

OCD-HOBBS

HOBBS OCD

Form 3160-3
(April 2004)

FEB 29 2012

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

6. If Indian, Allottee or Tribe Name

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

8. Lease Name and Well No

Hallertau 4 Federal No. 8H

39100

9. API Well No.

30-025- 40477

10. Field and Pool, or Exploratory

Bone Spring Wildcat 97903

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

4-26S-32E

12. County or Parish

Lea

13. State

NM

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

16. No of acres in lease

1720.49 acres

17. Spacing Unit dedicated to this well

E2E2 160 acres

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

150'

19. Proposed Depth

Pilot Hole 9900

MD 14015 TVD 9472

20. BLM/BIA Bond No. on File

NM-2575

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

3312' GR

22. Approximate date work will start*

03.01.11

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

01.16.12

Title

Manager Operations Administration

Approved By (Signature)

/s/ Don Peterson

Name (Printed/Typed)

CARLSBAD FIELD OFFICE

Title

FIELD MANAGER

FEB 28 2012

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.

APPROVAL FOR TWO YEARS

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)

K2 03/05/12

Carlsbad Controlled Water Basin

Approval Subject to General Requirements
& Special Stipulations Attached

MAR 06 2012

SEE ATTACHED
CONDITIONS OF APPROVAL

Application to Drill
Hallertau 4 Federal No. 8H
 Cimarex Energy Co. of Colorado
 Unit A, Section 4
 T26S-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 330 FNL & 510 FEL
 BHL 330 FSL & 350 FEL

- 2 Elevation above sea level: 3312' 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: Pilot Hole 9900 MD 14015 TVD 9472

- 6 Estimated tops of geological markers:

Rustler	1215
T. Salt	1338
B. Salt	4325
Delaware	4554
Cherry Canyon	5568
Brushy Canyon	7202
Lower Brushy Canyon	8445
Bone Spring	8639
2nd Bone Spring Sand	10000

- 7 Possible mineral bearing formation:
 Bone Spring Oil

8 Proposed Mud Circulating System:

Depth	Mud Wt	Visc	Fluid Loss	Type Mud
0' to 1235' 1175'	8.4 - 8.6	28	NC	FW
1235' to 4534'	10.0	30-32	NC	Brine water
4534' to 14015'	8.4 - 9.5	30-32	NC	FW, brine, and 2% KCl in the lateral

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 8¾" pilot hole to 9900 and log. Pump 30bbls MUDPUSHII 12ppg, followed by 495 sks Type H Cement, D080 (Dispersant) 0.080 gal/sk, D177 (Retarder) 0.045gal/sk 17.5 ppg yield 0.94 & 0% Excess. Set whipstock and kick off 8¾" lateral @ 9165 and drill to TD @ 14015 MD, 9472 TVD. Run 5½" 17# P-110 LTC from 0-14015 and cement.

Application to Drill
Hallertau 4 Federal No. 8H
 Cimarex Energy Co. of Colorado
 Unit A, Section 4
 T26S-R32E; Lea County, NM

9 Casing & Cementing Program:

String	Hole Size	Depth	Casing OD	Weight	Collar	Grade
Surface	17½"	0' to 1175' 1235'	New 13⅝"	48#	STC	H-40
Intermediate	12¼"	0' to 4534'	New 9⅝"	4036#	LTC	J-55
Production	8¾"	0' to 14015'	New 5½"	17#	LTC	P-110

Per Operator 2/21/12

10 Cementing:

Surface 835SKS Class C Cement + 4% Bentomite + .2% CaCl 13.5ppg 1.75yield 100% Excess
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 4300' Centralizers every 3rd joint in lateral to provide adequate cement coverage every 100' unless lateral doglegs require greater spacing between centralizers.

Depth to ground water is 275 according to the State Engineer. Fresh water zones will be protected by setting 13⅝" casing at 1175' and cementing to surface. Hydrocarbon zones will be protected by setting 9⅝" casing at 4538 and cementing to surface, and by setting 5½" casing at 14015 and cementing to 4300.

<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.

Cimarex Energy Co. of Colorado (operator) requests a variance if Cactus 101 (rig name) is used to drill this well to use a co-flex line between the BOP and choke manifold.

Manufacturer: Midwest Hose & Specialty

Serial Number: 59473

Length: 35' Size: 4-1/16" Ends: flanges/clamps

WP rating: 10,000 psi Anchors required by manufacturer – Yes/No (No)

Application to Drill
Hallertau 4 Federal No. 8H
Cimarex Energy Co. of Colorado
Unit A, Section 4
T26S-R32E; Lea County, NM

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

- A. Mud logging program: 2 man unit from 4534' 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 **4400 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.

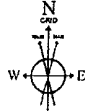
Location Lea County, NM
Field: (Hallertau) Sec 4, T26S, R32E
Facility Hallertau 4 Federal

Slot No. 8H SHL
Well No. 8H
Wellbore No. 8H PWB



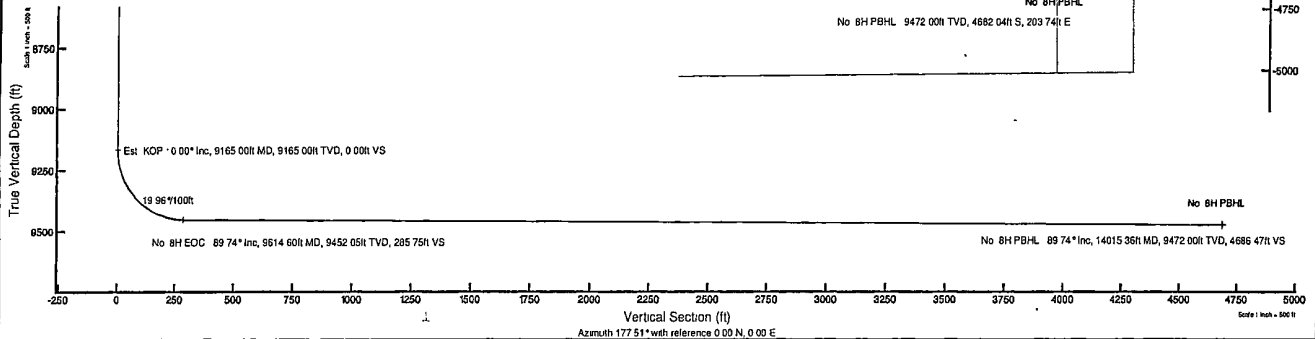
Well Profile Data

Design Comment	MD (ft)	Inc (°)	Az (°)	TVD (ft)	Local N (ft)	Local E (ft)	DLS (7100ft)	VS (ft)
Tie On	0.00	0.000	177.508	0.00	0.00	0.00	0.00	0.00
Est KOP	9165.00	0.000	177.508	9165.00	0.00	0.00	0.00	0.00
No. 8H EOC	9614.60	89.740	177.508	9452.05	-285.48	12.42	19.96	285.75
No. 8H PBHL	14015.36	89.740	177.508	9472.00	-4682.04	203.74	0.00	4686.47



BOSM (1945.0 to 2013.0) Dip: 59.99° Field: 48469.9 mT
Magnetic North is 7.63 degrees East of True North (at 1/2012)
Grid North is 0.35 degrees East of True North
To convert azimuth from True to Grid subtract 0.35 degrees
To convert 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 wellbore is Profile 1	Grid System: NAD83 / TM New Mexico SP, Eastern Zone (2011), US feet
True vertical depths are referenced to Rig on No. 8H SHL (KB)	North Reference: Grid north
Measured depths are referenced to Rig on No. 8H SHL (KB)	Scale: True distance
Rig on No. 8H SHL (KB) to Mean Sea Level: 5312 feet	Depths are in feet
Mean Sea Level to Grid line (at Slot No. 8H SHL): 0 feet	Created by: gpmassor on 1/9/2012
Coordinates are in feet referenced to Slot	





Planned Wellpath Report

Prelim_1

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REFERENCE WELLPATH IDENTIFICATION

Operator	Cimarex Energy Co.	Slot	No. 8H SHL
Area	Lea County, NM	Well	No. 8H
Field	(Hallertau) Sec 4, T26S, R32E	Wellbore	No. 8H PWB
Facility	Hallertau 4 Federal		

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	Gomeoscr
Scale	0.999957	Report Generated	1/9/2012 at 11:33:31 AM
Convergence at slot	0.35° East	Database/Source file	WA Midland/No._8H_PWB.xml

WELLPATH LOCATION

	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	0.96	149.73	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W
Facility Reference Pt			745669.47	393012.62	32°04'43.514"N	103°40'25.012"W
Field Reference Pt			745669.47	393012.62	32°04'43.514"N	103°40'25.012"W

WELLPATH DATUM

Calculation method	Minimum curvature	Rig on No. 8H SHL (KB) to GL	3312.00ft
Horizontal Reference Pt	Slot	Rig on No. 8H SHL (KB) to Mean Sea Level	3312.00ft
Vertical Reference Pt	Rig on No. 8H SHL (KB)	Rig on No. 8H SHL (KB) to Mud Line at Slot (No. 8H SHL)	3312.00ft
MD Reference Pt	Rig on No. 8H SHL (KB)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	177.51°



Planned Wellpath Report

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Field	(Hallertau) Sec 4, T26S, R32E	Wellbore	No. 8H PWB
Facility	Hallertau 4 Federal		

WELLPATH DATA (144 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	177.508	0.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	Tie On
100.00†	0.000	177.508	100.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	
200.00†	0.000	177.508	200.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	
300.00†	0.000	177.508	300.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	
400.00†	0.000	177.508	400.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	
500.00†	0.000	177.508	500.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	
600.00†	0.000	177.508	600.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	
700.00†	0.000	177.508	700.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	
800.00†	0.000	177.508	800.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	
900.00†	0.000	177.508	900.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	
1000.00†	0.000	177.508	1000.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	
1100.00†	0.000	177.508	1100.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	
1200.00†	0.000	177.508	1200.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	
1300.00†	0.000	177.508	1300.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	
1400.00†	0.000	177.508	1400.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	
1500.00†	0.000	177.508	1500.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	
1600.00†	0.000	177.508	1600.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	
1700.00†	0.000	177.508	1700.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	
1800.00†	0.000	177.508	1800.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	
1900.00†	0.000	177.508	1900.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	
2000.00†	0.000	177.508	2000.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	
2100.00†	0.000	177.508	2100.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	
2200.00†	0.000	177.508	2200.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	
2300.00†	0.000	177.508	2300.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	
2400.00†	0.000	177.508	2400.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	
2500.00†	0.000	177.508	2500.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	
2600.00†	0.000	177.508	2600.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	
2700.00†	0.000	177.508	2700.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	
2800.00†	0.000	177.508	2800.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	
2900.00†	0.000	177.508	2900.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	
3000.00†	0.000	177.508	3000.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	
3100.00†	0.000	177.508	3100.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	
3200.00†	0.000	177.508	3200.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	
3300.00†	0.000	177.508	3300.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	
3400.00†	0.000	177.508	3400.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	
3500.00†	0.000	177.508	3500.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	
3600.00†	0.000	177.508	3600.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	
3700.00†	0.000	177.508	3700.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	
3800.00†	0.000	177.508	3800.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	
3900.00†	0.000	177.508	3900.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	
4000.00†	0.000	177.508	4000.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	
4100.00†	0.000	177.508	4100.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	
4200.00†	0.000	177.508	4200.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	
4300.00†	0.000	177.508	4300.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	
4400.00†	0.000	177.508	4400.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	



Planned Wellpath Report

Prelim 1
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REFERENCE WELLPATH IDENTIFICATION

Operator	Cimarex Energy Co.	Slot	No. 8H SHL
Area	Lea County, NM	Well	No. 8H
Field	(Hallertau) Sec 4, T26S, R32E	Wellbore	No. 8H PWB
Facility	Hallertau 4 Federal		

WELLPATH DATA (144 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	177.508	4500.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	
4600.00†	0.000	177.508	4600.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	
4700.00†	0.000	177.508	4700.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	
4800.00†	0.000	177.508	4800.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	
4900.00†	0.000	177.508	4900.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	
5000.00†	0.000	177.508	5000.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	
5100.00†	0.000	177.508	5100.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	
5200.00†	0.000	177.508	5200.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	
5300.00†	0.000	177.508	5300.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	
5400.00†	0.000	177.508	5400.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	
5500.00†	0.000	177.508	5500.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	
5600.00†	0.000	177.508	5600.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	
5700.00†	0.000	177.508	5700.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	
5800.00†	0.000	177.508	5800.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	
5900.00†	0.000	177.508	5900.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	
6000.00†	0.000	177.508	6000.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	
6100.00†	0.000	177.508	6100.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	
6200.00†	0.000	177.508	6200.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	
6300.00†	0.000	177.508	6300.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	
6400.00†	0.000	177.508	6400.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	
6500.00†	0.000	177.508	6500.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	
6600.00†	0.000	177.508	6600.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	
6700.00†	0.000	177.508	6700.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	
6800.00†	0.000	177.508	6800.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	
6900.00†	0.000	177.508	6900.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	
7000.00†	0.000	177.508	7000.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	
7100.00†	0.000	177.508	7100.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	
7200.00†	0.000	177.508	7200.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	
7300.00†	0.000	177.508	7300.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	
7400.00†	0.000	177.508	7400.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	
7500.00†	0.000	177.508	7500.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	
7600.00†	0.000	177.508	7600.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	
7700.00†	0.000	177.508	7700.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	
7800.00†	0.000	177.508	7800.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	
7900.00†	0.000	177.508	7900.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	
8000.00†	0.000	177.508	8000.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	
8100.00†	0.000	177.508	8100.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	
8200.00†	0.000	177.508	8200.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	
8300.00†	0.000	177.508	8300.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	
8400.00†	0.000	177.508	8400.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	
8500.00†	0.000	177.508	8500.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	
8600.00†	0.000	177.508	8600.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	
8700.00†	0.000	177.508	8700.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	
8800.00†	0.000	177.508	8800.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	
8900.00†	0.000	177.508	8900.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	



Planned Wellpath Report

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**BAKER
HUGHES**

REFERENCE WELLPATH IDENTIFICATION

Operator	Cimarex Energy Co.	Slot	No. 8H SHL
Area	Lea County, NM	Well	No. 8H
Field	(Hallertau) Sec 4, T26S, R32E	Wellbore	No. 8H PWB
Facility	Hallertau 4 Federal		

WELLPATH DATA (144 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	177.508	9000.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	
9100.00+	0.000	177.508	9100.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	
9165.00	0.000	177.508	9165.00	0.00	0.00	0.00	745819.19	393013.58	32°04'43.514"N	103°40'23.272"W	0.00	Est. KOP
9200.00+	6.986	177.508	9199.91	2.13	-2.13	0.09	745819.28	393011.45	32°04'43.493"N	103°40'23.271"W	19.96	
9300.00+	26.946	177.508	9295.08	31.16	-31.13	1.35	745820.54	392982.45	32°04'43.206"N	103°40'23.258"W	19.96	
9400.00+	46.906	177.508	9374.62	90.94	-90.85	3.95	745823.14	392922.73	32°04'42.615"N	103°40'23.232"W	19.96	
9500.00+	66.866	177.508	9428.97	174.27	-174.11	7.58	745826.77	392839.48	32°04'41.791"N	103°40'23.196"W	19.96	
9600.00+	86.826	177.508	9451.61	271.16	-270.90	11.79	745830.98	392742.69	32°04'40.833"N	103°40'23.154"W	19.96	
9614.60	89.740	177.508	9452.05	285.75	-285.48	12.42	745831.61	392728.11	32°04'40.689"N	103°40'23.148"W	19.96	No. 8H EOC
9700.00+	89.740	177.508	9452.44	371.15	-370.80	16.14	745835.32	392642.80	32°04'39.844"N	103°40'23.111"W	0.00	
9800.00+	89.740	177.508	9452.89	471.15	-470.70	20.48	745839.67	392542.90	32°04'38.855"N	103°40'23.067"W	0.00	
9900.00+	89.740	177.508	9453.34	571.15	-570.61	24.83	745844.02	392443.00	32°04'37.867"N	103°40'23.024"W	0.00	
10000.00+	89.740	177.508	9453.80	671.15	-670.51	29.18	745848.37	392343.10	32°04'36.878"N	103°40'22.980"W	0.00	
10100.00+	89.740	177.508	9454.25	771.15	-770.42	33.52	745852.71	392243.20	32°04'35.889"N	103°40'22.937"W	0.00	
10200.00+	89.740	177.508	9454.70	871.15	-870.32	37.87	745857.06	392143.30	32°04'34.900"N	103°40'22.894"W	0.00	
10300.00+	89.740	177.508	9455.16	971.14	-970.23	42.22	745861.41	392043.40	32°04'33.911"N	103°40'22.850"W	0.00	
10400.00+	89.740	177.508	9455.61	1071.14	-1070.13	46.57	745865.75	391943.50	32°04'32.922"N	103°40'22.807"W	0.00	
10500.00+	89.740	177.508	9456.06	1171.14	-1170.03	50.91	745870.10	391843.60	32°04'31.934"N	103°40'22.763"W	0.00	
10600.00+	89.740	177.508	9456.52	1271.14	-1269.94	55.26	745874.45	391743.70	32°04'30.945"N	103°40'22.720"W	0.00	
10700.00+	89.740	177.508	9456.97	1371.14	-1369.84	59.61	745878.79	391643.80	32°04'29.956"N	103°40'22.677"W	0.00	
10800.00+	89.740	177.508	9457.42	1471.14	-1469.75	63.95	745883.14	391543.90	32°04'28.967"N	103°40'22.633"W	0.00	
10900.00+	89.740	177.508	9457.88	1571.14	-1569.65	68.30	745887.49	391444.00	32°04'27.978"N	103°40'22.590"W	0.00	
11000.00+	89.740	177.508	9458.33	1671.14	-1669.56	72.65	745891.84	391344.10	32°04'26.989"N	103°40'22.546"W	0.00	
11100.00+	89.740	177.508	9458.78	1771.14	-1769.46	77.00	745896.18	391244.20	32°04'26.001"N	103°40'22.503"W	0.00	
11200.00+	89.740	177.508	9459.24	1871.13	-1869.37	81.34	745900.53	391144.30	32°04'25.012"N	103°40'22.459"W	0.00	
11300.00+	89.740	177.508	9459.69	1971.13	-1969.27	85.69	745904.88	391044.40	32°04'24.023"N	103°40'22.416"W	0.00	
11400.00+	89.740	177.508	9460.14	2071.13	-2069.17	90.04	745909.22	390944.50	32°04'23.034"N	103°40'22.373"W	0.00	
11500.00+	89.740	177.508	9460.60	2171.13	-2169.08	94.39	745913.57	390844.60	32°04'22.045"N	103°40'22.329"W	0.00	
11600.00+	89.740	177.508	9461.05	2271.13	-2268.98	98.73	745917.92	390744.70	32°04'21.056"N	103°40'22.286"W	0.00	
11700.00+	89.740	177.508	9461.50	2371.13	-2368.89	103.08	745922.27	390644.80	32°04'20.068"N	103°40'22.242"W	0.00	
11800.00+	89.740	177.508	9461.96	2471.13	-2468.79	107.43	745926.61	390544.90	32°04'19.079"N	103°40'22.199"W	0.00	
11900.00+	89.740	177.508	9462.41	2571.13	-2568.70	111.77	745930.96	390445.00	32°04'18.090"N	103°40'22.156"W	0.00	
12000.00+	89.740	177.508	9462.86	2671.13	-2668.60	116.12	745935.31	390345.10	32°04'17.101"N	103°40'22.112"W	0.00	
12100.00+	89.740	177.508	9463.32	2771.13	-2768.51	120.47	745939.65	390245.20	32°04'16.112"N	103°40'22.069"W	0.00	
12200.00+	89.740	177.508	9463.77	2871.12	-2868.41	124.82	745944.00	390145.30	32°04'15.123"N	103°40'22.025"W	0.00	
12300.00+	89.740	177.508	9464.22	2971.12	-2968.31	129.16	745948.35	390045.40	32°04'14.135"N	103°40'21.982"W	0.00	
12400.00+	89.740	177.508	9464.68	3071.12	-3068.22	133.51	745952.70	389945.50	32°04'13.146"N	103°40'21.938"W	0.00	
12500.00+	89.740	177.508	9465.13	3171.12	-3168.12	137.86	745957.04	389845.60	32°04'12.157"N	103°40'21.895"W	0.00	
12600.00+	89.740	177.508	9465.58	3271.12	-3268.03	142.21	745961.39	389745.70	32°04'11.168"N	103°40'21.852"W	0.00	
12700.00+	89.740	177.508	9466.04	3371.12	-3367.93	146.55	745965.74	389645.80	32°04'10.179"N	103°40'21.808"W	0.00	
12800.00+	89.740	177.508	9466.49	3471.12	-3467.84	150.90	745970.08	389545.90	32°04'09.190"N	103°40'21.765"W	0.00	
12900.00+	89.740	177.508	9466.94	3571.12	-3567.74	155.25	745974.43	389446.00	32°04'08.201"N	103°40'21.721"W	0.00	
13000.00+	89.740	177.508	9467.40	3671.12	-3667.65	159.59	745978.78	389346.10	32°04'07.213"N	103°40'21.678"W	0.00	
13100.00+	89.740	177.508	9467.85	3771.12	-3767.55	163.94	745983.12	389246.20	32°04'06.224"N	103°40'21.635"W	0.00	
13200.00+	89.740	177.508	9468.30	3871.11	-3867.45	168.29	745987.47	389146.30	32°04'05.235"N	103°40'21.591"W	0.00	



Planned Wellpath Report

Prelim_1

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REFERENCE WELLPATH IDENTIFICATION

Operator	Cimarex Energy Co.	Slot	No. 8H SHL
Area	Lea County, NM	Well	No. 8H
Field	(Hallertau) Sec 4, T26S, R32E	Wellbore	No. 8H PWB
Facility	Hallertau 4 Federal		

WELLPATH DATA (144 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
13300.00†	89.740	177.508	9468.76	3971.11	-3967.36	172.64	745991.82	389046.40	32°04'04.246"N	103°40'21.548"W	0.00	
13400.00†	89.740	177.508	9469.21	4071.11	-4067.26	176.98	745996.17	388946.50	32°04'03.257"N	103°40'21.504"W	0.00	
13500.00†	89.740	177.508	9469.66	4171.11	-4167.17	181.33	746000.51	388846.60	32°04'02.268"N	103°40'21.461"W	0.00	
13600.00†	89.740	177.508	9470.12	4271.11	-4267.07	185.68	746004.86	388746.70	32°04'01.280"N	103°40'21.418"W	0.00	
13700.00†	89.740	177.508	9470.57	4371.11	-4366.98	190.03	746009.21	388646.80	32°04'00.291"N	103°40'21.374"W	0.00	
13800.00†	89.740	177.508	9471.02	4471.11	-4466.88	194.37	746013.55	388546.90	32°03'59.302"N	103°40'21.331"W	0.00	
13900.00†	89.740	177.508	9471.48	4571.11	-4566.79	198.72	746017.90	388447.00	32°03'58.313"N	103°40'21.287"W	0.00	
14000.00†	89.740	177.508	9471.93	4671.11	-4666.69	203.07	746022.25	388347.10	32°03'57.324"N	103°40'21.244"W	0.00	
14015.36	89.740	177.508	9472.00	4686.47	-4682.04	203.74	746022.92	388331.75	32°03'57.172"N	103°40'21.237"W	0.00	No. 8H PBHL

TARGETS

Name	MD [ft]	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
1) No. 8H PBHL	14015.36	9472.00	-4682.04	203.74	746022.92	388331.75	32°03'57.172"N	103°40'21.237"W	point

SURVEY PROGRAM - Ref Wellbore: No. 8H PWB - Ref Wellpath: Prelim_1

Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
3312.00	14015.36	NaviTrak (Standard)		No. 8H PWB

SR & A

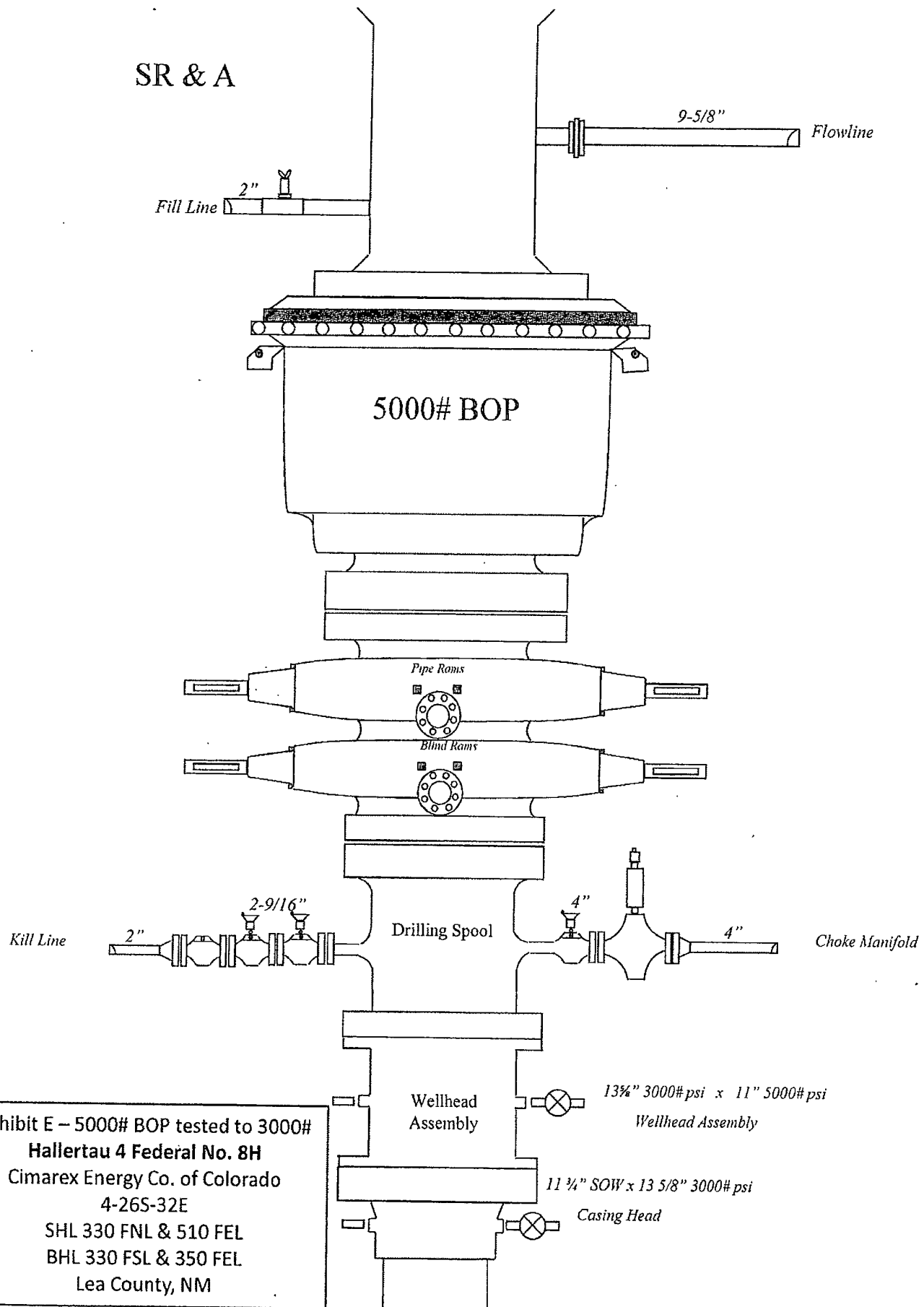


Exhibit E – 5000# BOP tested to 3000#
Hallertau 4 Federal No. 8H
Cimarex Energy Co. of Colorado
4-26S-32E
SHL 330 FNL & 510 FEL
BHL 330 FSL & 350 FEL
Lea County, NM

Drilling Operations Choke Manifold 5M Service tested to 3M

Exhibit E-1 – Choke Manifold Diagram

Hallertau 4 Federal No. 8H

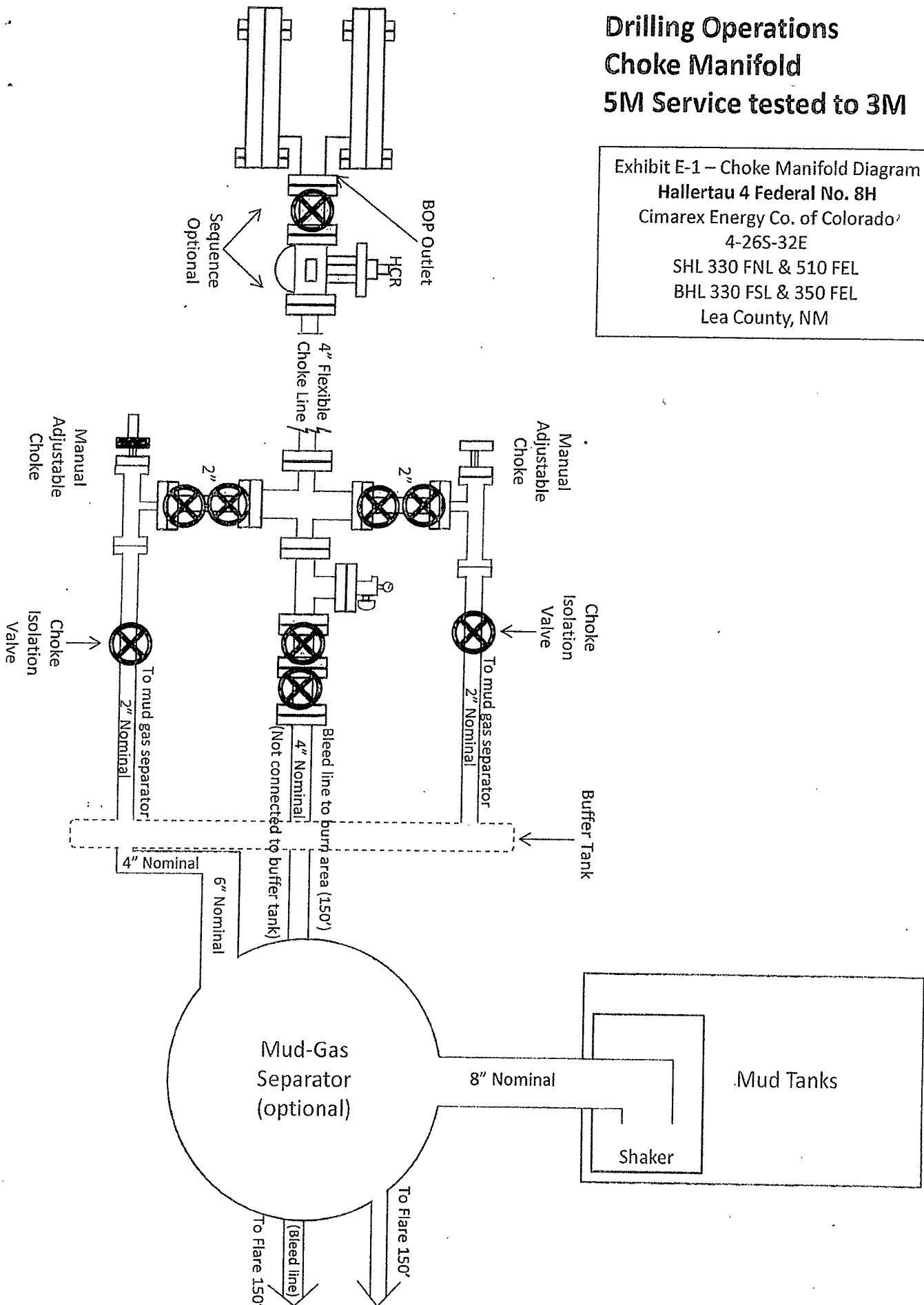
Cimarex Energy Co. of Colorado

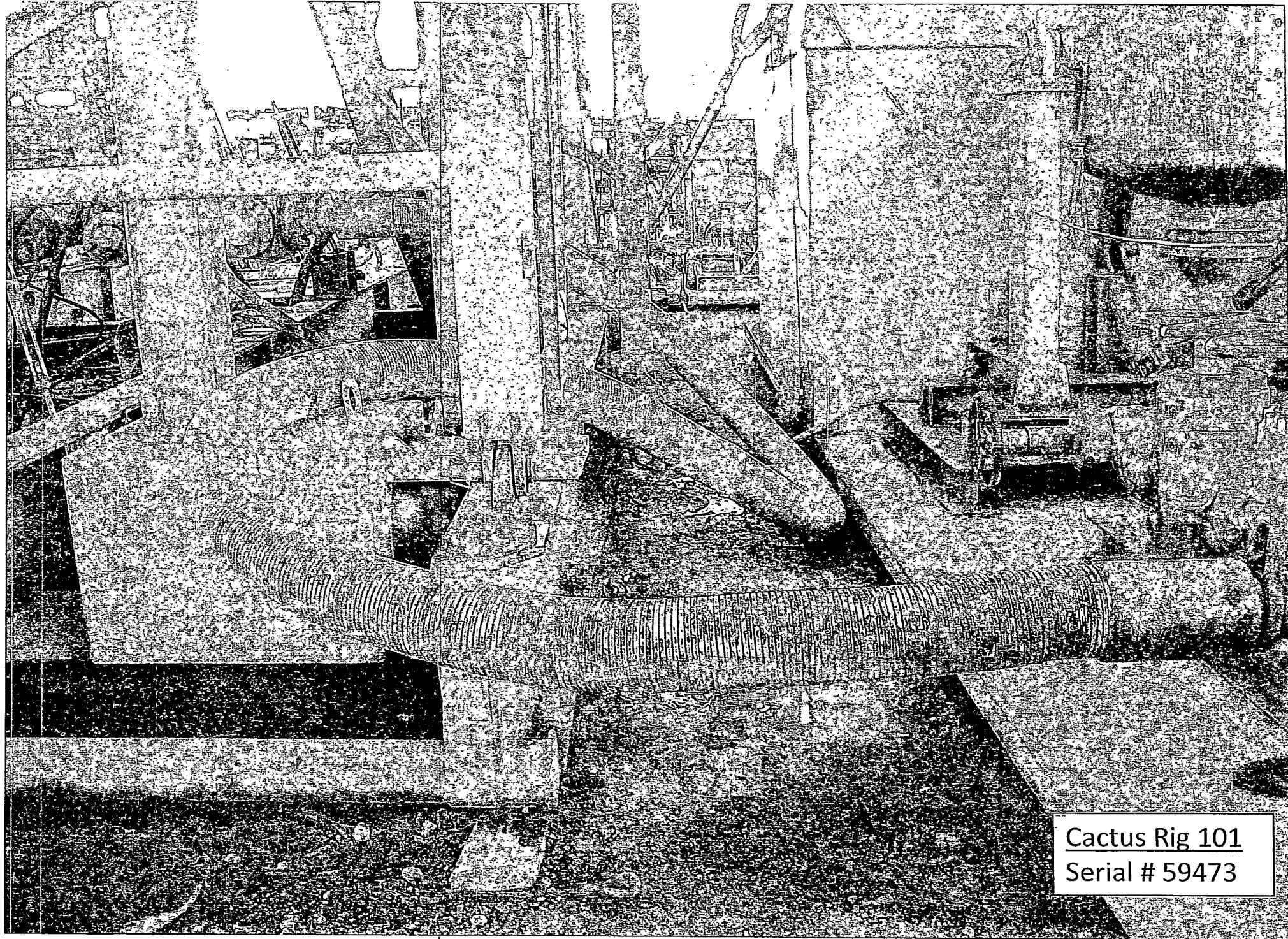
4-26S-32E

SHL 330 FNL & 510 FEL

BHL 330 FSL & 350 FEL

Lea County, NM





Cactus Rig 101
Serial # 59473

M I D W E S T
HOSE AND SPECIALTY INC.

INTERNAL HYDROSTATIC TEST REPORT		
Customer: CACTUS		P.O. Number: Rig#101 Asset#M5358
HOSE SPECIFICATIONS		
Type: CHOKER LINE		Length: 35'
I.D. 4" INCHES		O.D. 8" INCHES
WORKING PRESSURE 10,000 PSI	TEST PRESSURE 15,000 PSI	BURST PRESSURE PSI
COUPLINGS		
Type of End Fitting 4 1/16 10K FLANGE		
Type of Coupling: SWEDGED		MANUFACTURED BY MIDWEST HOSE & SPECIALTY
PROCEDURE		
<i>Hose assembly pressure tested with water at ambient temperature.</i>		
TIME HELD AT TEST PRESSURE 15 MIN.		ACTUAL BURST PRESSURE: 0 PSI
COMMENTS: s/n#59473 Asset#M5358 Hose is covered with stainless steel armour cover and wrapped with fire resistant vermiculite coated fiberglass insulation rated for 1500 degrees complete with lifting eyes		
Date: 5/19/2010	Tested By: BOBBY FINK	Approved: MENDI JACKSON



Midwest Hose
& Specialty, Inc.

Specification Sheet Choke & Kill Hose

The Midwest Hose & Specialty Choke & Kill hose is manufactured with only premium components. The reinforcement cables, inner liner and cover are made of the highest quality material to handle the tough drilling applications of today's industry. The end connections are available with API flanges, API male threads, hubs, hammer unions or other special fittings upon request. Hose assembly is manufactured to API 7K. This assembly is wrapped with fire resistant vermiculite coated fiberglass insulation, rated at 2000 degrees with stainless steel armor cover.

Working Pressure:	5,000 or 10,000 psi working pressure
Test Pressure:	10,000 or 15,000 psi test pressure
Reinforcement:	Multiple steel cables
Cover:	Stainless Steel Armor
Inner Tube:	Petroleum resistant, Abrasion resistant
End Fitting:	API flanges, API male threads, threaded or butt weld hammer unions, unbolt and other special connections
Maximum Length:	110 Feet
ID:	2-1/2", 3", 3-1/2", 4"
Operating Temperature:	-22 deg F to +180 deg F (-30 deg C to +82 deg C)

Cactus 101

