

NO-HORRIS HOBBS OCD

FEB 23 2012

Form 3160-3
(April 2004)

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

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

RECEIVED

APPLICATION FOR PERMIT TO DRILL OR REENTER

1a Type of Work ☒ DRILL ☐ REENTER		5. Lease Serial No NM-0392082-A/NM-120910	
1b Type of Well ☒ Oil Well ☐ Gas Well ☐ Other ☒ Single Zone ☐ Multiple Zone		6 If Indian, Allottee or Tribe Name	
2. Name of Operator Cimarex Energy Co. of Colorado		7 If Unit or CA Agreement, Name and No.	
3a Address 600 N. Marienfeld St., Ste. 600; Midland, TX 79701		8 Lease Name and Well No Hallertau 5 Federal Com No. 2H	
3b Phone No (include area code) 432-571-7800		9. API Well No. 30-025- 40454	
4 Location of Well (Report location clearly and in accordance with any State requirements. *) At Surface 220 FSL & 2080 FEL Unit D At proposed prod Zone 330 FNL & 1980 FEL Unit B Horizontal Bone Spring test		10. Field and Pool, or Exploratory Bone Spring Wildcat UPPER 9/14/12	
14. Distance in miles and direction from nearest town or post office*		11. Sec., T R M or Blk. and Survey or Area 5-26S-32E	
15 Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drg. unit line if any) 220'		12 County or Parish Lea	
16. No of acres in lease NM-0392082-A - 1720.49 acres NM-120910 - 1418.62 acres		13. State NM	
17. Spacing Unit dedicated to this well W2E2 160 acres		18 Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft 255'	
19 Proposed Depth 13623' Per Operator 2/8/12 MD 13394 TVD 8952		20. BLM/BIA Bond No. on File NM-2575	
21. Elevations (Show whether DF, KDB, RT, GL, etc) 3257' GR		22 Approximate date work will start* 2.1.11	
		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 | 4 Bond to cover the operations unless covered by an existing bond on file (see Item 20 above) |
| 2 A Drilling Plan | 5 Operator Certification |
| 3 A Surface Use Plan (if the location is on National Forest System Lands, the SUPO shall be filed with the appropriate Forest Service Office) | 6 Such other site specific information and/or plans as may be required by the authorized officer |

25. Signature 	Name (Printed/Typed) Terri Stathem	Date 12.14.11
Title Regulatory Analyst		
Approved By (Signature) Is/ Don Peterson	Name (Printed/Typed)	Date
Title FIELD MANAGER	Office CARLSBAD FIELD OFFICE	

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

Conditions of approval, if any, are attached

Title 18 U S 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)

KZ 02/27/12

Carlsbad Controlled Water Basin

SEE ATTACHED FOR
CONDITIONS OF APPROVAL

Approval Subject to General Requirements
& Special Stipulations Attached

FEB 28 2012

Application to Drill
Hallertau 5 Federal Com No. 2H
Cimarex Energy Co. of Colorado
Unit O, Section 5
T26S-R32E; Lea County, NM

HOBBS OCD

FEB 23 2012

RECEIVED

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

1 Location: SHL 220 FSL & 2080 FEL
BHL 330 FNL & 1980 FEL

2 Elevation above sea level: 3257 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 13394 TVD 8952

6 Estimated tops of geological markers:

Rustler	1100	Cherry Canyon	5567
T. Salt	1417	Basal Brushy Canyon	8252
B. Salt	4227	Bone Spring	8447
Delaware	4432	FBSS	9452

7 Possible mineral bearing formation:

Delaware	Oil
Bone Spring	Oil

8 Proposed Mud Circulating System:

Depth	Mud Wt	Visc	Fluid Loss	Type Mud
0' to 1100' 1190	8.4 - 8.6	28	NC	FW
1100' to 4800' 4400	10.0	30-32	NC	Brine water
4800' to 13394' 13623' per operator 2/8/12	8.4 - 9.5	30-32	NC	FW, brine

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

Drill surface and intermediate holes and set casing. Drill 8 3/4" hole to KOP @ 8666 and drill through curve to lateral TD @ 13394 MD, 8952 TVD. Set 5 1/2" 17# P110 LTC casing from 0-13394. Cement as shown in cementing proposal.

13623'
per operator
2/8/12
MMA
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Cimarex Energy Co. of Colorado
Unit O, Section 5
T26S-R32E; Lea County, NM

9 Casing & Cementing Program:

String	Hole Size	Depth	Casing OD	Weight	Collar	Grade
Surface	17½"	0' to 1190' 1100'	New 13⅝"	54.5#	STC	J-55
Intermediate	12¼"	0' to 4400' 4800'	New 9⅝"	40.36#	LTC	J-55
Production	8¾"	0' to 13394'	New 5½"	17#	LTC	P-110

13623' Per Operator 2/21/12

10 Cementing:

Surface 835SKS Class C Cement + 4% Bentomite + 2% CaCl 13.5ppg 1.75yield 100% Excess, Circulate Cmmt to Surface
TOC Surface Centralizers per Onshorder 2.III.B.1.f

Intermediate Lead:1240SKS Type C Cement, 5% NaCl WOW, D132 (ext) 27.522 lb/sk, D020 (ext) 6%, D042 (ext) 3lb/sk, D130 (LCM) 0.125lb/sk 12.6ppg 2.06yield 70% Excess
Tail:200SKS Type C Cement 14.8ppg 1.33 yield 25% Excess
TOC Surface

Production Lead:945SKS Type H cement, NaCl 5% WOW, D132 (ext) 39.39lb/sk, D020 (ext) 10%, D046 Antifoam 0.20%, D130 LCM 0.125lb/sk, D112 1% 11.8ppg 2.56 yield 45% Excess
Tail:745SKS D049 Cement, 1.3% NaCl, 0.4% D207 fluid loss, 0.2% AnitFoam, 0.3% retarder, 2.0% D174 Expanding Agent 14.5ppg 1.44 yield 25% Excess
TOC 4600' 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 275 according to the State Engineer. Fresh water zones will be protected by setting 13⅝" casing at 1100' and cementing to surface. Hydrocarbon zones will be protected by setting 9⅝" casing at 4800' and cementing to surface, and by setting 5½" casing at 13394' and cementing to 4600'.

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

11 Pressure control Equipment:

A 13⅝" 5000 PSI working pressure BOP tested to 3000 psi 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 as needed. 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 to be used when 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. From the base of the 13⅝" casing through the running of production casing, the well will be equipped with a 5000 psi BOP system tested to 3000 psi.

BOPs will be tested by an independent service company to 250 psi low and 3000 psi high. Hydril will be tested to 250 psi low and 1500 psi high.

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T26S-R32E; Lea County, NM

12 Testing, Logging and Coring Program: *See COA*

- A. Mud logging program: 2 man unit from 4800' to TD
- B. Electric logging program: CNL / LDT / CAL / GR, DLL / CAL / GR
- C. No DSTs or cores are planned at this time.

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 **4028 psi** Estimated BHT **150°**

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.

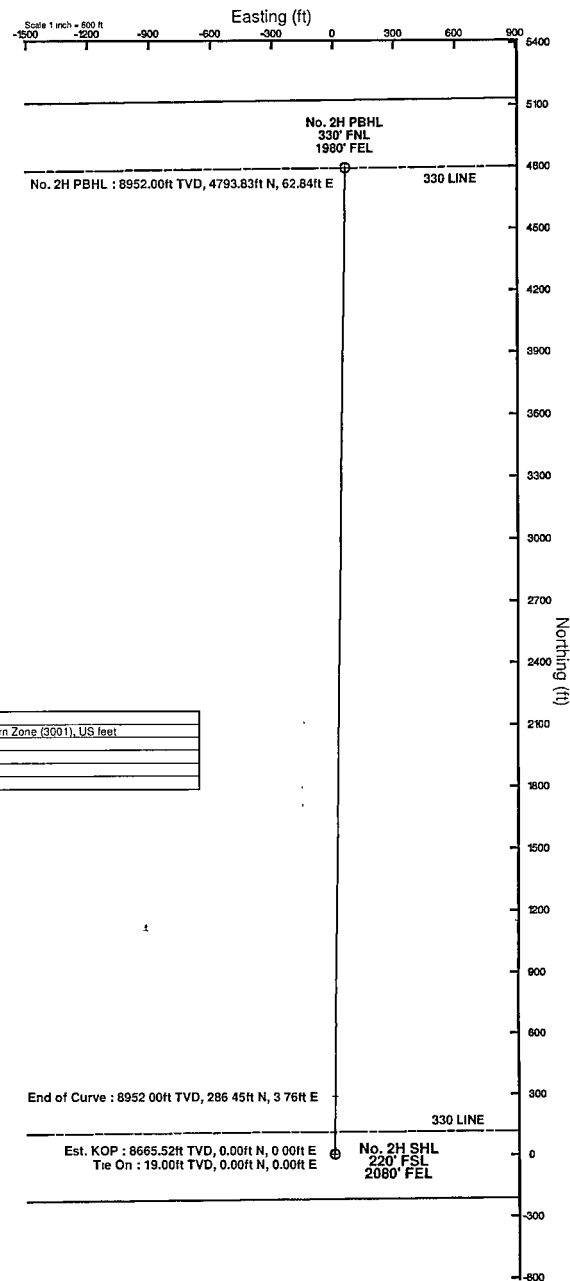
Location: Lea County, NM
Field: (Hallertau) Sec 5, T26S, R32E
Facility: Hallertau 5 Federal No. 4H

Slot: No. 2H SHL
Well: No. 2H
Wellbore: No. 2H PWB



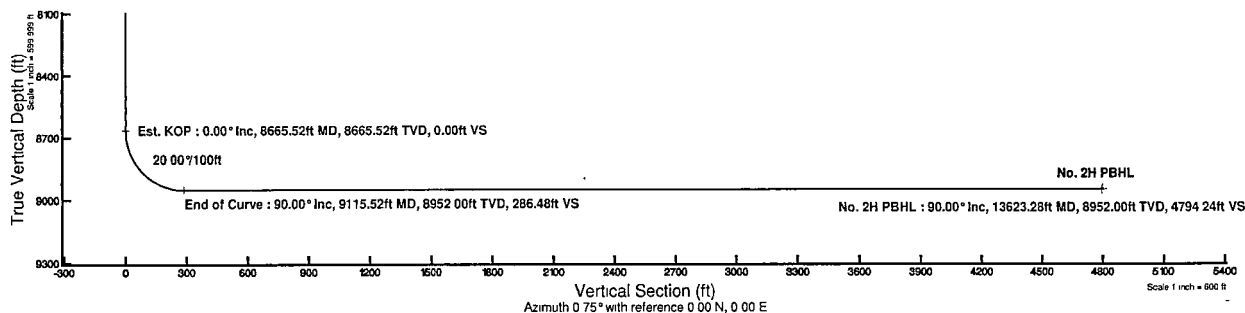
Well Profile Data

Design Comment	MD (ft)	Inc (°)	Az (°)	TVD (ft)	Local N (ft)	Local E (ft)	DLS (%/100ft)	VS (ft)
Tie On	19.00	0.000	0.751	19.00	0.00	0.00	0.00	0.00
Est. KOP	8665.52	0.000	0.751	8665.52	0.00	0.00	0.00	0.00
End of Curve	9115.52	90.000	0.751	8952.00	286.45	3.76	20.00	286.48
No. 2H PBHL	13623.28	90.000	0.751	8952.00	4793.83	62.84	0.00	4794.24



BGGM (1945.0 to 2012.0) Dip 60.01° Field 48513.6 nT
Magnetic North is 7.62 degrees East of True North (at 11/22/2011)
Grid North is 0.34 degrees East of True North
To correct azimuth from True to Grid subtract 0.34 degrees
To correct azimuth from Magnetic to Grid add 7.28 degrees
For example if the Magnetic North Azimuth = 90 degs, then the Grid North Azimuth = 90 + 7.28 = 97.28

Plot reference wellpath is Prelim 1	
True vertical depths are referenced to Rig on No. 2H SHL (KB)	Grid System NAD83 / TM New Mexico SP, Eastern Zone (3001), US feet
Measured depths are referenced to Rig on No. 2H SHL (KB)	North Reference Grid north
Fig on No. 2H SHL (KB) to Mean Sea Level 3276 feet	Scale True distance
Mean Sea Level to Mud line (At Slot No. 2H SHL) 0 feet	Depths are in feet
Coordinates are in feet referenced to Slot	Created by calphik on 11/22/2011





Planned Wellpath Report

Prelim_1
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REFERENCE WELLPATH IDENTIFICATION			
Operator	Cimarex Energy Co.	Slot	No. 2H SHL
Area	Lea County, NM	Well	No. 2H
Field	(Hallertau) Sec 5, T26S, R32E	Wellbore	No. 2H PWB
Facility	Hallertau 5 Federal No. 4H		

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	Calphik
Scale	0.999954	Report Generated	11/22/2011 at 10:34:06 PM
Convergence at slot	0.34° East	Database/Source file	WellArchitectDB/No. 2H_PWB.xml

WELLPATH LOCATION						
	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	-107.71	2579.94	738963.00	388159.56	32°03'55.889"N	103°41'43.292"W
Facility Reference Pt			736383.19	388267.27	32°03'57.105"N	103°42'13.264"W
Field Reference Pt			736383.19	388267.27	32°03'57.105"N	103°42'13.264"W

WELLPATH DATUM			
Calculation method	Minimum curvature	Rig on No. 2H SHL (KB) to GL	3276.00ft
Horizontal Reference Pt	Slot	Rig on No. 2H SHL (KB) to Mean Sea Level	3276.00ft
Vertical Reference Pt	Rig on No. 2H SHL (KB)	Rig on No. 2H SHL (KB) to Mud Line at Slot (No. 2H SHL)	3276.00ft
MD Reference Pt	Rig on No. 2H SHL (KB)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	0.75°



Planned Wellpath Report

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Area	Lea County, NM	Well	No. 2H
Field	(Hallertau) Sec 5, T26S, R32E	Wellbore	No. 2H PWB
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WELLPATH DATA (143 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	0.751	0.00	0.00	0.00	0.00	738963.00	388159.56	32°03'55.889"N	103°41'43.292"W	0.00	
19.00	0.000	0.751	19.00	0.00	0.00	0.00	738963.00	388159.56	32°03'55.889"N	103°41'43.292"W	0.00	Tie On
119.00†	0.000	0.751	119.00	0.00	0.00	0.00	738963.00	388159.56	32°03'55.889"N	103°41'43.292"W	0.00	
219.00†	0.000	0.751	219.00	0.00	0.00	0.00	738963.00	388159.56	32°03'55.889"N	103°41'43.292"W	0.00	
319.00†	0.000	0.751	319.00	0.00	0.00	0.00	738963.00	388159.56	32°03'55.889"N	103°41'43.292"W	0.00	
419.00†	0.000	0.751	419.00	0.00	0.00	0.00	738963.00	388159.56	32°03'55.889"N	103°41'43.292"W	0.00	
519.00†	0.000	0.751	519.00	0.00	0.00	0.00	738963.00	388159.56	32°03'55.889"N	103°41'43.292"W	0.00	
619.00†	0.000	0.751	619.00	0.00	0.00	0.00	738963.00	388159.56	32°03'55.889"N	103°41'43.292"W	0.00	
719.00†	0.000	0.751	719.00	0.00	0.00	0.00	738963.00	388159.56	32°03'55.889"N	103°41'43.292"W	0.00	
819.00†	0.000	-0.751	819.00	0.00	0.00	0.00	738963.00	388159.56	32°03'55.889"N	103°41'43.292"W	0.00	
919.00†	0.000	0.751	919.00	0.00	0.00	0.00	738963.00	388159.56	32°03'55.889"N	103°41'43.292"W	0.00	
1019.00†	0.000	0.751	1019.00	0.00	0.00	0.00	738963.00	388159.56	32°03'55.889"N	103°41'43.292"W	0.00	
1119.00†	0.000	0.751	1119.00	0.00	0.00	0.00	738963.00	388159.56	32°03'55.889"N	103°41'43.292"W	0.00	
1219.00†	0.000	0.751	1219.00	0.00	0.00	0.00	738963.00	388159.56	32°03'55.889"N	103°41'43.292"W	0.00	
1319.00†	0.000	0.751	1319.00	0.00	0.00	0.00	738963.00	388159.56	32°03'55.889"N	103°41'43.292"W	0.00	
1419.00†	0.000	0.751	1419.00	0.00	0.00	0.00	738963.00	388159.56	32°03'55.889"N	103°41'43.292"W	0.00	
1519.00†	0.000	0.751	1519.00	0.00	0.00	0.00	738963.00	388159.56	32°03'55.889"N	103°41'43.292"W	0.00	
1619.00†	0.000	0.751	1619.00	0.00	0.00	0.00	738963.00	388159.56	32°03'55.889"N	103°41'43.292"W	0.00	
1719.00†	0.000	0.751	1719.00	0.00	0.00	0.00	738963.00	388159.56	32°03'55.889"N	103°41'43.292"W	0.00	
1819.00†	0.000	0.751	1819.00	0.00	0.00	0.00	738963.00	388159.56	32°03'55.889"N	103°41'43.292"W	0.00	
1919.00†	0.000	0.751	1919.00	0.00	0.00	0.00	738963.00	388159.56	32°03'55.889"N	103°41'43.292"W	0.00	
2019.00†	0.000	0.751	2019.00	0.00	0.00	0.00	738963.00	388159.56	32°03'55.889"N	103°41'43.292"W	0.00	
2119.00†	0.000	0.751	2119.00	0.00	0.00	0.00	738963.00	388159.56	32°03'55.889"N	103°41'43.292"W	0.00	
2219.00†	0.000	0.751	2219.00	0.00	0.00	0.00	738963.00	388159.56	32°03'55.889"N	103°41'43.292"W	0.00	
2319.00†	0.000	0.751	2319.00	0.00	0.00	0.00	738963.00	388159.56	32°03'55.889"N	103°41'43.292"W	0.00	
2419.00†	0.000	0.751	2419.00	0.00	0.00	0.00	738963.00	388159.56	32°03'55.889"N	103°41'43.292"W	0.00	
2519.00†	0.000	0.751	2519.00	0.00	0.00	0.00	738963.00	388159.56	32°03'55.889"N	103°41'43.292"W	0.00	
2619.00†	0.000	0.751	2619.00	0.00	0.00	0.00	738963.00	388159.56	32°03'55.889"N	103°41'43.292"W	0.00	
2719.00†	0.000	0.751	2719.00	0.00	0.00	0.00	738963.00	388159.56	32°03'55.889"N	103°41'43.292"W	0.00	
2819.00†	0.000	0.751	2819.00	0.00	0.00	0.00	738963.00	388159.56	32°03'55.889"N	103°41'43.292"W	0.00	
2919.00†	0.000	0.751	2919.00	0.00	0.00	0.00	738963.00	388159.56	32°03'55.889"N	103°41'43.292"W	0.00	
3019.00†	0.000	0.751	3019.00	0.00	0.00	0.00	738963.00	388159.56	32°03'55.889"N	103°41'43.292"W	0.00	
3119.00†	0.000	0.751	3119.00	0.00	0.00	0.00	738963.00	388159.56	32°03'55.889"N	103°41'43.292"W	0.00	
3219.00†	0.000	0.751	3219.00	0.00	0.00	0.00	738963.00	388159.56	32°03'55.889"N	103°41'43.292"W	0.00	
3319.00†	0.000	0.751	3319.00	0.00	0.00	0.00	738963.00	388159.56	32°03'55.889"N	103°41'43.292"W	0.00	
3419.00†	0.000	0.751	3419.00	0.00	0.00	0.00	738963.00	388159.56	32°03'55.889"N	103°41'43.292"W	0.00	
3519.00†	0.000	0.751	3519.00	0.00	0.00	0.00	738963.00	388159.56	32°03'55.889"N	103°41'43.292"W	0.00	
3619.00†	0.000	0.751	3619.00	0.00	0.00	0.00	738963.00	388159.56	32°03'55.889"N	103°41'43.292"W	0.00	
3719.00†	0.000	0.751	3719.00	0.00	0.00	0.00	738963.00	388159.56	32°03'55.889"N	103°41'43.292"W	0.00	
3819.00†	0.000	0.751	3819.00	0.00	0.00	0.00	738963.00	388159.56	32°03'55.889"N	103°41'43.292"W	0.00	
3919.00†	0.000	0.751	3919.00	0.00	0.00	0.00	738963.00	388159.56	32°03'55.889"N	103°41'43.292"W	0.00	
4019.00†	0.000	0.751	4019.00	0.00	0.00	0.00	738963.00	388159.56	32°03'55.889"N	103°41'43.292"W	0.00	
4119.00†	0.000	0.751	4119.00	0.00	0.00	0.00	738963.00	388159.56	32°03'55.889"N	103°41'43.292"W	0.00	
4219.00†	0.000	0.751	4219.00	0.00	0.00	0.00	738963.00	388159.56	32°03'55.889"N	103°41'43.292"W	0.00	
4319.00†	0.000	0.751	4319.00	0.00	0.00	0.00	738963.00	388159.56	32°03'55.889"N	103°41'43.292"W	0.00	



Planned Wellpath Report

Prelim_1
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REFERENCE WELLPATH IDENTIFICATION			
Operator	Cimarex Energy Co.	Slot	No. 2H SHL
Area	Lea County, NM	Well	No. 2H
Field	(Hallertau) Sec 5, T26S, R32E	Wellbore	No. 2H PWB
Facility	Hallertau 5 Federal No. 4H		

WELLPATH DATA (143 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
4419.00†	0.000	0.751	4419.00	0.00	0.00	0.00	738963.00	388159.56	32°03'55.889"N	103°41'43.292"W	0.00	
4519.00†	0.000	0.751	4519.00	0.00	0.00	0.00	738963.00	388159.56	32°03'55.889"N	103°41'43.292"W	0.00	
4619.00†	0.000	0.751	4619.00	0.00	0.00	0.00	738963.00	388159.56	32°03'55.889"N	103°41'43.292"W	0.00	
4719.00†	0.000	0.751	4719.00	0.00	0.00	0.00	738963.00	388159.56	32°03'55.889"N	103°41'43.292"W	0.00	
4819.00†	0.000	0.751	4819.00	0.00	0.00	0.00	738963.00	388159.56	32°03'55.889"N	103°41'43.292"W	0.00	
4919.00†	0.000	0.751	4919.00	0.00	0.00	0.00	738963.00	388159.56	32°03'55.889"N	103°41'43.292"W	0.00	
5019.00†	0.000	0.751	5019.00	0.00	0.00	0.00	738963.00	388159.56	32°03'55.889"N	103°41'43.292"W	0.00	
5119.00†	0.000	0.751	5119.00	0.00	0.00	0.00	738963.00	388159.56	32°03'55.889"N	103°41'43.292"W	0.00	
5219.00†	0.000	0.751	5219.00	0.00	0.00	0.00	738963.00	388159.56	32°03'55.889"N	103°41'43.292"W	0.00	
5319.00†	0.000	0.751	5319.00	0.00	0.00	0.00	738963.00	388159.56	32°03'55.889"N	103°41'43.292"W	0.00	
5419.00†	0.000	0.751	5419.00	0.00	0.00	0.00	738963.00	388159.56	32°03'55.889"N	103°41'43.292"W	0.00	
5519.00†	0.000	0.751	5519.00	0.00	0.00	0.00	738963.00	388159.56	32°03'55.889"N	103°41'43.292"W	0.00	
5619.00†	0.000	0.751	5619.00	0.00	0.00	0.00	738963.00	388159.56	32°03'55.889"N	103°41'43.292"W	0.00	
5719.00†	0.000	0.751	5719.00	0.00	0.00	0.00	738963.00	388159.56	32°03'55.889"N	103°41'43.292"W	0.00	
5819.00†	0.000	0.751	5819.00	0.00	0.00	0.00	738963.00	388159.56	32°03'55.889"N	103°41'43.292"W	0.00	
5919.00†	0.000	0.751	5919.00	0.00	0.00	0.00	738963.00	388159.56	32°03'55.889"N	103°41'43.292"W	0.00	
6019.00†	0.000	0.751	6019.00	0.00	0.00	0.00	738963.00	388159.56	32°03'55.889"N	103°41'43.292"W	0.00	
6119.00†	0.000	0.751	6119.00	0.00	0.00	0.00	738963.00	388159.56	32°03'55.889"N	103°41'43.292"W	0.00	
6219.00†	0.000	0.751	6219.00	0.00	0.00	0.00	738963.00	388159.56	32°03'55.889"N	103°41'43.292"W	0.00	
6319.00†	0.000	0.751	6319.00	0.00	0.00	0.00	738963.00	388159.56	32°03'55.889"N	103°41'43.292"W	0.00	
6419.00†	0.000	0.751	6419.00	0.00	0.00	0.00	738963.00	388159.56	32°03'55.889"N	103°41'43.292"W	0.00	
6519.00†	0.000	0.751	6519.00	0.00	0.00	0.00	738963.00	388159.56	32°03'55.889"N	103°41'43.292"W	0.00	
6619.00†	0.000	0.751	6619.00	0.00	0.00	0.00	738963.00	388159.56	32°03'55.889"N	103°41'43.292"W	0.00	
6719.00†	0.000	0.751	6719.00	0.00	0.00	0.00	738963.00	388159.56	32°03'55.889"N	103°41'43.292"W	0.00	
6819.00†	0.000	0.751	6819.00	0.00	0.00	0.00	738963.00	388159.56	32°03'55.889"N	103°41'43.292"W	0.00	
6919.00†	0.000	0.751	6919.00	0.00	0.00	0.00	738963.00	388159.56	32°03'55.889"N	103°41'43.292"W	0.00	
7019.00†	0.000	0.751	7019.00	0.00	0.00	0.00	738963.00	388159.56	32°03'55.889"N	103°41'43.292"W	0.00	
7119.00†	0.000	0.751	7119.00	0.00	0.00	0.00	738963.00	388159.56	32°03'55.889"N	103°41'43.292"W	0.00	
7219.00†	0.000	0.751	7219.00	0.00	0.00	0.00	738963.00	388159.56	32°03'55.889"N	103°41'43.292"W	0.00	
7319.00†	0.000	0.751	7319.00	0.00	0.00	0.00	738963.00	388159.56	32°03'55.889"N	103°41'43.292"W	0.00	
7419.00†	0.000	0.751	7419.00	0.00	0.00	0.00	738963.00	388159.56	32°03'55.889"N	103°41'43.292"W	0.00	
7519.00†	0.000	0.751	7519.00	0.00	0.00	0.00	738963.00	388159.56	32°03'55.889"N	103°41'43.292"W	0.00	
7619.00†	0.000	0.751	7619.00	0.00	0.00	0.00	738963.00	388159.56	32°03'55.889"N	103°41'43.292"W	0.00	
7719.00†	0.000	0.751	7719.00	0.00	0.00	0.00	738963.00	388159.56	32°03'55.889"N	103°41'43.292"W	0.00	
7819.00†	0.000	0.751	7819.00	0.00	0.00	0.00	738963.00	388159.56	32°03'55.889"N	103°41'43.292"W	0.00	
7919.00†	0.000	0.751	7919.00	0.00	0.00	0.00	738963.00	388159.56	32°03'55.889"N	103°41'43.292"W	0.00	
8019.00†	0.000	0.751	8019.00	0.00	0.00	0.00	738963.00	388159.56	32°03'55.889"N	103°41'43.292"W	0.00	
8119.00†	0.000	0.751	8119.00	0.00	0.00	0.00	738963.00	388159.56	32°03'55.889"N	103°41'43.292"W	0.00	
8219.00†	0.000	0.751	8219.00	0.00	0.00	0.00	738963.00	388159.56	32°03'55.889"N	103°41'43.292"W	0.00	
8319.00†	0.000	0.751	8319.00	0.00	0.00	0.00	738963.00	388159.56	32°03'55.889"N	103°41'43.292"W	0.00	
8419.00†	0.000	0.751	8419.00	0.00	0.00	0.00	738963.00	388159.56	32°03'55.889"N	103°41'43.292"W	0.00	
8447.00†	0.000	0.751	8447.00	0.00	0.00	0.00	738963.00	388159.56	32°03'55.889"N	103°41'43.292"W	0.00	Bone Spring
8519.00†	0.000	0.751	8519.00	0.00	0.00	0.00	738963.00	388159.56	32°03'55.889"N	103°41'43.292"W	0.00	
8552.00†	0.000	0.751	8552.00	0.00	0.00	0.00	738963.00	388159.56	32°03'55.889"N	103°41'43.292"W	0.00	Bone Spring A Shale
8619.00†	0.000	0.751	8619.00	0.00	0.00	0.00	738963.00	388159.56	32°03'55.889"N	103°41'43.292"W	0.00	



Planned Wellpath Report

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REFERENCE WELLPATH IDENTIFICATION			
Operator	Cimarex Energy Co.	Slot	No. 2H SHL
Area	Lea County, NM	Well	No. 2H
Field	(Hallertau) Sec 5, T26S, R32E	Wellbore	No. 2H PWB
Facility	Hallertau 5 Federal No. 4H		

WELLPATH DATA (143 stations) † = interpolated/extrapolated station												Comments
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]	
8665.52	0.000	0.751	8665.52	0.00	0.00	0.00	738963.00	388159.56	32°03'55.889"N	103°41'43.292"W	0.00	Est. KOP
8719.00†	10.696	0.751	8718.69	4.98	4.98	0.07	738963.06	388164.54	32°03'55.938"N	103°41'43.291"W	20.00	
8819.00†	30.696	0.751	8811.76	40.14	40.14	0.53	738963.52	388199.70	32°03'56.286"N	103°41'43.283"W	20.00	
8919.00†	50.696	0.751	8887.20	105.01	105.00	1.38	738964.37	388264.56	32°03'56.928"N	103°41'43.269"W	20.00	
9019.00†	70.696	0.751	8935.89	191.77	191.76	2.51	738965.51	388351.31	32°03'57.786"N	103°41'43.249"W	20.00	
9115.52	90.000	0.751	8952.00	286.48	286.45	3.76	738966.75	388446.00	32°03'58.723"N	103°41'43.229"W	20.00	End of Curve
9119.00†	90.000	0.751	8952.00	289.96	289.93	3.80	738966.80	388449.48	32°03'58.758"N	103°41'43.228"W	0.00	
9219.00†	90.000	0.751	8952.00	389.96	389.92	5.11	738968.11	388549.47	32°03'59.747"N	103°41'43.206"W	0.00	
9319.00†	90.000	0.751	8952.00	489.96	489.92	6.42	738969.42	388649.46	32°04'00.736"N	103°41'43.184"W	0.00	
9419.00†	90.000	0.751	8952.00	589.96	589.91	7.73	738970.73	388749.44	32°04'01.726"N	103°41'43.161"W	0.00	
9519.00†	90.000	0.751	8952.00	689.96	689.90	9.04	738972.04	388849.43	32°04'02.715"N	103°41'43.139"W	0.00	
9619.00†	90.000	0.751	8952.00	789.96	789.89	10.35	738973.35	388949.41	32°04'03.704"N	103°41'43.117"W	0.00	
9719.00†	90.000	0.751	8952.00	889.96	889.88	11.67	738974.66	389049.40	32°04'04.694"N	103°41'43.095"W	0.00	
9819.00†	90.000	0.751	8952.00	989.96	989.87	12.98	738975.97	389149.39	32°04'05.683"N	103°41'43.073"W	0.00	
9919.00†	90.000	0.751	8952.00	1089.96	1089.86	14.29	738977.28	389249.37	32°04'06.672"N	103°41'43.051"W	0.00	
10019.00†	90.000	0.751	8952.00	1189.96	1189.86	15.60	738978.60	389349.36	32°04'07.662"N	103°41'43.029"W	0.00	
10119.00†	90.000	0.751	8952.00	1289.96	1289.85	16.91	738979.91	389449.35	32°04'08.651"N	103°41'43.007"W	0.00	
10219.00†	90.000	0.751	8952.00	1389.96	1389.84	18.22	738981.22	389549.33	32°04'09.640"N	103°41'42.985"W	0.00	
10319.00†	90.000	0.751	8952.00	1489.96	1489.83	19.53	738982.53	389649.32	32°04'10.630"N	103°41'42.963"W	0.00	
10419.00†	90.000	0.751	8952.00	1589.96	1589.82	20.84	738983.84	389749.31	32°04'11.619"N	103°41'42.940"W	0.00	
10519.00†	90.000	0.751	8952.00	1689.96	1689.81	22.15	738985.15	389849.29	32°04'12.609"N	103°41'42.918"W	0.00	
10619.00†	90.000	0.751	8952.00	1789.96	1789.80	23.46	738986.46	389949.28	32°04'13.598"N	103°41'42.896"W	0.00	
10719.00†	90.000	0.751	8952.00	1889.96	1889.80	24.77	738987.77	390049.27	32°04'14.587"N	103°41'42.874"W	0.00	
10819.00†	90.000	0.751	8952.00	1989.96	1989.79	26.08	738989.08	390149.25	32°04'15.577"N	103°41'42.852"W	0.00	
10919.00†	90.000	0.751	8952.00	2089.96	2089.78	27.40	738990.39	390249.24	32°04'16.566"N	103°41'42.830"W	0.00	
11019.00†	90.000	0.751	8952.00	2189.96	2189.77	28.71	738991.70	390349.23	32°04'17.555"N	103°41'42.808"W	0.00	
11119.00†	90.000	0.751	8952.00	2289.96	2289.76	30.02	738993.01	390449.21	32°04'18.545"N	103°41'42.786"W	0.00	
11219.00†	90.000	0.751	8952.00	2389.96	2389.75	31.33	738994.32	390549.20	32°04'19.534"N	103°41'42.764"W	0.00	
11319.00†	90.000	0.751	8952.00	2489.96	2489.74	32.64	738995.63	390649.19	32°04'20.523"N	103°41'42.742"W	0.00	
11419.00†	90.000	0.751	8952.00	2589.96	2589.74	33.95	738996.95	390749.17	32°04'21.513"N	103°41'42.719"W	0.00	
11519.00†	90.000	0.751	8952.00	2689.96	2689.73	35.26	738998.26	390849.16	32°04'22.502"N	103°41'42.697"W	0.00	
11619.00†	90.000	0.751	8952.00	2789.96	2789.72	36.57	738999.57	390949.15	32°04'23.492"N	103°41'42.675"W	0.00	
11719.00†	90.000	0.751	8952.00	2889.96	2889.71	37.88	739000.88	391049.13	32°04'24.481"N	103°41'42.653"W	0.00	
11819.00†	90.000	0.751	8952.00	2989.96	2989.70	39.19	739002.19	391149.12	32°04'25.470"N	103°41'42.631"W	0.00	
11919.00†	90.000	0.751	8952.00	3089.96	3089.69	40.50	739003.50	391249.11	32°04'26.460"N	103°41'42.609"W	0.00	
12019.00†	90.000	0.751	8952.00	3189.96	3189.68	41.81	739004.81	391349.09	32°04'27.449"N	103°41'42.587"W	0.00	
12119.00†	90.000	0.751	8952.00	3289.96	3289.68	43.12	739006.12	391449.08	32°04'28.438"N	103°41'42.565"W	0.00	
12219.00†	90.000	0.751	8952.00	3389.96	3389.67	44.44	739007.43	391549.07	32°04'29.428"N	103°41'42.543"W	0.00	
12319.00†	90.000	0.751	8952.00	3489.96	3489.66	45.75	739008.74	391649.05	32°04'30.417"N	103°41'42.520"W	0.00	
12419.00†	90.000	0.751	8952.00	3589.96	3589.65	47.06	739010.05	391749.04	32°04'31.406"N	103°41'42.498"W	0.00	
12519.00†	90.000	0.751	8952.00	3689.96	3689.64	48.37	739011.36	391849.03	32°04'32.396"N	103°41'42.476"W	0.00	
12619.00†	90.000	0.751	8952.00	3789.96	3789.63	49.68	739012.67	391949.01	32°04'33.385"N	103°41'42.454"W	0.00	
12719.00†	90.000	0.751	8952.00	3889.96	3889.62	50.99	739013.99	392049.00	32°04'34.374"N	103°41'42.432"W	0.00	
12819.00†	90.000	0.751	8952.00	3989.96	3989.62	52.30	739015.30	392148.99	32°04'35.364"N	103°41'42.410"W	0.00	
12919.00†	90.000	0.751	8952.00	4089.96	4089.61	53.61	739016.61	392248.97	32°04'36.353"N	103°41'42.388"W	0.00	



Planned Wellpath Report

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REFERENCE WELLPATH IDENTIFICATION

Operator	Cimarex Energy Co.	Slot	No. 2H SHL
Area	Lea County, NM	Well	No. 2H
Field	(Hallertau) Sec 5, T26S, R32E	Wellbore	No. 2H PWB
Facility	Hallertau 5 Federal No. 4H		

WELLPATH DATA (143 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
13019.00†	90.000	0.751	8952.00	4189.96	4189.60	54.92	739017.92	392348.96	32°04'37.343"N	103°41'42.366"W	0.00	
13119.00†	90.000	0.751	8952.00	4289.96	4289.59	56.23	739019.23	392448.95	32°04'38.332"N	103°41'42.344"W	0.00	
13219.00†	90.000	0.751	8952.00	4389.96	4389.58	57.54	739020.54	392548.93	32°04'39.321"N	103°41'42.321"W	0.00	
13319.00†	90.000	0.751	8952.00	4489.96	4489.57	58.85	739021.85	392648.92	32°04'40.311"N	103°41'42.299"W	0.00	
13419.00†	90.000	0.751	8952.00	4589.96	4589.56	60.17	739023.16	392748.91	32°04'41.300"N	103°41'42.277"W	0.00	
13519.00†	90.000	0.751	8952.00	4689.96	4689.55	61.48	739024.47	392848.89	32°04'42.289"N	103°41'42.255"W	0.00	
13619.00†	90.000	0.751	8952.00	4789.96	4789.55	62.79	739025.78	392948.88	32°04'43.279"N	103°41'42.233"W	0.00	
13623.28	90.000	0.751	8952.00	4794.24	4793.83	62.84	739025.84	392953.16	32°04'43.321"N	103°41'42.232"W	0.00	No. 2H PBHL

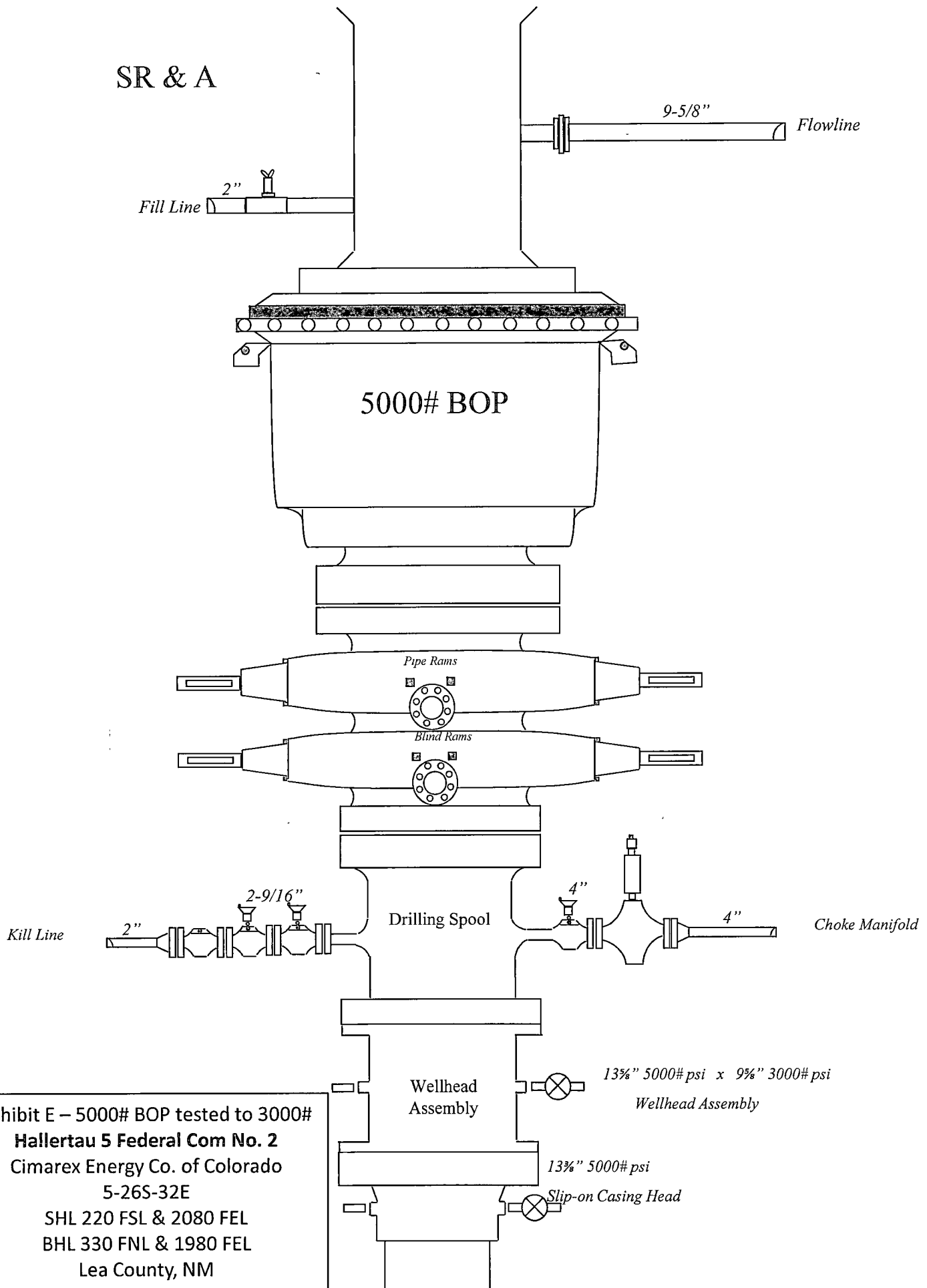
TARGETS

Name	MD [ft]	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
1) No. 2H PBHL	13623.28	8952.00	4793.83	62.84	739025.84	392953.16	32°04'43.321"N	103°41'42.232"W	point

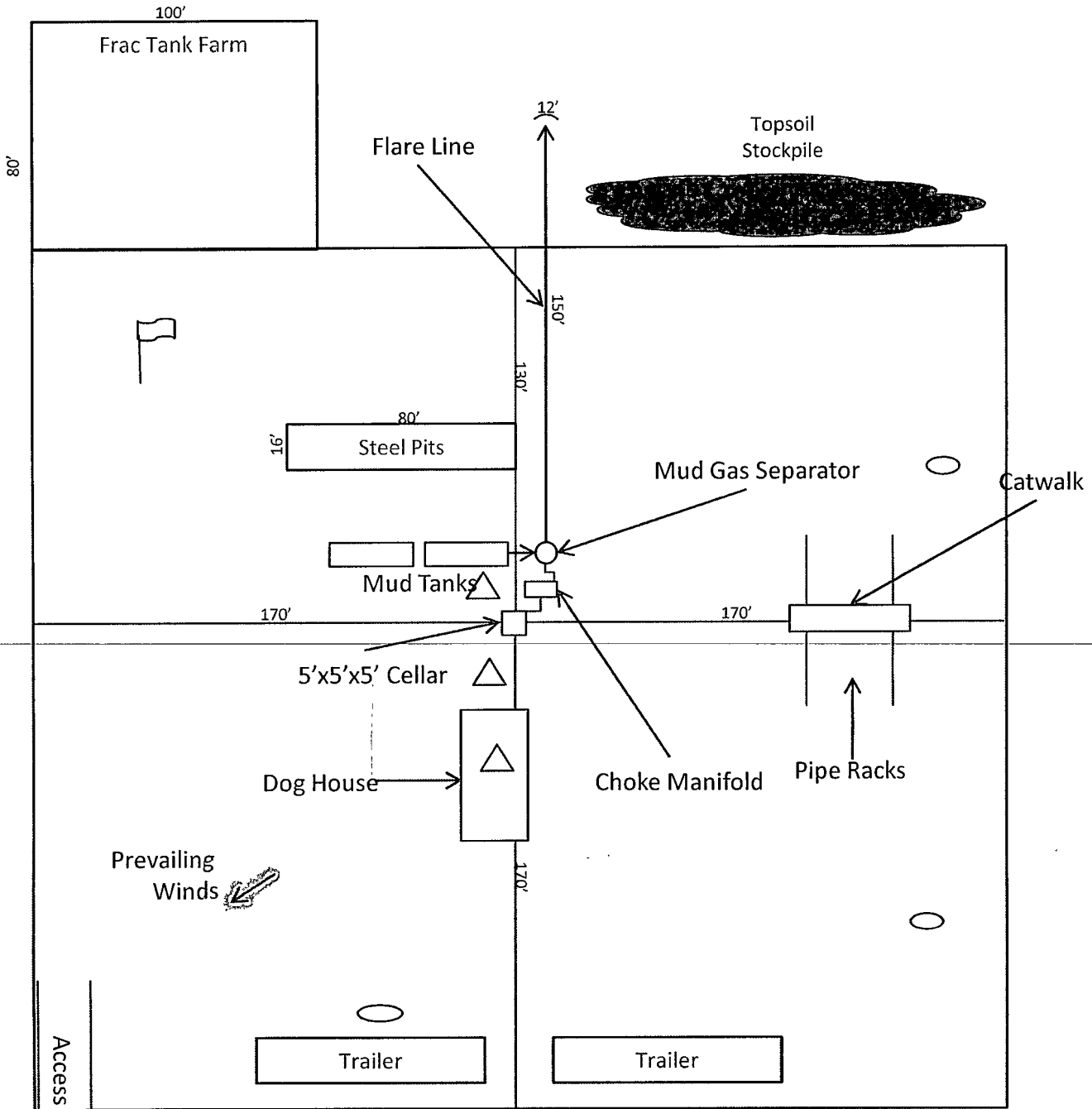
SURVEY PROGRAM - Ref Wellbore: No. 2H PWB Ref Wellpath: Prelim_1

Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
3276.00	13623.28	NaviTrak (Standard)		No. 2H PWB

SR & A



Key 880



N

1" = 50'

-  Wind Direction Indicators (wind sock or streamers)
-  H2S Monitors (alarms at bell nipple and shale shaker)
-  Briefing Areas

Exhibit D – Rig Diagram
Hallertau 5 Federal Com No. 2
 Cimarex Energy Co. of Colorado
 5-26S-32E
 SHL 220 FSL & 2080 FEL
 BHL 330 FNL & 1980 FEL
 Lea County, NM