15050'	8.4	30-32	NC	2% KCL

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

Proposed drilling Plan

After setting surface 1 & 2 and intermediate casing, drill 8¾" hole to 10264 and log. Then kick off 8¾" lateral at 10264 and drill to TD at 15050 MD, 10550 TVD. Set 5½" 17# P110 LTC from 0-15050 and cement to 500' inside intermediate shoe (4710).

Application to Drill
Hat Mesa 10 Federal Com No. 4
 Cimarex Energy Co. of Colorado
 Unit P, Section 10
 T21S-R32E; Lea County, NM

9 Casing & Cementing Program:

String	Hole Size	Depth	Casing OD	Weight	Collar	Grade
Surface	26"	0' to 1475'	New 20"	106#	STC	J/K-55
Surface 2	17½"	0' to 3450'	New 13¾"	68#	STC	L-80
Intermediate	12¾"	0' to 5210'	New 9¾"	40#	LTC	N-80
Production	8¾"	0' to 15050'	New 5½"	17#	LTC	P-110

* 106# 5 nominal

10. Cementing:

Surface
20"

Lead: 2195SKS Halcem C + 2% CaCl 13.5ppg 1.75yield 100% Excess
 Tail: 345SKS Class C + 4% D20, 1% S001, 0.2% D46, 0.125 lb/sk D130 14.2ppg 1.34 yield 25% Excess
TOC Surface Centralizers per Onshorder 2.III.B.1.f

Surface 2
13 3/8"

Lead: 2940SKS Econocem + 5% Salt + 5# Gilsonite 13.5ppg 1.75yield 75% Excess
 Tail: 215SKS Halcem + 2% CaCl 14.2ppg 1.34 yield 25% Excess
TOC Surface

Intermediate
9 5/8"

Lead: 1190SKS Econocem + 5% Salt + 5# Gilsonite 14.6ppg 1.54yield 70% Excess
 Tail: 160SKS Halcem + 1% CaCl 14.8ppg 1.34 yield 25% Excess
TOC Surface

Production
5 1/2"

Lead: 1040SKS Econocem H + 0.5% CFR-3 + 0.1% HR-601 11.9ppg 2.44 yield 50% Excess
 Tail: 1270SKS Versacem H + 0.5% Halad-344 + 0.4% CFR-3 + 1# Salt + 0.1% HR-601 14.5ppg 1.22 yield 25% Excess

~~TOC 4710~~ Centralizers every 3rd joint in lateral to provide adequate cement coverage every 100' unless lateral doglegs require greater spacing between centralizers.

* See COA

Depth to ground water is 140 according to the State Engineer. Fresh water zones will be protected by setting 20" casing at 1475 and cementing to surface and 13¾" casing at 3450 and cementing to surface. Hydrocarbon zones will be protected by setting 9¾" casing at 5210 and cementing to surface, and by setting 5½" casing at 15050 and cementing to 4710.

<u>Collapse Factor</u>	<u>Burst Factor</u>	<u>Tension Factor</u>
1.125	1.125	1.6

11 Pressure control Equipment:

* See COA

Exhibit "E". From the base of the 20" surface pipe, the well will be equipped with a 2M diverter system with rotating head (see exhibit E-1). From the base of the 13-3/8" surface "2" pipe through the running of production casing, the well will be equipped with a 5000 psi BOP system. A 13¾" 5000 PSI working pressure B.O.P. consisting of one set of blind rams and one set of pipe rams and a 5000# annular type preventer. A choke manifold and 120 gallon accumulator with floor and remote operating stations and auxiliary power system. Rotating head below 6000'. A kelly cock will be installed and maintained in operable condition and a drill string safety valve in the open position will be available on the rig floor. Mud gas separator will be available if drilling in H2S areas.

BOP unit will be hydraulically operated. BOP will be nipped up and operated at least once a day while drilling and the blind rams will be operated when out of hole during trips. No abnormal pressure or temperature is expected while drilling.

After surface "2" casing the BOP will be tested to 250 psi low and 3000 psi high by an independent service company.

Hydril will be tested to 250 psi low and 2500 psi high.

* See COA

After intermediate casing the BOP will be tested to 250 psi low and 5000 psi high by an independent service company. Hydril will be tested to 250 psi low and 2500 psi high.

Application to Drill
Hat Mesa 10 Federal Com No. 4 *H*
Cimarex Energy Co. of Colorado
Unit P, Section 10
T21S-R32E; Lea County, NM

12 Testing, Logging and Coring Program:

- A. Mud logging program: 2 man unit from 5210 to TD
- B. Electric logging program: CNL / LDT / CAL / GR, DLL / CAL / GR
- C. No DSTs or cores are planned at this time.

** See COA*

13 Potential Hazards:

No abnormal pressures or temperatures are expected. In accordance with Onshore Order 6, Cimarex does not anticipate that there will be enough H₂S from the surface to the Bone Spring formations to meet the BLM's minimum requirements for the submission of an "H₂S Drilling Operation Plan" or "Public Protection Plan" for the drilling and completion of this well. Since we have an H₂S Safety package on all wells, attached is an "H₂S Drilling Operations Plan." Adequate flare lines will be installed off the mud / gas separator where gas may be flared safely. All personnel will be familiar with all aspects of safe operation of equipment being used.

Estimated BHP **3000 psi** Estimated BHT **130°**

14 Road and location construction will begin after BLM approval of APD. Anticipated spud date as soon as approved.

Drilling expected to take 30-35 days

If production casing is run an additional 30 days will be required to complete and construct surface facilities.

15 Other Facets of Operations:

After running casing, cased hole gamma ray neutron collar logs will be run from total depth over possible pay intervals.

Bone Spring pay will be perforated and stimulated.

The proposed well will be tested and potentialized as **an oil well.**



Cimarex Energy Co.

Location: Lea County, NM
Field: (Hat Mesa) Sec 10, T21S, R32E
Facility: Hat Mesa 10 Fed Com

Slot: No. 4H SHL
Well: No. 4H
Wellbore: No. 4H PWB



Well Profile Data

Design Comment	MD (ft)	Inc (°)	Az (°)	TVD (ft)	Local N (ft)	Local E (ft)	DLS (°/100ft)	VS (ft)
Tie On	0.00	0.000	269.284	0.00	0.00	0.00	0.00	0.00
Est. KOP	10263.52	0.000	269.284	10263.52	0.00	0.00	0.00	0.00
End of Curve	10713.52	90.000	269.284	10550.00	-3.58	-286.46	20.00	286.48
No. 4H PBHL	15049.50	90.000	269.284	10550.00	-57.80	-4622.10	0.00	4622.46

Plot reference wellpath is Prelim_1

True vertical depths are referenced to Rig on No. 4H PBHL (RT)

Measured depths are referenced to Rig on No. 4H PBHL (RT)

Rig on No. 4H PBHL (RT) to Mean Sea Level 3827 feet

Mean Sea Level to Mud line (At Slot No. 4H SHL) 0 feet

Coordinates are in feet referenced to Slot

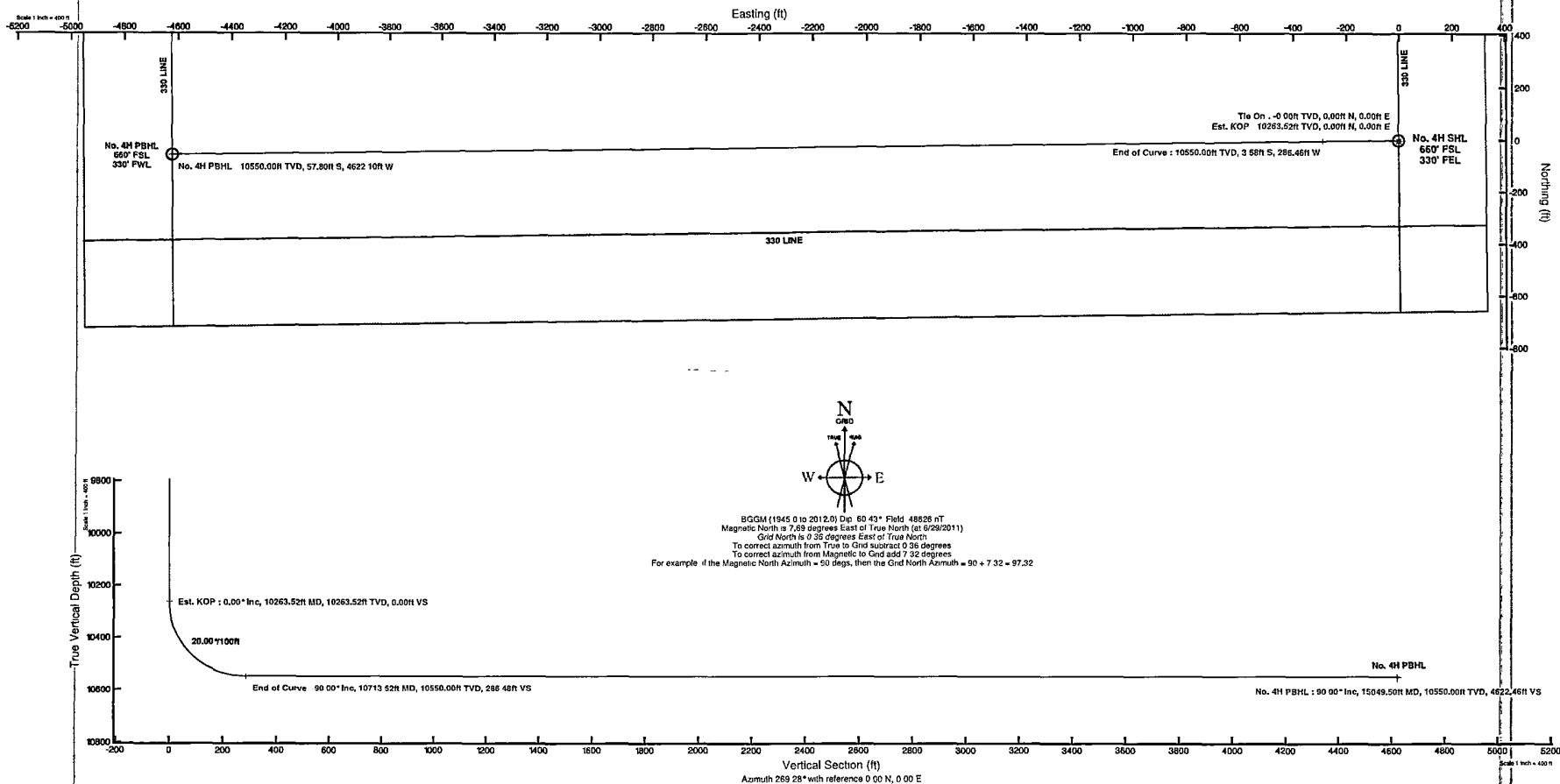
Grid System NAD83 / IM New Mexico SP, Eastern Zone (3001), US feet

North Reference: Grid north

Scale: True distance

Depths are in feet

Created by: calphk on 7/1/2011





Planned Wellpath Report

Prelim 1

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REFERENCE WELLPATH IDENTIFICATION

Operator	Cimarex Energy Co.	Slot	No. 4H SHL
Area	Lea County, NM	Well	No. 4H
Field	(Hat Mesa) Sec 10, T21S, R32E	Wellbore	No. 4H PWB
Facility	Hat Mesa 10 Fed Com		

REPORT SETUP INFORMATION

Projection System	NAD83 / TM New Mexico SP, Eastern Zone (3001), US feet	Software System	WellArchitect® 3.0.0
North Reference	Grid	User	Calhphik
Scale	0.999959	Report Generated	7/1/2011 at 9:43:17 AM
Convergence at slot	0.36° East	Database/Source file	WA Midland/No_4H_PWB.xml

WELLPATH LOCATION

	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	-2679.41	17.80	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W
Facility Reference Pt			750441.70	544591.70	32°29'43.138"N	103°39'18.407"W
Field Reference Pt			750441.70	544591.70	32°29'43.138"N	103°39'18.407"W

WELLPATH DATUM

Calculation method	Minimum curvature	Rig on No. 4H PBHL (RT) to GL	3827.00ft
Horizontal Reference Pt	Slot	Rig on No. 4H PBHL (RT) to Mean Sea Level	3827.00ft
Vertical Reference Pt	Rig on No. 4H PBHL (RT)	Rig on No. 4H PBHL (RT) to Mud Line at Slot (No. 4H SHL)	3827.00ft
MD Reference Pt	Rig on No. 4H PBHL (RT)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	269.28°



Planned Wellpath Report

Prelim 1

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REFERENCE WELLPATH IDENTIFICATION			
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Field	(Hat Mesa) Sec 10, T21S, R32E	Wellbore	No. 4H PWB
Facility	Hat Mesa 10 Fed Com		

WELLPATH DATA (156 stations) † = interpolated/extrapolated station												
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	DLS [°/100ft]	Comments
0.00	0.000	269.284	0.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	The On
100.00†	0.000	269.284	100.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
200.00†	0.000	269.284	200.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
300.00†	0.000	269.284	300.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
400.00†	0.000	269.284	400.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
500.00†	0.000	269.284	500.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
600.00†	0.000	269.284	600.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
700.00†	0.000	269.284	700.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
800.00†	0.000	269.284	800.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
900.00†	0.000	269.284	900.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
1000.00†	0.000	269.284	1000.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
1100.00†	0.000	269.284	1100.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
1200.00†	0.000	269.284	1200.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
1300.00†	0.000	269.284	1300.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
1400.00†	0.000	269.284	1400.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
1500.00†	0.000	269.284	1500.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
1600.00†	0.000	269.284	1600.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
1700.00†	0.000	269.284	1700.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
1800.00†	0.000	269.284	1800.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
1900.00†	0.000	269.284	1900.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
2000.00†	0.000	269.284	2000.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
2100.00†	0.000	269.284	2100.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
2200.00†	0.000	269.284	2200.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
2300.00†	0.000	269.284	2300.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
2400.00†	0.000	269.284	2400.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
2500.00†	0.000	269.284	2500.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
2600.00†	0.000	269.284	2600.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
2700.00†	0.000	269.284	2700.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
2800.00†	0.000	269.284	2800.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
2900.00†	0.000	269.284	2900.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
3000.00†	0.000	269.284	3000.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
3100.00†	0.000	269.284	3100.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
3200.00†	0.000	269.284	3200.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
3300.00†	0.000	269.284	3300.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
3400.00†	0.000	269.284	3400.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
3500.00†	0.000	269.284	3500.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
3600.00†	0.000	269.284	3600.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
3700.00†	0.000	269.284	3700.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
3800.00†	0.000	269.284	3800.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
3900.00†	0.000	269.284	3900.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
4000.00†	0.000	269.284	4000.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
4100.00†	0.000	269.284	4100.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
4200.00†	0.000	269.284	4200.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
4300.00†	0.000	269.284	4300.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
4400.00†	0.000	269.284	4400.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	



Planned Wellpath Report

Prelim-1
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REFERENCE WELLPATH IDENTIFICATION

Operator	Cimarex Energy Co.	Slot	No. 4H SHL
Area	Lea County, NM	Well	No. 4H
Field	(Hat Mesa) Sec 10, T21S, R32E	Wellbore	No. 4H PWB
Facility	Hat Mesa 10 Fed Com		

WELLPATH DATA (156 stations) † = interpolated/extrapolated station

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	DLS [°/100ft]	Comments
4500.00†	0.000	269.284	4500.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
4600.00†	0.000	269.284	4600.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
4700.00†	0.000	269.284	4700.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
4800.00†	0.000	269.284	4800.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
4900.00†	0.000	269.284	4900.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
5000.00†	0.000	269.284	5000.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
5100.00†	0.000	269.284	5100.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
5200.00†	0.000	269.284	5200.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
5300.00†	0.000	269.284	5300.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
5400.00†	0.000	269.284	5400.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
5500.00†	0.000	269.284	5500.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
5600.00†	0.000	269.284	5600.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
5700.00†	0.000	269.284	5700.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
5800.00†	0.000	269.284	5800.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
5900.00†	0.000	269.284	5900.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
6000.00†	0.000	269.284	6000.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
6100.00†	0.000	269.284	6100.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
6200.00†	0.000	269.284	6200.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
6300.00†	0.000	269.284	6300.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
6400.00†	0.000	269.284	6400.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
6500.00†	0.000	269.284	6500.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
6600.00†	0.000	269.284	6600.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
6700.00†	0.000	269.284	6700.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
6800.00†	0.000	269.284	6800.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
6900.00†	0.000	269.284	6900.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
7000.00†	0.000	269.284	7000.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
7100.00†	0.000	269.284	7100.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
7200.00†	0.000	269.284	7200.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
7300.00†	0.000	269.284	7300.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
7400.00†	0.000	269.284	7400.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
7500.00†	0.000	269.284	7500.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
7600.00†	0.000	269.284	7600.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
7700.00†	0.000	269.284	7700.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
7800.00†	0.000	269.284	7800.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
7900.00†	0.000	269.284	7900.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
8000.00†	0.000	269.284	8000.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
8100.00†	0.000	269.284	8100.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
8200.00†	0.000	269.284	8200.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
8300.00†	0.000	269.284	8300.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
8400.00†	0.000	269.284	8400.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
8500.00†	0.000	269.284	8500.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
8600.00†	0.000	269.284	8600.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
8700.00†	0.000	269.284	8700.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
8800.00†	0.000	269.284	8800.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
8900.00†	0.000	269.284	8900.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	



Planned Wellpath Report

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REFERENCE WELLPATH IDENTIFICATION

Operator	Cimarex Energy Co.	Slot	No. 4H SHL
Area	Lea County, NM	Well	No. 4H
Field	(Hat Mesa) Sec 10, T21S, R32E	Wellbore	No. 4H PWB
Facility	Hat Mesa 10 Fed Com		

WELLPATH DATA (156 stations) † = interpolated/extrapolated station

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	DLS [°/100ft]	Comments
9000.00†	0.000	269.284	9000.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
9100.00†	0.000	269.284	9100.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
9200.00†	0.000	269.284	9200.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
9300.00†	0.000	269.284	9300.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
9400.00†	0.000	269.284	9400.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
9500.00†	0.000	269.284	9500.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
9600.00†	0.000	269.284	9600.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
9700.00†	0.000	269.284	9700.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
9725.00†	0.000	269.284	9725.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	1st Bone Spring Shale
9800.00†	0.000	269.284	9800.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
9900.00†	0.000	269.284	9900.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
10000.00†	0.000	269.284	10000.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
10100.00†	0.000	269.284	10100.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
10200.00†	0.000	269.284	10200.00	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	
10263.52	0.000	269.284	10263.52	0.00	0.00	0.00	750459.50	541912.40	32°29'16.626"N	103°39'18.398"W	0.00	Est. KOP
10300.00†	7.296	269.284	10299.90	2.32	-0.03	-2.32	750457.18	541912.37	32°29'16.625"N	103°39'18.425"W	20.00	
10325.48†	12.392	269.284	10325.00	6.67	-0.08	-6.67	750452.83	541912.32	32°29'16.625"N	103°39'18.476"W	20.00	2nd Bone Spring Shale
10400.00†	27.296	269.284	10394.90	31.90	-0.40	-31.90	750427.60	541912.00	32°29'16.624"N	103°39'18.770"W	20.00	
10500.00†	47.296	269.284	10474.04	92.18	-1.15	-92.18	750367.33	541911.25	32°29'16.620"N	103°39'19.474"W	20.00	
10600.00†	67.296	269.284	10527.80	175.91	-2.20	-175.89	750283.62	541910.20	32°29'16.615"N	103°39'20.452"W	20.00	
10700.00†	87.296	269.284	10549.68	272.96	-3.41	-272.94	750186.57	541908.99	32°29'16.609"N	103°39'21.585"W	20.00	
10713.52	90.000	269.284	10550.00	286.48	-3.58	-286.46	750173.06	541908.82	32°29'16.608"N	103°39'21.743"W	20.00	End of Curve
10800.00†	90.000	269.284	10550.00	372.96	-4.66	-372.93	750086.59	541907.74	32°29'16.603"N	103°39'22.752"W	0.00	
10900.00†	90.000	269.284	10550.00	472.96	-5.91	-472.92	749986.60	541906.49	32°29'16.597"N	103°39'23.920"W	0.00	
11000.00†	90.000	269.284	10550.00	572.96	-7.16	-572.91	749886.61	541905.24	32°29'16.591"N	103°39'25.087"W	0.00	
11100.00†	90.000	269.284	10550.00	672.96	-8.42	-672.91	749786.62	541903.99	32°29'16.585"N	103°39'26.254"W	0.00	
11200.00†	90.000	269.284	10550.00	772.96	-9.67	-772.90	749686.64	541902.73	32°29'16.578"N	103°39'27.422"W	0.00	
11300.00†	90.000	269.284	10550.00	872.96	-10.92	-872.89	749586.65	541901.48	32°29'16.572"N	103°39'28.589"W	0.00	
11400.00†	90.000	269.284	10550.00	972.96	-12.17	-972.88	749486.66	541900.23	32°29'16.566"N	103°39'29.757"W	0.00	
11500.00†	90.000	269.284	10550.00	1072.96	-13.42	-1072.87	749386.67	541898.98	32°29'16.560"N	103°39'30.924"W	0.00	
11600.00†	90.000	269.284	10550.00	1172.96	-14.67	-1172.87	749286.68	541897.73	32°29'16.554"N	103°39'32.092"W	0.00	
11700.00†	90.000	269.284	10550.00	1272.96	-15.92	-1272.86	749186.70	541896.48	32°29'16.548"N	103°39'33.259"W	0.00	
11800.00†	90.000	269.284	10550.00	1372.96	-17.17	-1372.85	749086.71	541895.23	32°29'16.542"N	103°39'34.426"W	0.00	
11900.00†	90.000	269.284	10550.00	1472.96	-18.42	-1472.84	748986.72	541893.98	32°29'16.536"N	103°39'35.594"W	0.00	
12000.00†	90.000	269.284	10550.00	1572.96	-19.67	-1572.83	748886.73	541892.73	32°29'16.530"N	103°39'36.761"W	0.00	
12100.00†	90.000	269.284	10550.00	1672.96	-20.92	-1672.83	748786.74	541891.48	32°29'16.523"N	103°39'37.929"W	0.00	
12200.00†	90.000	269.284	10550.00	1772.96	-22.17	-1772.82	748686.76	541890.23	32°29'16.517"N	103°39'39.096"W	0.00	
12300.00†	90.000	269.284	10550.00	1872.96	-23.42	-1872.81	748586.77	541888.98	32°29'16.511"N	103°39'40.264"W	0.00	
12400.00†	90.000	269.284	10550.00	1972.96	-24.67	-1972.80	748486.78	541887.73	32°29'16.505"N	103°39'41.431"W	0.00	
12500.00†	90.000	269.284	10550.00	2072.96	-25.92	-2072.80	748386.79	541886.48	32°29'16.499"N	103°39'42.598"W	0.00	
12600.00†	90.000	269.284	10550.00	2172.96	-27.17	-2172.79	748286.81	541885.23	32°29'16.493"N	103°39'43.766"W	0.00	
12700.00†	90.000	269.284	10550.00	2272.96	-28.42	-2272.78	748186.82	541883.98	32°29'16.487"N	103°39'44.933"W	0.00	
12800.00†	90.000	269.284	10550.00	2372.96	-29.67	-2372.77	748086.83	541882.73	32°29'16.480"N	103°39'46.101"W	0.00	
12900.00†	90.000	269.284	10550.00	2472.96	-30.92	-2472.76	747986.84	541881.48	32°29'16.474"N	103°39'47.268"W	0.00	
13000.00†	90.000	269.284	10550.00	2572.96	-32.17	-2572.76	747886.85	541880.23	32°29'16.468"N	103°39'48.436"W	0.00	



Planned Wellpath Report

Prelim_1

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REFERENCE WELLPATH IDENTIFICATION

Operator	Cimarex Energy Co.	Slot	No. 4H SHL
Area	Lea County, NM	Well	No. 4H
Field	(Hat Mesa) Sec 10, T21S, R32E	Wellbore	No. 4H PWB
Facility	Hat Mesa 10 Fed Com		

WELLPATH DATA (156 stations) † = interpolated/extrapolated station

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	DLS [°/100ft]	Comments
13100.00†	90.000	269.284	10550.00	2672.96	-33.42	-2672.75	747786.87	541878.98	32°29'16.462"N	103°39'49.603"W	0.00	
13200.00†	90.000	269.284	10550.00	2772.96	-34.68	-2772.74	747686.88	541877.73	32°29'16.456"N	103°39'50.770"W	0.00	
13300.00†	90.000	269.284	10550.00	2872.96	-35.93	-2872.73	747586.89	541876.48	32°29'16.450"N	103°39'51.938"W	0.00	
13400.00†	90.000	269.284	10550.00	2972.96	-37.18	-2972.73	747486.90	541875.23	32°29'16.443"N	103°39'53.105"W	0.00	
13500.00†	90.000	269.284	10550.00	3072.96	-38.43	-3072.72	747386.91	541873.98	32°29'16.437"N	103°39'54.273"W	0.00	
13600.00†	90.000	269.284	10550.00	3172.96	-39.68	-3172.71	747286.93	541872.72	32°29'16.431"N	103°39'55.440"W	0.00	
13700.00†	90.000	269.284	10550.00	3272.96	-40.93	-3272.70	747186.94	541871.47	32°29'16.425"N	103°39'56.608"W	0.00	
13800.00†	90.000	269.284	10550.00	3372.96	-42.18	-3372.69	747086.95	541870.22	32°29'16.419"N	103°39'57.775"W	0.00	
13900.00†	90.000	269.284	10550.00	3472.96	-43.43	-3472.69	746986.96	541868.97	32°29'16.413"N	103°39'58.942"W	0.00	
14000.00†	90.000	269.284	10550.00	3572.96	-44.68	-3572.68	746886.97	541867.72	32°29'16.406"N	103°40'00.110"W	0.00	
14100.00†	90.000	269.284	10550.00	3672.96	-45.93	-3672.67	746786.99	541866.47	32°29'16.400"N	103°40'01.277"W	0.00	
14200.00†	90.000	269.284	10550.00	3772.96	-47.18	-3772.66	746687.00	541865.22	32°29'16.394"N	103°40'02.445"W	0.00	
14300.00†	90.000	269.284	10550.00	3872.96	-48.43	-3872.65	746587.01	541863.97	32°29'16.388"N	103°40'03.612"W	0.00	
14400.00†	90.000	269.284	10550.00	3972.96	-49.68	-3972.65	746487.02	541862.72	32°29'16.382"N	103°40'04.780"W	0.00	
14500.00†	90.000	269.284	10550.00	4072.96	-50.93	-4072.64	746387.04	541861.47	32°29'16.375"N	103°40'05.947"W	0.00	
14600.00†	90.000	269.284	10550.00	4172.96	-52.18	-4172.63	746287.05	541860.22	32°29'16.369"N	103°40'07.114"W	0.00	
14700.00†	90.000	269.284	10550.00	4272.96	-53.43	-4272.62	746187.06	541858.97	32°29'16.363"N	103°40'08.282"W	0.00	
14800.00†	90.000	269.284	10550.00	4372.96	-54.68	-4372.62	746087.07	541857.72	32°29'16.357"N	103°40'09.449"W	0.00	
14900.00†	90.000	269.284	10550.00	4472.96	-55.93	-4472.61	745987.08	541856.47	32°29'16.351"N	103°40'10.617"W	0.00	
15000.00†	90.000	269.284	10550.00	4572.96	-57.18	-4572.60	745887.10	541855.22	32°29'16.344"N	103°40'11.784"W	0.00	
15049.50	90.000	269.284	10550.00	4622.46	-57.80	-4622.10	745837.60	541854.60	32°29'16.341"N	103°40'12.362"W	0.00	No. 4H PBHL

TARGETS

Name	MD [ft]	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
1) No. 4H PBHL	15049.50	10550.00	-57.80	-4622.10	745837.60	541854.60	32°29'16.341"N	103°40'12.362"W	point

SURVEY PROGRAM - Ref Wellbore: No. 4H PWB Ref Wellpath: Prelim_1

Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
3827.00	15049.50	NaviTrak (Standard)		No. 4H PWB

20" Diverter System

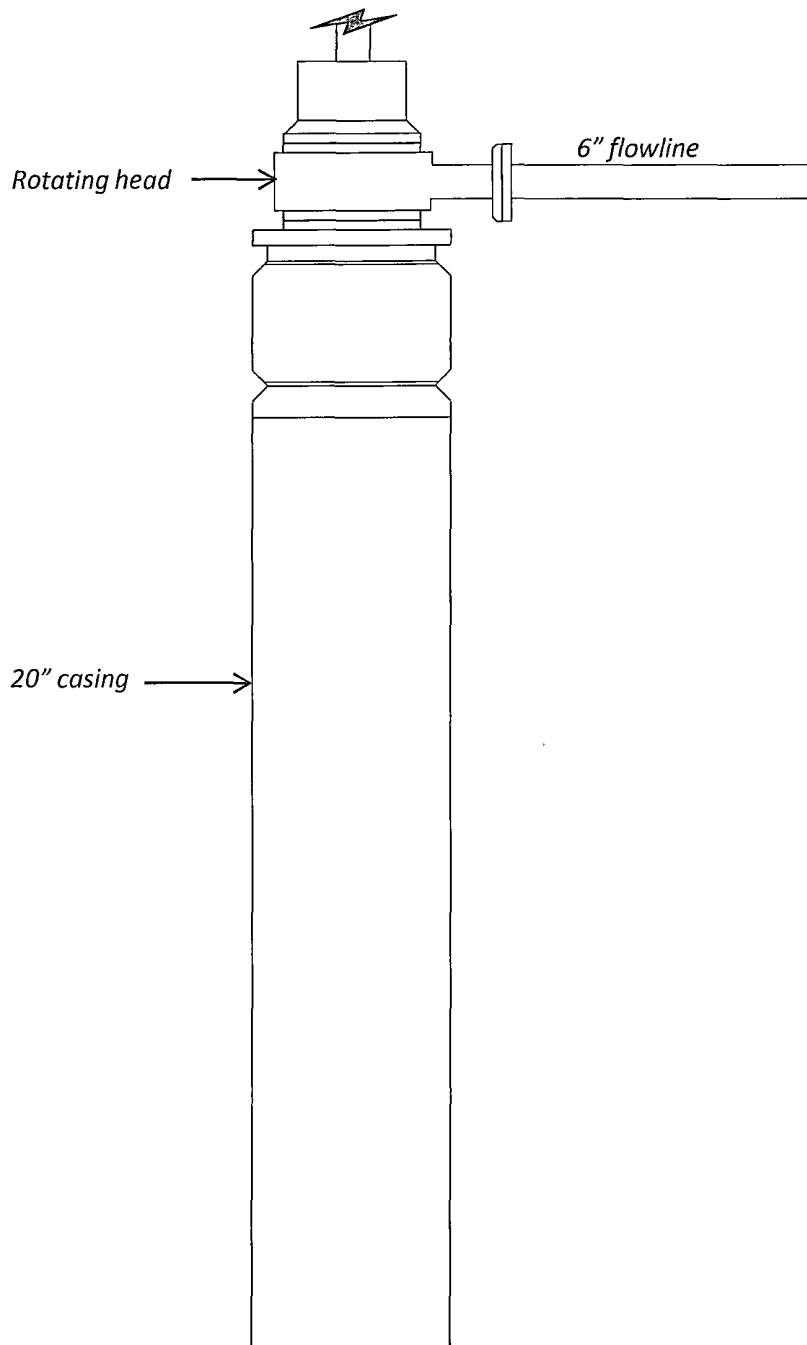


Exhibit E-1 – 20" Diverter System
Hat Mesa 10 Federal Com No. 4
Cimarex Energy Co. of Colorado
10-21S-32E
SHL 660 FSL & 330 FEL
BHL 660 FSL & 330 FWL
Lea County, NM

SR & A

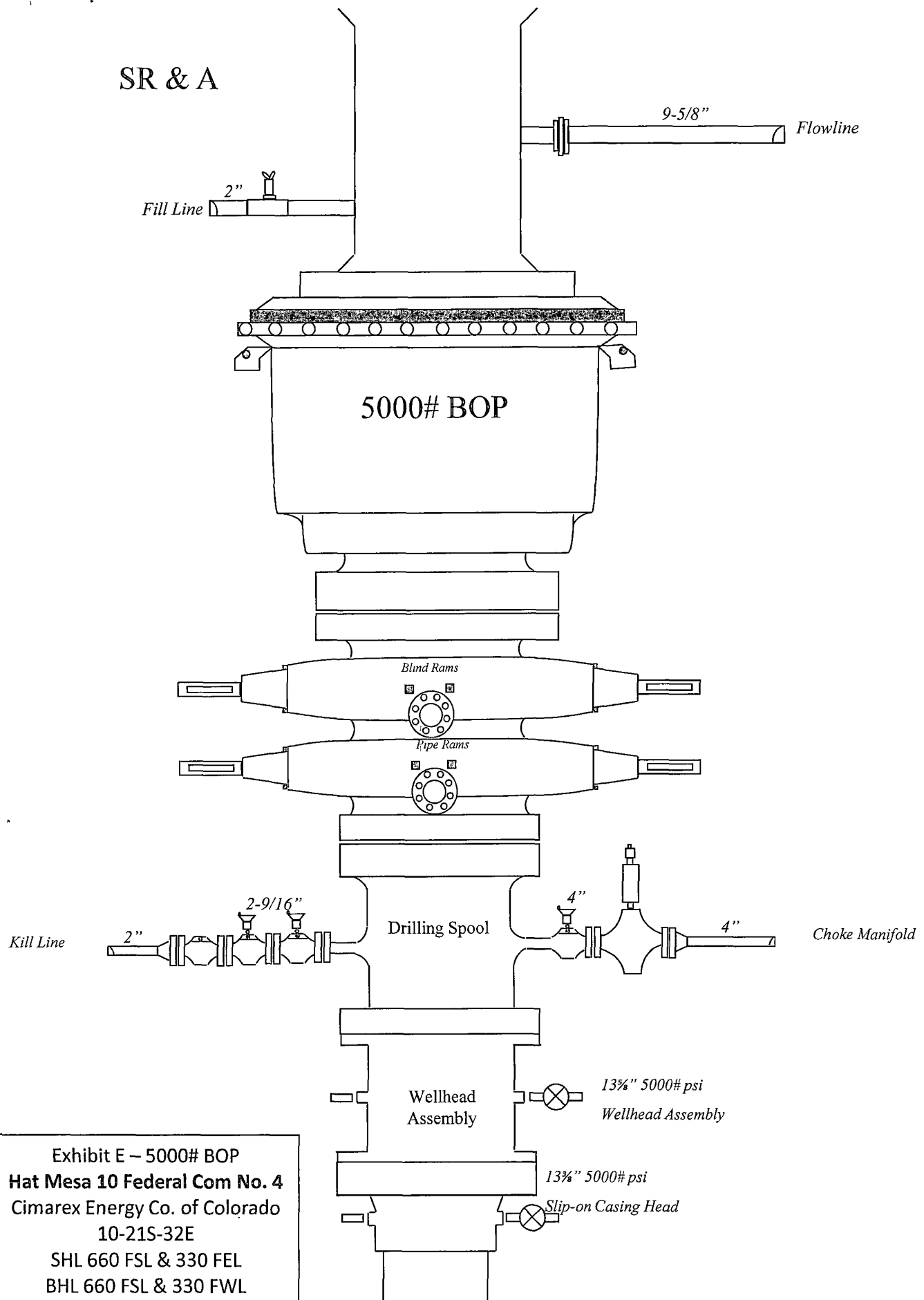
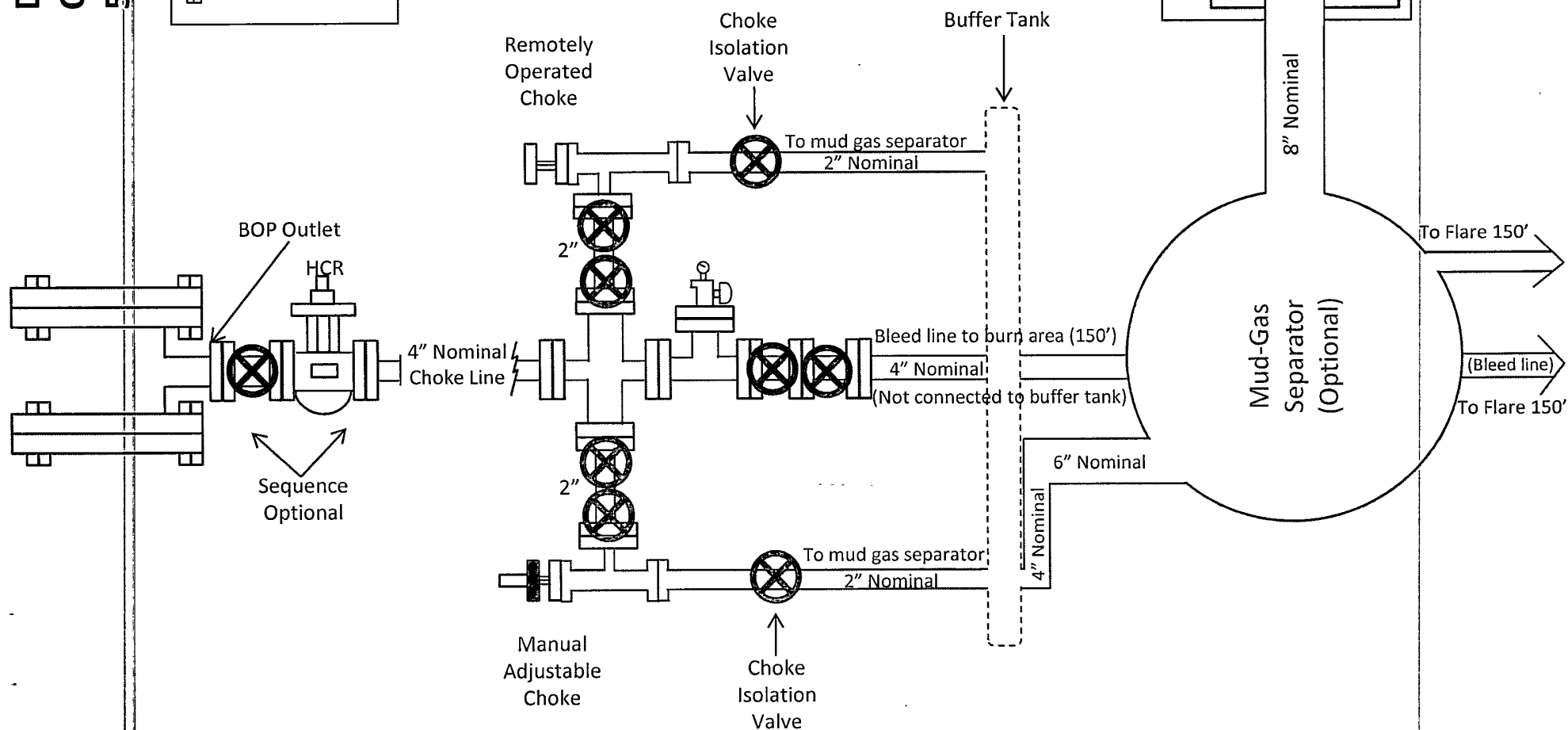
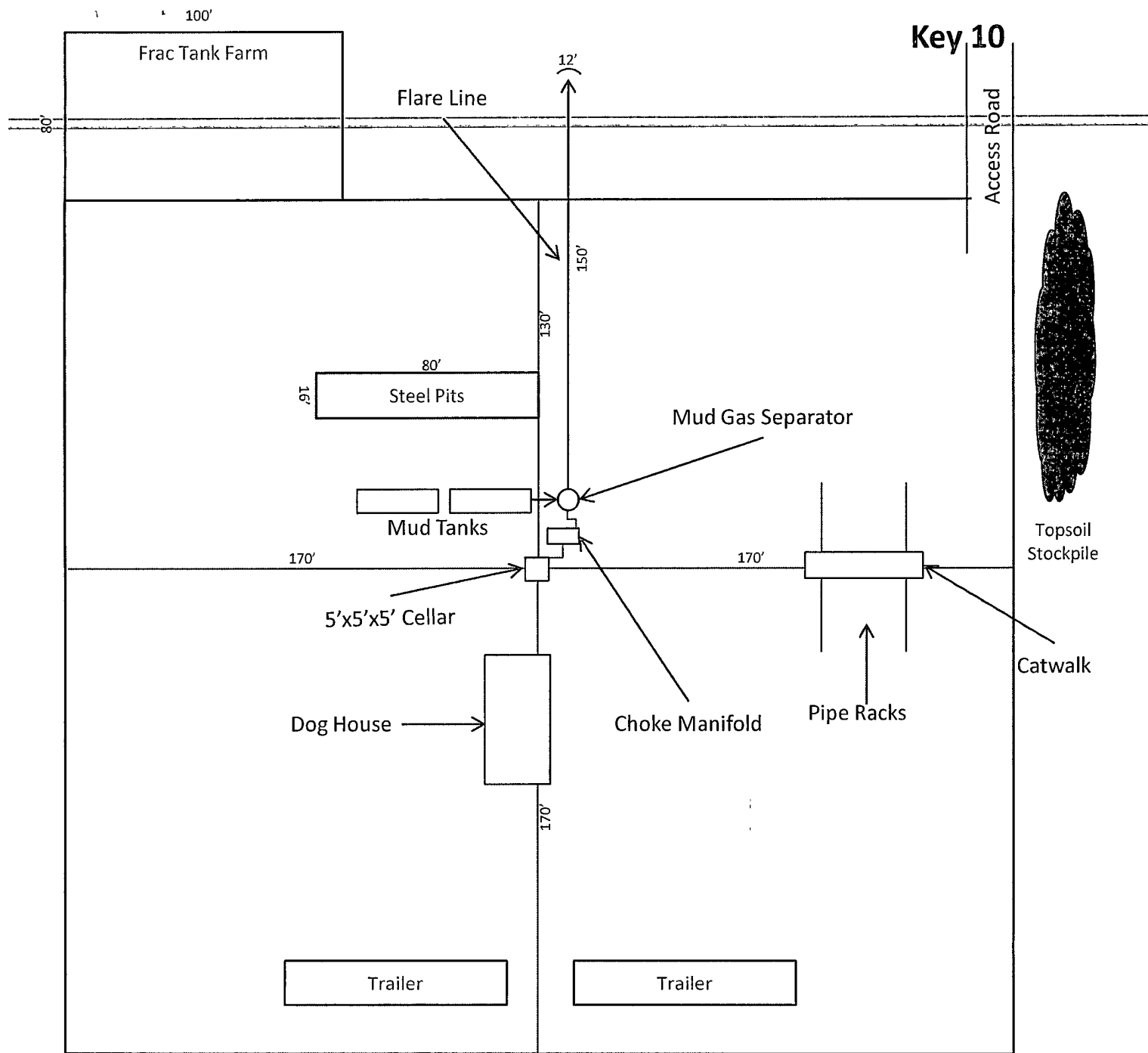


Exhibit E – 5000# BOP
Hat Mesa 10 Federal Com No. 4
Cimarex Energy Co. of Colorado
10-21S-32E
SHL 660 FSL & 330 FEL
BHL 660 FSL & 330 FWL
Lea County, NM

Drilling Operations Choke Manifold 5M-Service

Exhibit E-2 – Choke Manifold Diagram
Hat Mesa 10 Federal Com No. 4
Cimarex Energy Co. of Colorado
10-215-32E
SHL 660 FSL & 330 FEL
BHL 660 FSL & 330 FWL
Lea County, NM





Key 10

1"=50'

N
↑

Exhibit D – Rig Diagram
Hat Mesa 10 Federal Com No. 4
 Cimarex Energy Co. of Colorado
 10-21S-32E
 SHL 660 FSL & 330 FEL
 BHL 660 FSL & 330 FWL
 Lea County, NM