

OCD-HOBBS

HOBBS OCD

MAY 08 2012

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

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

RECEIVED

1a Type of Work. ☒ DRILL ☐ REENTER		5 Lease Serial No NM-84729
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. Cuervo Federal No. 20H <39203>
3b. Phone No (include area code) 432-571-7800		9 API Well No. 30-025- 40559
4. Location of Well (Report location clearly and in accordance with any State requirements. *) At Surface 330 FNL & 375 FEL At proposed prod Zone 330 FSL & 375 FEL Horizontal Bone Spring test		10. Field and Pool, or Exploratory Diamondtail; Bone Spring <17644>
14 Distance in miles and direction from nearest town or post office*		11. Sec., T. R. M. or Blk. and Survey or Area 14-23S-32E
15 Distance from proposed* location to nearest property or lease line, ft (Also to nearest drig. unit line if any) 330'	16. No of acres in lease 640 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. 1281'	19 Proposed Depth Pilot Hole TD 11300 MD 15514 TVD 11035	20 BLM/BIA Bond No. on File NM-2575
21. Elevations (Show whether DF, KDB, RT, GL, etc) 3745' GR	22. Approximate date work will start* 08.01.12	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 Zeno Farris	Name (Printed/Typed) Zeno Farris	Date 8.6.12
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Title

Manager Operations Administration

Approved By (Signature) /s/George MacDonell	Name (Printed/Typed) George MacDonell	Date MAY 03 2012
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)

Carlsbad Controlled Water Basin

SEE ATTACHED FOR
CONDITIONS OF APPROVAL

KB 06/05/12

Approval Subject to General Requirements
& Special Stipulations Attached
MAY 09 2012

APPROVAL FOR TWO YEARS

Application to Drill
Cuervo Federal No. 20H
Cimarex Energy Co. of Colorado
Unit A, Section 14
T23S-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 & 375 FEL
BHL 330 FSL & 375 FEL
- 2 Elevation above sea level: 3745' 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 15514 TVD 11035
- 6 Estimated tops of geological markers:

Rustler	1220'
Top of Salt	1380'
Castile	3565'
Base of Salt	4700'
Delaware Sands	5000'
Cherry Canyon	5969'
Brushy Canyon	7000'
Bone Spring	8770'
FBSS	9930'
SBSS	10600'
3rd BS Carbonate	11100'
- 7 Possible mineral bearing formation:

Bone Spring	Oil
Delaware	Oil

8 Proposed Mud Circulating System:

Depth	Mud Wt	Visc	Fluid Loss	Type Mud
0' to 1250' 1335	8.4 - 8.6	28	NC	FW
1250' to 4900'	10.0	30-32	NC	Brine
4900' to 10700'	8.4-9.0	28-29	NC	FW and brine, use hi-vis sweeps to keep hole clean
10700' to 15514'	8.5-9.5	27-45	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

Drill 8 3/4" pilot hole to 11300 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 8 3/4" lateral @ 10700 and drill to TD @ 15514 MD, 11035 TVD. Run 5 1/2" 17# P-110 LTC from 0-15514 and cement.

see COA

Application to Drill
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 Cimarex Energy Co. of Colorado
 Unit A, Section 14
 T23S-R32E, Lea County, NM

9 Casing & Cementing Program:

String	Hole Size	Depth	Casing OD	Weight	Collar	Grade
Surface 1	17 1/2"	0' to 1250'	New 13 3/8"	48#	STC	H-40
Intermediate	12 1/4"	0' to 4900'	New 9 5/8"	40#	LTC	J-55
Production	8 1/2"	0' to 15514'	New 5 1/2"	17#	LTC	P-110

10 Cementing:

Surface Lead: 545SKS Halcem C + 4% Bentomite + 2% CaCl 13.5ppg 1.75 yield 100% Excess
 Tail: 420SKS Halcem C + 2% CaCl 14.2ppg 1.34 yield 50% Excess
TOC Surface Centralizers per Onshorder 2.III.B.1.f

Intermediate Lead: 1655SKS Econocem + 5% Salt + 5# Gilsonite 14.6ppg 1.54 yield 70% Excess
 Tail: 200SKS Halcem + 1% CaCl 14.8ppg 1.34 yield 25% Excess
TOC Surface

Production Lead: 1030SKS Econocem H + 0.5% CFR-3 + 0.1% HR-601 11.9ppg 2.44 yield 50% Excess
 Tail: 1305SKS Versacem H + 0.5% Halad-344 + 0.4% CFR-3 + 1# Salt + 0.1% HR-601 14.5ppg 1.22 yield 25% Excess
TOC 3800' Centralizers every 3rd joint in lateral to provide adequate cement coverage every 100' unless lateral doglegs require greater spacing between centralizers.

According to the NM State Engineer, depth to ground water is 500 feet. Fresh water zones will be protected by setting 13 3/8" casing at 1250 and 9 5/8" casing at 4900 and cementing to surface. Hydrocarbon zones will be protected by setting 5 1/2" casing at 15514 and cementing to 3800.

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

11 Pressure control Equipment:

Exhibit "E". A 13 3/8" 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 4900'. 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.

Before drilling out of the surface casing BOPs 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 1500 psi high. Before drilling out of the intermediate casing BOPs will be tested to 250 psi low and 5000 psi high. Hydril will be tested to 250 psi low and 2500 high.

Cimarex Energy Co. of Colorado (operator) requests a variance if Cactus 115 (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: 63270

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

WP rating: 10,000 psi Anchors required by manufacturer - Yes/No

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Cimarex Energy Co. of Colorado
Unit A, Section 14
T23S-R32E, Lea County, NM

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

- A. Mud logging program: 2 man unit from 4900 to TD
- B. Electric logging program: CNL / LDT / CAL / GR, DLL / CAL / GR Surface to TD
- 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 4900 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. of Colorado

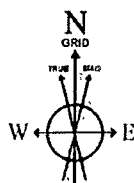
Location: Lea County, NM
Field: (Cuervo) Sec 14, T23S, R32E
Facility: Cuervo Fed No 20 H

S'lot: No 20 SHL
Well: No 20 H
Wellbore: No 20 PVB

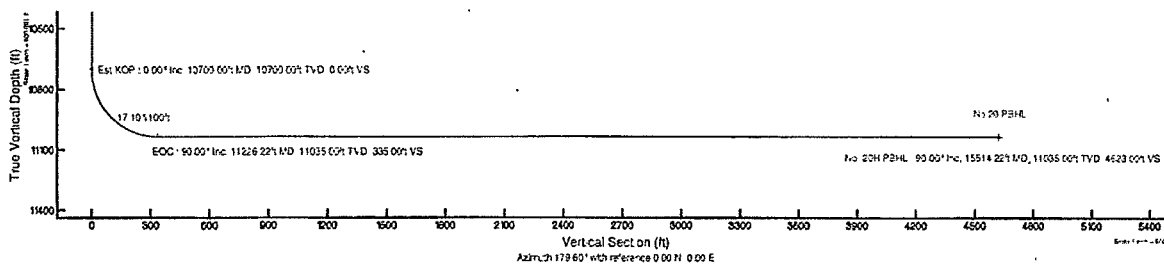
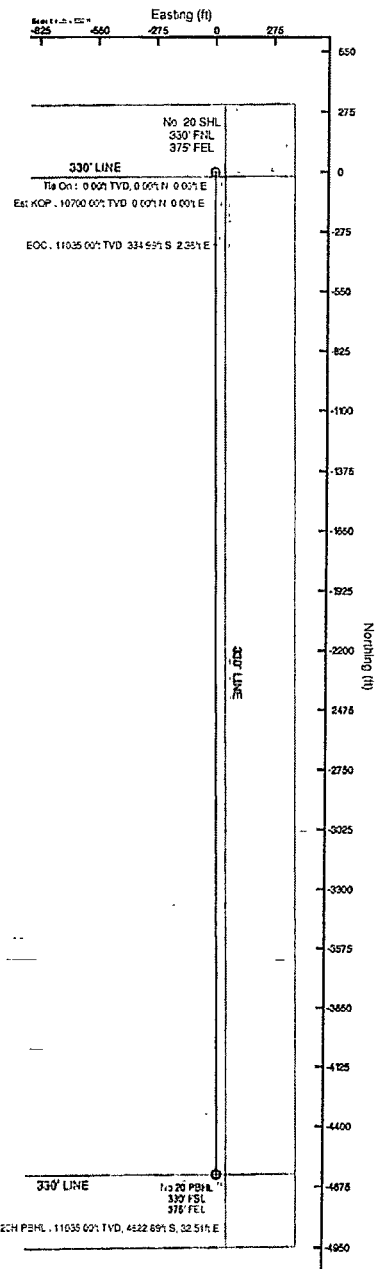


Well Profile Data							
Depth Comment	MD (ft)	Int (ft)	Az (°)	TVD (ft)	Local N (ft)	Local E (ft)	DLS (1:100%)
To On	0.00	0.00	179.597	0.00	0.00	0.00	0.00
Est KOP	10700.00	0.00	179.597	10700.00	0.00	0.00	0.00
EOC	11226.22	50.00	179.597	11035.00	-334.59	2.35	17.10
No 20H PSHL	15514.22	90.00	179.597	11035.00	-4522.69	32.51	0.00

Plot reference wellbore is PSHL 4	
True vertical depths are referenced to Rig on No. 20H SHL (KB)	Grid System: NAD83 / TM New Mexico SP, Eastern Zone (3001), US feet
Measured depths are referenced to Rig on No. 20H SHL (KB)	North Reference: Grid north
Rig on No. 20H SHL (KB) to Mean Sea Level: 3727 feet	Scale: True distance
Mean Sea Level to Mud line (At Slot No. 20 SHL) 0 feet	Depth are in feet
Coordinates are in feet referenced to Slot	Created by: gendry on 1/30/2012



BGGM (1945 0 to 2012 0) D/p: 60 25° F/d: 48660 5 nT
Magnetic North is 7.60 degrees East of True North (at 12/29 2011)
Grid North is 0.37 degrees East of True North
To correct azimuth from True to Grid subtract 0.37 degrees
To correct azimuth from Magnetic to Grid add 7.23 degrees
For example, if the Magnetic North Azimuth = 90 degs, then the Grid North Azimuth = 90 + 7.23 = 97.23





Planned Wellpath Report

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REFERENCE WELLPATH IDENTIFICATION

Operator	Cimarex Energy Co. of Colorado	Slot	No. 20 SHL
Area	Lea County, NM	Well	No. 20
Field	(Cuervo) Sec 14, T23S, R32E	Wellbore	No. 20 PWB
Facility	Cuervo Fed No. 20		

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	Gentbry
Scale	0.999962	Report Generated	1/30/2012 at 9:55:58 AM
Convergence at slot	0.37° East	Database/Source file	WA Midland/No._20_PWB.xml

WELLPATH LOCATION

	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W
Facility Reference Pt			756123.60	477614.20	32°18'40.030"N	103°38'17.152"W
Field Reference Pt			751577.10	474590.70	32°18'10.401"N	103°39'10.352"W

WELLPATH DATUM

Calculation method	Minimum curvature	Rig on No. 20H SHL (KB) to GL	3727.00ft
Horizontal Reference Pt	Slot	Rig on No. 20H SHL (KB) to Mean Sea Level	3727.00ft
Vertical Reference Pt	Rig on No. 20H SHL (KB)	Rig on No. 20H SHL (KB) to Mud Line at Slot (No. 20 SHL)	3727.00ft
MD Reference Pt	Rig on No. 20H SHL (KB)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	179.60°



Planned Wellpath Report

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REFERENCE WELLPATH IDENTIFICATION

Operator	Cimarex Energy Co. of Colorado	Slot	No. 20 SHL
Area	Lea County, NM	Well	No. 20
Field	(Cuervo) Sec 14,T23S,R32E	Wellbore	No. 20 PWB
Facility	Cuervo Fed No.20 H		

WELLPATH DATA (161 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	179.597	0.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	Tie On
100.00†	0.000	179.597	100.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
200.00†	0.000	179.597	200.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
300.00†	0.000	179.597	300.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
400.00†	0.000	179.597	400.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
500.00†	0.000	179.597	500.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
600.00†	0.000	179.597	600.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
700.00†	0.000	179.597	700.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
800.00†	0.000	179.597	800.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
900.00†	0.000	179.597	900.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
1000.00†	0.000	179.597	1000.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
1100.00†	0.000	179.597	1100.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
1200.00†	0.000	179.597	1200.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
1300.00†	0.000	179.597	1300.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
1400.00†	0.000	179.597	1400.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
1500.00†	0.000	179.597	1500.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
1600.00†	0.000	179.597	1600.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
1700.00†	0.000	179.597	1700.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
1800.00†	0.000	179.597	1800.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
1900.00†	0.000	179.597	1900.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
2000.00†	0.000	179.597	2000.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
2100.00†	0.000	179.597	2100.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
2200.00†	0.000	179.597	2200.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
2300.00†	0.000	179.597	2300.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
2400.00†	0.000	179.597	2400.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
2500.00†	0.000	179.597	2500.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
2600.00†	0.000	179.597	2600.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
2700.00†	0.000	179.597	2700.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
2800.00†	0.000	179.597	2800.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
2900.00†	0.000	179.597	2900.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
3000.00†	0.000	179.597	3000.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
3100.00†	0.000	179.597	3100.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
3200.00†	0.000	179.597	3200.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
3300.00†	0.000	179.597	3300.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
3400.00†	0.000	179.597	3400.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
3500.00†	0.000	179.597	3500.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
3600.00†	0.000	179.597	3600.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
3700.00†	0.000	179.597	3700.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
3800.00†	0.000	179.597	3800.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
3900.00†	0.000	179.597	3900.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
4000.00†	0.000	179.597	4000.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
4100.00†	0.000	179.597	4100.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
4200.00†	0.000	179.597	4200.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
4300.00†	0.000	179.597	4300.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
4400.00†	0.000	179.597	4400.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	



Planned Wellpath Report

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REFERENCE WELLPATH IDENTIFICATION			
Operator	Cimarex Energy Co. of Colorado	Slot	No. 20 SHL
Area	Lea County, NM	Well	No. 20
Field	(Cuervo) Sec 14,T23S,R32E	Wellbore	No. 20 PWB
Facility	Cuervo Fed No.20		

WELLPATH DATA (161 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	179.597	4500.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
4600.00†	0.000	179.597	4600.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
4700.00†	0.000	179.597	4700.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
4800.00†	0.000	179.597	4800.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
4900.00†	0.000	179.597	4900.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
5000.00†	0.000	179.597	5000.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	Delaware Sands
5100.00†	0.000	179.597	5100.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
5200.00†	0.000	179.597	5200.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
5300.00†	0.000	179.597	5300.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
5400.00†	0.000	179.597	5400.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
5500.00†	0.000	179.597	5500.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
5600.00†	0.000	179.597	5600.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
5700.00†	0.000	179.597	5700.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
5800.00†	0.000	179.597	5800.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
5900.00†	0.000	179.597	5900.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
6000.00†	0.000	179.597	6000.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
6100.00†	0.000	179.597	6100.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
6200.00†	0.000	179.597	6200.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
6300.00†	0.000	179.597	6300.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
6400.00†	0.000	179.597	6400.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
6500.00†	0.000	179.597	6500.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
6600.00†	0.000	179.597	6600.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
6700.00†	0.000	179.597	6700.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
6800.00†	0.000	179.597	6800.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
6900.00†	0.000	179.597	6900.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
7000.00†	0.000	179.597	7000.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
7100.00†	0.000	179.597	7100.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
7200.00†	0.000	179.597	7200.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
7300.00†	0.000	179.597	7300.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
7400.00†	0.000	179.597	7400.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
7500.00†	0.000	179.597	7500.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
7600.00†	0.000	179.597	7600.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
7700.00†	0.000	179.597	7700.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
7800.00†	0.000	179.597	7800.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
7900.00†	0.000	179.597	7900.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
8000.00†	0.000	179.597	8000.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
8100.00†	0.000	179.597	8100.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
8200.00†	0.000	179.597	8200.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
8300.00†	0.000	179.597	8300.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
8400.00†	0.000	179.597	8400.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
8500.00†	0.000	179.597	8500.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
8600.00†	0.000	179.597	8600.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
8700.00†	0.000	179.597	8700.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
8770.00†	0.000	179.597	8770.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	Bone Spring
8800.00†	0.000	179.597	8800.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	



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REFERENCE WELLPATH IDENTIFICATION			
Operator	Cimarex Energy Co. of Colorado	Slot	No. 20 SHL
Area	Lea County, NM	Well	No. 20
Field	(Cuervo) Sec 14, T23S, R32E	Wellbore	No. 20 PWB
Facility	Cuervo Fed No.20		

WELLPATH DATA (161 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
8900.00†	0.000	179.597	8900.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
9000.00†	0.000	179.597	9000.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
9100.00†	0.000	179.597	9100.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
9200.00†	0.000	179.597	9200.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
9300.00†	0.000	179.597	9300.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
9400.00†	0.000	179.597	9400.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
9430.00†	0.000	179.597	9430.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	Upper Bone Spring Shale
9500.00†	0.000	179.597	9500.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
9600.00†	0.000	179.597	9600.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
9700.00†	0.000	179.597	9700.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
9800.00†	0.000	179.597	9800.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
9900.00†	0.000	179.597	9900.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
9930.00†	0.000	179.597	9930.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	1st Bone Spring Shale
10000.00†	0.000	179.597	10000.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
10100.00†	0.000	179.597	10100.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
10200.00†	0.000	179.597	10200.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
10300.00†	0.000	179.597	10300.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
10400.00†	0.000	179.597	10400.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
10500.00†	0.000	179.597	10500.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	
10600.00†	0.000	179.597	10600.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	2nd Bone Spring Shale
10700.00	0.000	179.597	10700.00	0.00	0.00	0.00	756123.60	477614.20	32°18'40.030"N	103°38'17.152"W	0.00	Est KOP
10800.00†	17.103	179.597	10798.52	14.81	-14.81	0.10	756123.70	477599.39	32°18'39.883"N	103°38'17.152"W	17.10	
10900.00†	34.206	179.597	10888.33	57.95	-57.95	0.41	756124.01	477556.25	32°18'39.457"N	103°38'17.152"W	17.10	
11000.00†	51.310	179.597	10961.48	125.59	-125.58	0.88	756124.48	477488.62	32°18'38.787"N	103°38'17.151"W	17.10	
11100.00†	68.413	179.597	11010.50	211.75	-211.74	1.49	756125.09	477402.47	32°18'37.935"N	103°38'17.151"W	17.10	
11200.00†	85.516	179.597	11033.97	308.81	-308.80	2.17	756125.77	477305.41	32°18'36.974"N	103°38'17.150"W	17.10	
11226.22	90.000	179.597	11035.00	335.00	-334.99	2.36	756125.96	477279.22	32°18'36.715"N	103°38'17.150"W	17.10	EOC
11300.00†	90.000	179.597	11035.00	408.78	-408.77	2.88	756126.48	477205.44	32°18'35.985"N	103°38'17.149"W	0.00	
11400.00†	90.000	179.597	11035.00	508.78	-508.77	3.58	756127.18	477105.45	32°18'34.996"N	103°38'17.149"W	0.00	
11500.00†	90.000	179.597	11035.00	608.78	-608.77	4.28	756127.88	477005.46	32°18'34.006"N	103°38'17.148"W	0.00	
11600.00†	90.000	179.597	11035.00	708.78	-708.77	4.99	756128.59	476905.46	32°18'33.017"N	103°38'17.147"W	0.00	
11700.00†	90.000	179.597	11035.00	808.78	-808.76	5.69	756129.29	476805.47	32°18'32.027"N	103°38'17.147"W	0.00	
11800.00†	90.000	179.597	11035.00	908.78	-908.76	6.39	756129.99	476705.48	32°18'31.038"N	103°38'17.146"W	0.00	
11900.00†	90.000	179.597	11035.00	1008.78	-1008.76	7.10	756130.69	476605.48	32°18'30.048"N	103°38'17.146"W	0.00	
12000.00†	90.000	179.597	11035.00	1108.78	-1108.76	7.80	756131.40	476505.49	32°18'29.059"N	103°38'17.145"W	0.00	
12100.00†	90.000	179.597	11035.00	1208.78	-1208.75	8.50	756132.10	476405.50	32°18'28.069"N	103°38'17.144"W	0.00	
12200.00†	90.000	179.597	11035.00	1308.78	-1308.75	9.21	756132.80	476305.50	32°18'27.080"N	103°38'17.144"W	0.00	
12300.00†	90.000	179.597	11035.00	1408.78	-1408.75	9.91	756133.51	476205.51	32°18'26.090"N	103°38'17.143"W	0.00	
12400.00†	90.000	179.597	11035.00	1508.78	-1508.75	10.61	756134.21	476105.51	32°18'25.101"N	103°38'17.142"W	0.00	
12500.00†	90.000	179.597	11035.00	1608.78	-1608.74	11.31	756134.91	476005.52	32°18'24.111"N	103°38'17.142"W	0.00	
12600.00†	90.000	179.597	11035.00	1708.78	-1708.74	12.02	756135.62	475905.53	32°18'23.122"N	103°38'17.141"W	0.00	
12700.00†	90.000	179.597	11035.00	1808.78	-1808.74	12.72	756136.32	475805.53	32°18'22.132"N	103°38'17.140"W	0.00	
12800.00†	90.000	179.597	11035.00	1908.78	-1908.74	13.42	756137.02	475705.54	32°18'21.143"N	103°38'17.140"W	0.00	
12900.00†	90.000	179.597	11035.00	2008.78	-2008.73	14.13	756137.73	475605.55	32°18'20.153"N	103°38'17.139"W	0.00	
13000.00†	90.000	179.597	11035.00	2108.78	-2108.73	14.83	756138.43	475505.55	32°18'19.164"N	103°38'17.138"W	0.00	



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REFERENCE WELLPATH IDENTIFICATION			
Operator	Cimarex Energy Co. of Colorado	Slot	No. 20 SHL
Area	Lea County, NM	Well	No. 20
Field	(Cuervo) Sec 14, T23S, R32E	Wellbore	No. 20 PWB
Facility	Cuervo Fed No.20		

WELLPATH DATA (161 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	179.597	11035.00	2208.78	-2208.73	15.53	756139.13	475405.56	32°18'18.174"N	103°38'17.138"W	0.00	
13200.00†	90.000	179.597	11035.00	2308.78	-2308.73	16.24	756139.84	475305.57	32°18'17.185"N	103°38'17.137"W	0.00	
13300.00†	90.000	179.597	11035.00	2408.78	-2408.72	16.94	756140.54	475205.57	32°18'16.195"N	103°38'17.137"W	0.00	
13400.00†	90.000	179.597	11035.00	2508.78	-2508.72	17.64	756141.24	475105.58	32°18'15.206"N	103°38'17.136"W	0.00	
13500.00†	90.000	179.597	11035.00	2608.78	-2608.72	18.35	756141.95	475005.59	32°18'14.216"N	103°38'17.135"W	0.00	
13600.00†	90.000	179.597	11035.00	2708.78	-2708.72	19.05	756142.65	474905.59	32°18'13.227"N	103°38'17.135"W	0.00	
13700.00†	90.000	179.597	11035.00	2808.78	-2808.71	19.75	756143.35	474805.60	32°18'12.237"N	103°38'17.134"W	0.00	
13800.00†	90.000	179.597	11035.00	2908.78	-2908.71	20.46	756144.06	474705.61	32°18'11.248"N	103°38'17.133"W	0.00	
13900.00†	90.000	179.597	11035.00	3008.78	-3008.71	21.16	756144.76	474605.61	32°18'10.258"N	103°38'17.133"W	0.00	
14000.00†	90.000	179.597	11035.00	3108.78	-3108.71	21.86	756145.46	474505.62	32°18'09.269"N	103°38'17.132"W	0.00	
14100.00†	90.000	179.597	11035.00	3208.78	-3208.70	22.57	756146.17	474405.62	32°18'08.279"N	103°38'17.131"W	0.00	
14200.00†	90.000	179.597	11035.00	3308.78	-3308.70	23.27	756146.87	474305.63	32°18'07.290"N	103°38'17.131"W	0.00	
14300.00†	90.000	179.597	11035.00	3408.78	-3408.70	23.97	756147.57	474205.64	32°18'06.300"N	103°38'17.130"W	0.00	
14400.00†	90.000	179.597	11035.00	3508.78	-3508.70	24.68	756148.27	474105.64	32°18'05.311"N	103°38'17.130"W	0.00	
14500.00†	90.000	179.597	11035.00	3608.78	-3608.69	25.38	756148.98	474005.65	32°18'04.321"N	103°38'17.129"W	0.00	
14600.00†	90.000	179.597	11035.00	3708.78	-3708.69	26.08	756149.68	473905.66	32°18'03.332"N	103°38'17.128"W	0.00	
14700.00†	90.000	179.597	11035.00	3808.78	-3808.69	26.78	756150.38	473805.66	32°18'02.342"N	103°38'17.128"W	0.00	
14800.00†	90.000	179.597	11035.00	3908.78	-3908.69	27.49	756151.09	473705.67	32°18'01.353"N	103°38'17.127"W	0.00	
14900.00†	90.000	179.597	11035.00	4008.78	-4008.68	28.19	756151.79	473605.68	32°18'00.363"N	103°38'17.126"W	0.00	
15000.00†	90.000	179.597	11035.00	4108.78	-4108.68	28.89	756152.49	473505.68	32°17'59.374"N	103°38'17.126"W	0.00	
15100.00†	90.000	179.597	11035.00	4208.78	-4208.68	29.60	756153.20	473405.69	32°17'58.384"N	103°38'17.125"W	0.00	
15200.00†	90.000	179.597	11035.00	4308.78	-4308.68	30.30	756153.90	473305.70	32°17'57.395"N	103°38'17.124"W	0.00	
15300.00†	90.000	179.597	11035.00	4408.78	-4408.67	31.00	756154.60	473205.70	32°17'56.405"N	103°38'17.124"W	0.00	
15400.00†	90.000	179.597	11035.00	4508.78	-4508.67	31.71	756155.30	473105.71	32°17'55.416"N	103°38'17.123"W	0.00	
15500.00†	90.000	179.597	11035.00	4608.78	-4608.67	32.41	756156.01	473005.72	32°17'54.426"N	103°38'17.123"W	0.00	
15514.22	90.000	179.597	11035.00	4623.00	-4622.89	32.51	756156.11	472991.50	32°17'54.285"N	103°38'17.122"W	0.00	No. 20H PBHL



Planned Wellpath Report

Prelim_4
Page 6 of 6



REFERENCE WELLPATH IDENTIFICATION			
Operator	Cimarex Energy Co. of Colorado	Slot	No. 20 SHL
Area	Lea County, NM	Well	No. 20
Field	(Cuervo) Sec 14, T23S, R32E	Wellbore	No. 20 PWB
Facility	Cuervo Fed No.20		

TARGETS									
Name	MD [ft]	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
1) No.20 PBHL	15514.22	11035.00	4622.89	32.50	756156.10	472991.50	32°17'54.285"N	103°38'17.123"W	point

SURVEY PROGRAM:- Ref Wellbore: No. 20 PWB Ref Wellpath: Prelim_4				
Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
3727.00	15514.22	NaviTrak (Standard)		No. 20 PWB

SR & A

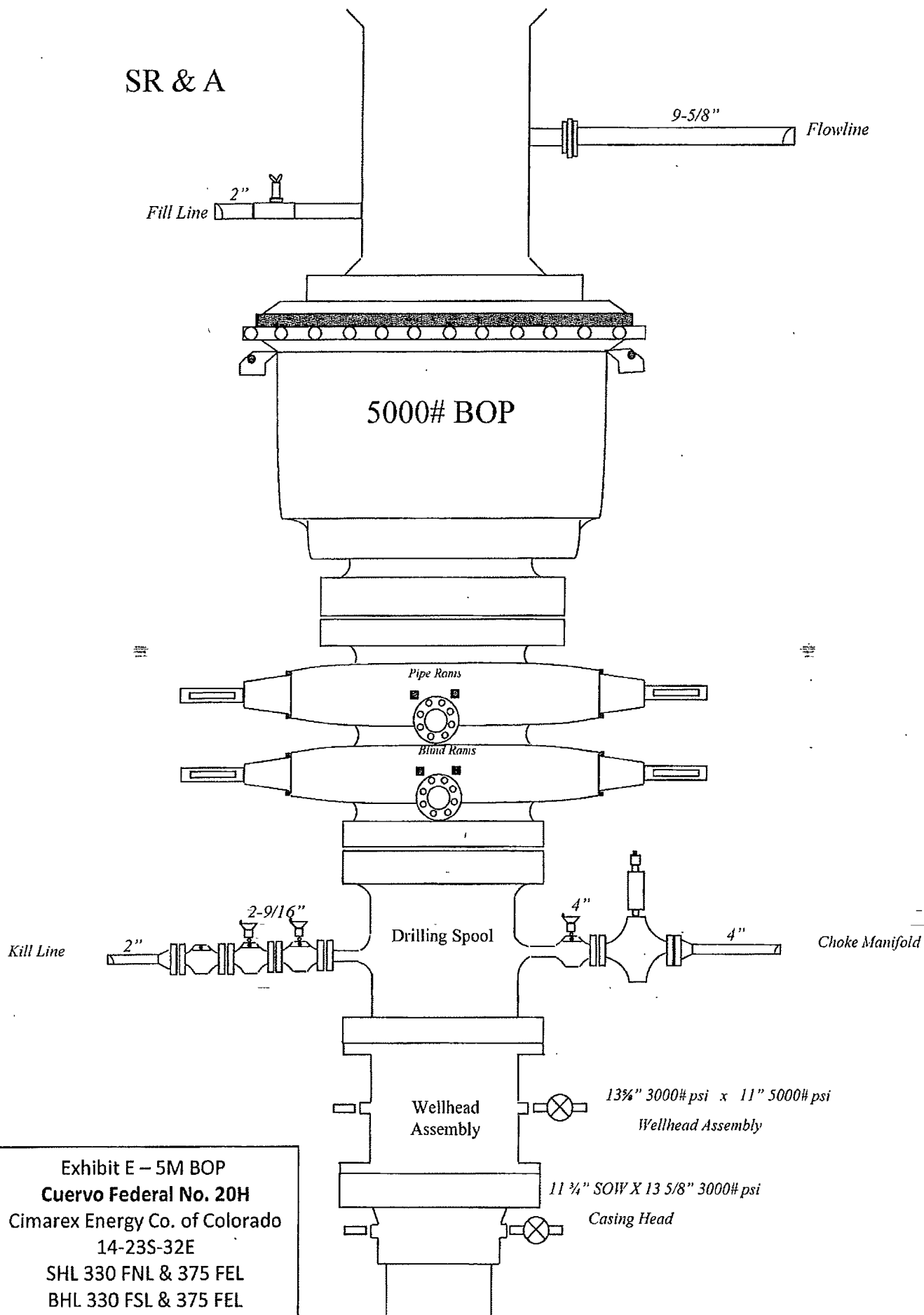
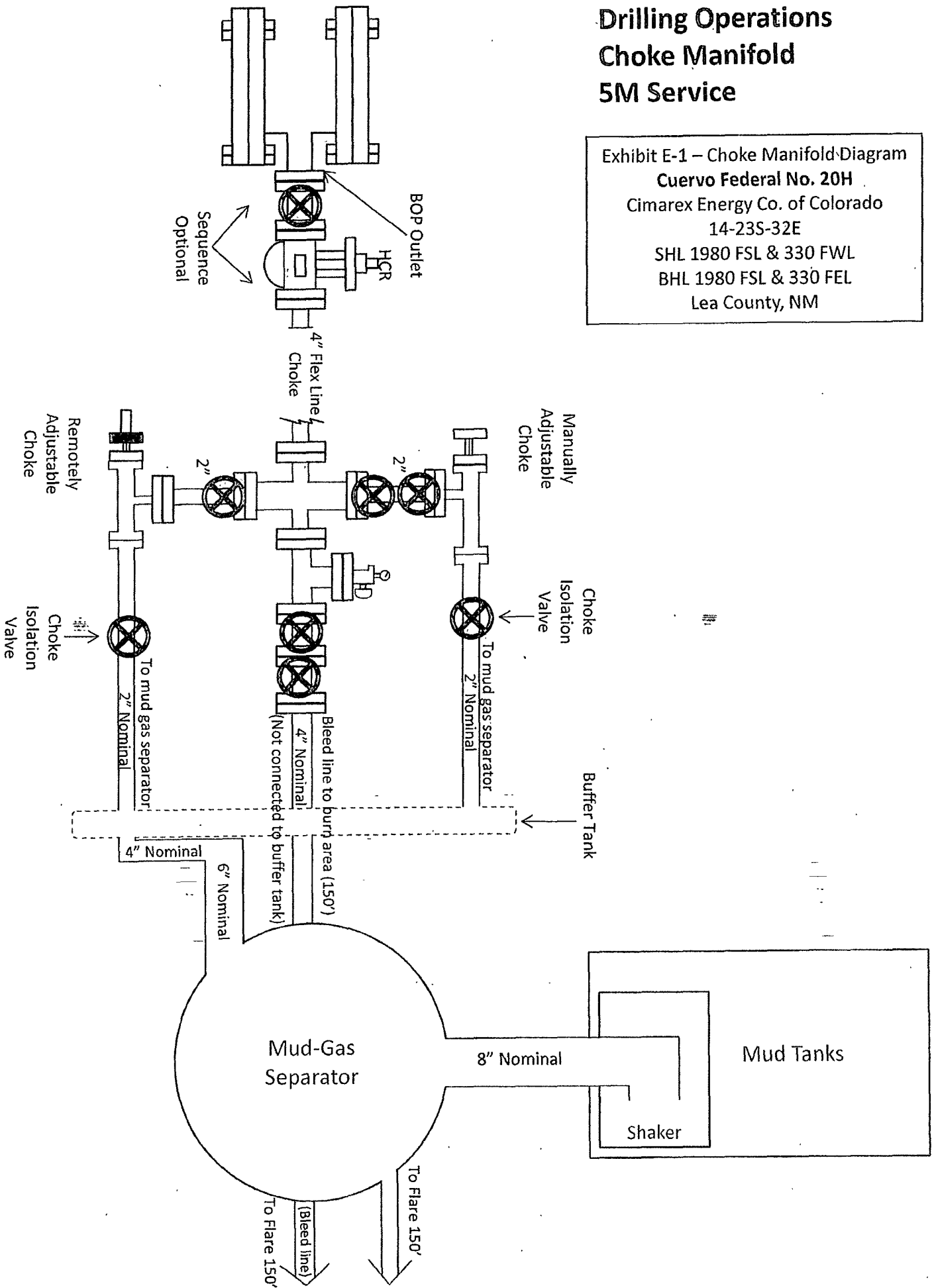


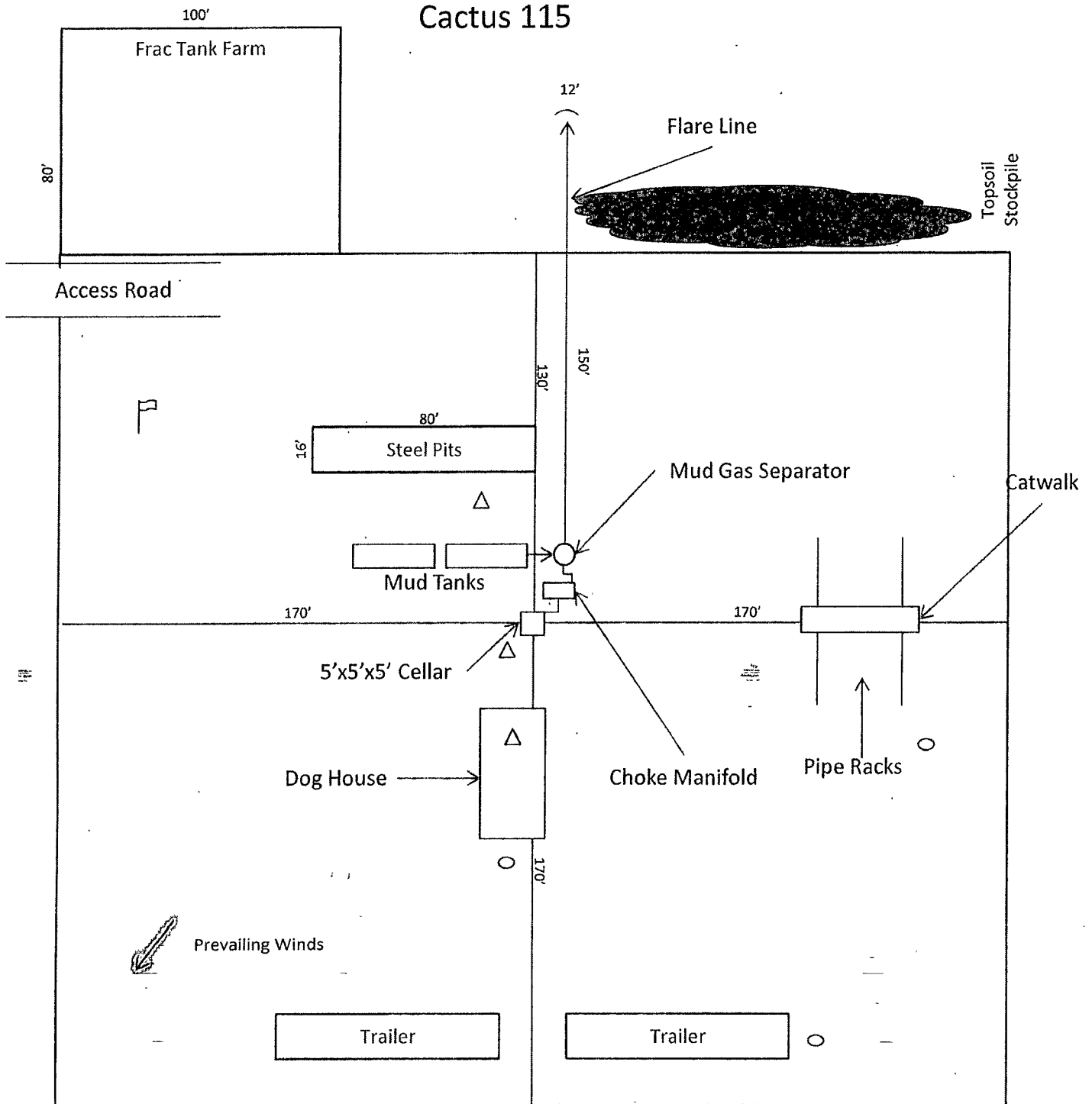
Exhibit E - 5M BOP
Cuervo Federal No. 20H
Cimarex Energy Co. of Colorado
14-23S-32E
SHL 330 FNL & 375 FEL
BHL 330 FSL & 375 FEL
Lea County, NM

Drilling Operations Choke Manifold 5M Service

Exhibit E-1 – Choke Manifold Diagram
Cuervo Federal No. 20H
 Cimarex Energy Co. of Colorado
 14-23S-32E
 SHL 1980 FSL & 330 FWL
 BHL 1980 FSL & 330 FEL
 Lea County, NM



Cactus 115



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

Exhibit D – Rig Diagram
Cuervo Federal No. 20H
 Cimarex Energy Co. of Colorado
 14-23S-32E
 SHL 330 FNL & 375 FEL
 BHL 330 FSL & 375 FEL
 Lea County, NM

