

HOBBS OCD

SEP 22 2011

R-111-POTASH

Hobbs
OCD-ARTESIA

Form 3160-3
(April 2004)

RECEIVED

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

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

5. Lease Serial No.
SHL NM-0362177, BHL NM-10470
6. If Indian, Allottee or Tribe Name

1a Type of Work ☒ DRILL ☐ REENTER

7. If Unit or CA Agreement, Name and No

Pending

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

8 Lease Name and Well No

Hat Mesa 10 Federal Com No. 1

2 Name of Operator

Cimarex Energy Co. of Colorado

9. API Well No

30-025- 40304

3a. Address

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

3b Phone No (include area code)

432-571-7800

10. Field and Pool, or Exploratory

Bone Spring Wildcat

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

At Surface

1940 FNL & 330 FEL

Unit H

At proposed prod Zone

1980 FNL & 330 FWL

Unit E

Horizontal Bone Spring test

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

10-21S-32E

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

12 County or Parish

Eddy Lea

13 State

NM

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

NM-0362177 - 160 acres
NM-10470 - 959.48 acres

17 Spacing Unit dedicated to this well

S2N2 160 acres

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

1280'

19. Proposed Depth

MD 15048 TVD 10550

20. BLM/BIA Bond No on File

NM-2575

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

3794' GR

22. Approximate date work will start*

08.01.11

23 Estimated duration

25-30 days

24 Attachments

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

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

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

25 Signature

Zeno Farris

Name (Printed/Typed)

Zeno Farris

Date

06.03.11

Title

Manager Operations Administration

Approved By (Signature)

/s/ Jesse J. Juen

Name (Printed/Typed)

Date

SEP 12 2011

Title

ACTING STATE DIRECTOR

Office

NM STATE OFFICE

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

Conditions of approval, if any, are attached

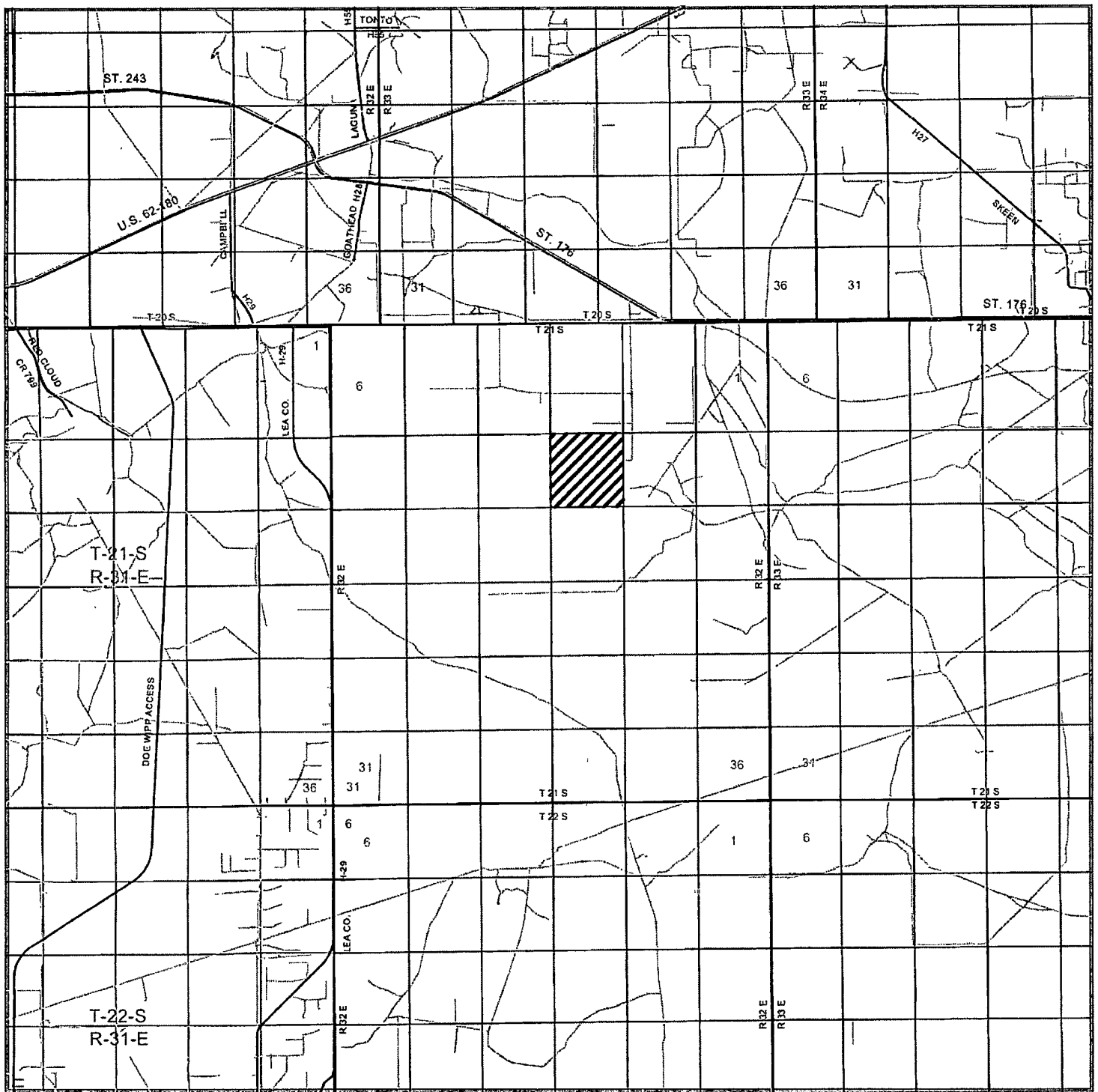
APPROVAL FOR TWO YEARS

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)

Capitan Controlled Water Basin
SEE ATTACHED FOR
CONDITIONS OF APPROVAL

KE 09/28/11 APPROVAL SUBJECT TO
GENERAL REQUIREMENTS
AND SPECIAL STIPULATIONS
ATTACHED. SEP 29 2011



HAT MESA "10" FEDERAL COM #1H
 Located 1940' FNL and 330' FEL
 Section 10, Township 21 South, Range 32 East,
 N.M.P.M., Lea County, New Mexico.

basin
surveys
 focused on excellence
 in the oilfield

P.O. Box 1786
 1120 N. West County Rd.
 Hobbs, New Mexico 88241
 (575) 393-7316 - Office
 (575) 392-2206 - Fax
 basinsurveys.com

W.O. Number: JMS 24474

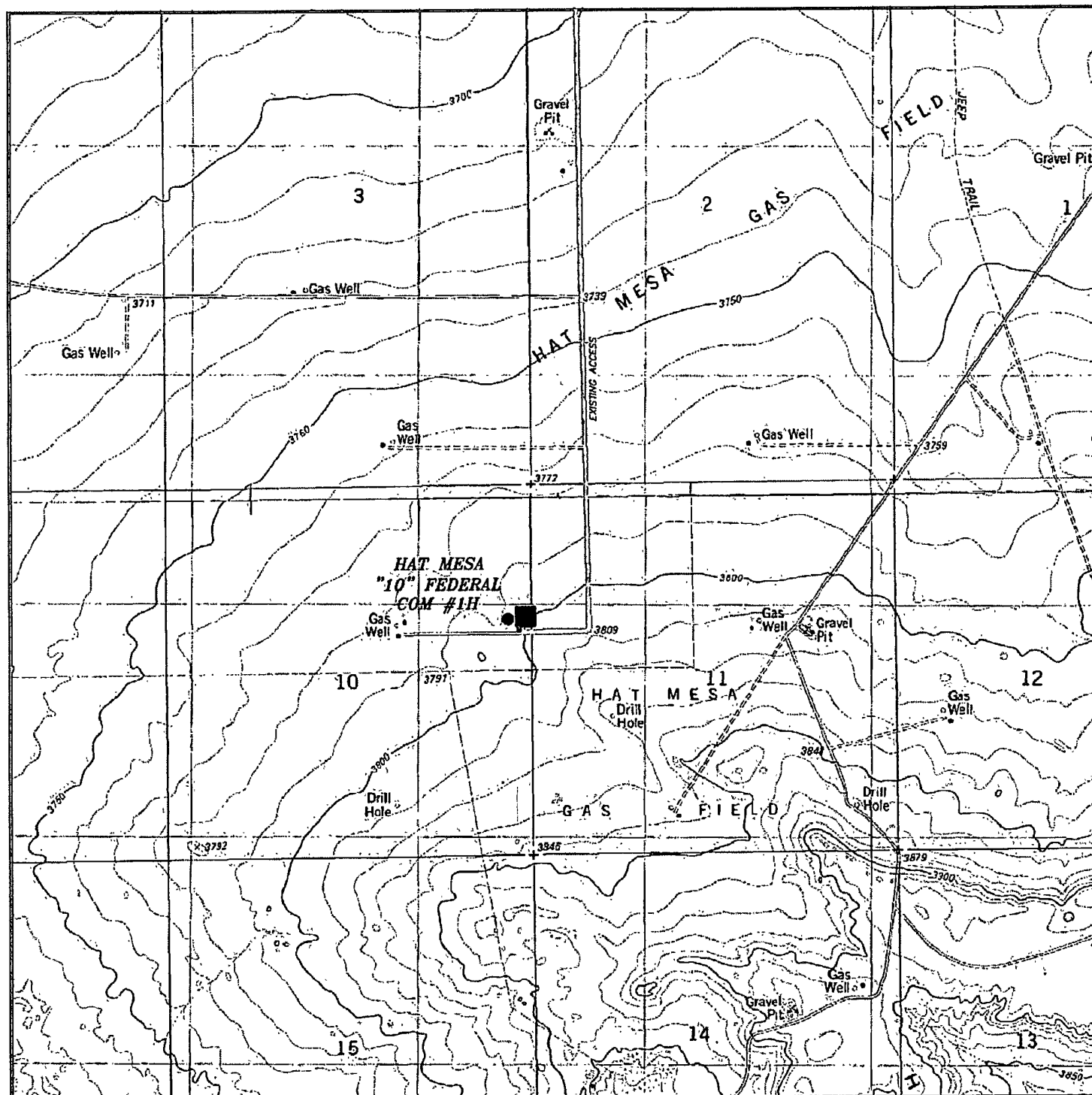
Survey Date: 04-15-2011

Scale: 1" = 2 Miles

Date: 04-19-2011

CIMAREX
ENERGY CO.
OF COLORADO

Exhibit B



HAT MESA "10" FEDERAL COM #1H

■ Battery

Located 1940' FNL and 330' FEL

Section 10, Township 21 South, Range 32 East,
N.M.P.M., Lea County, New Mexico.

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Survey Date: 04-15-2011

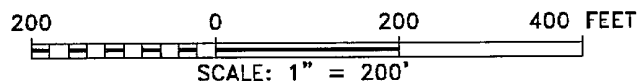
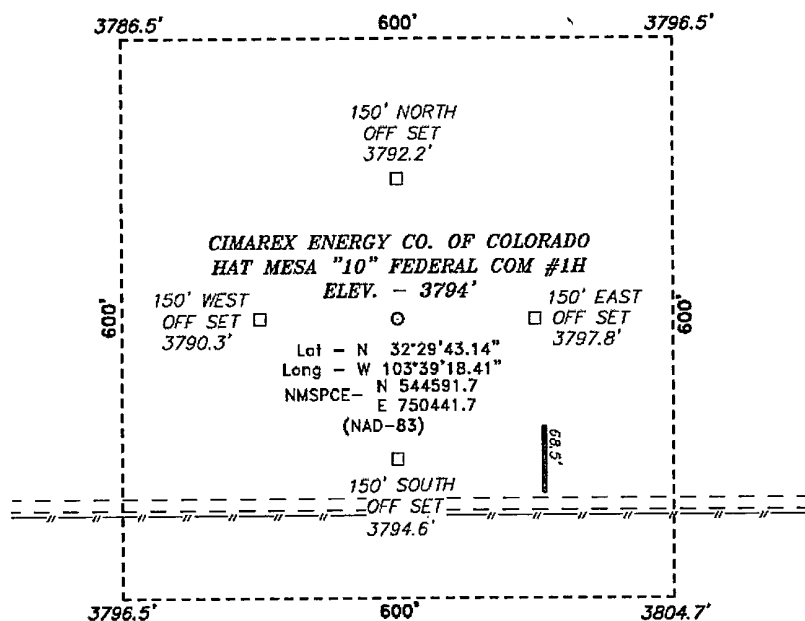
Scale: 1" = 2000'

Date: 04-19-2011

CIMAREX
ENERGY CO.
OF COLORADO

Exhibit C

SECTION 10, TOWNSHIP 21 SOUTH, RANGE 32 EAST, N.M.P.M.,
LEA COUNTY, NEW MEXICO.



Directions to Location:

FROM THE JUNCTION OF 62-180 AND HWY 176, GO
EAST ON HWY 176 FOR 4.8 MILES TO LEASE ROAD,
ON LEASE ROAD GO SOUTH 2.0 MILES TURNING
WEST 0.2 MILES TO PROPOSED LEASE ROAD.

BASIN SURVEYS P.O. BOX 1786-HOBBS, NEW MEXICO

W.O. Number: 24474 Drawn By: J. SMALL

Date: 04-19-2011 Disk: JMS 24474

CIMAREX ENERGY CO. OF COLORADO

REF: HAT MESA "10" FEDERAL COM #1H / WELL PAD TOPO

THE HAT MESA "10" FEDERAL COM #1H LOCATED 1940'
FROM THE NORTH LINE AND 330' FROM THE EAST LINE OF
SECTION 10, TOWNSHIP 21 SOUTH, RANGE 32 EAST,
N.M.P.M., LEA COUNTY, NEW MEXICO.

Survey Date: 04-15-2011 Sheet 1 of 1 Sheets



Cimarex Energy Co.

Location: Lea County, NM
Field: (Hat Mesa) Sec 10, T21S, R32E
Facility: Hat Mesa 10 Fed Com No 1H

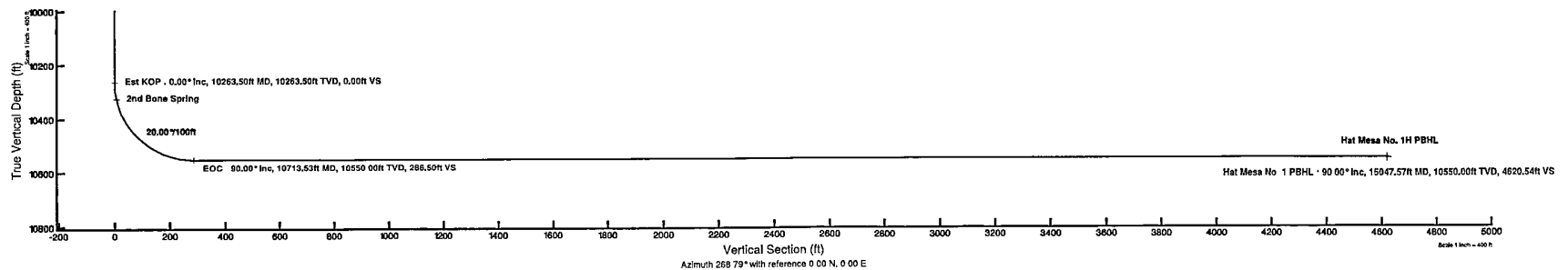
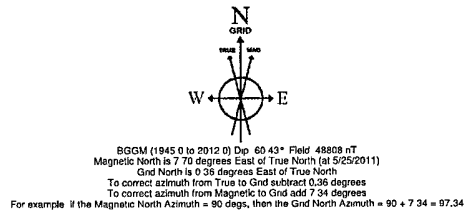
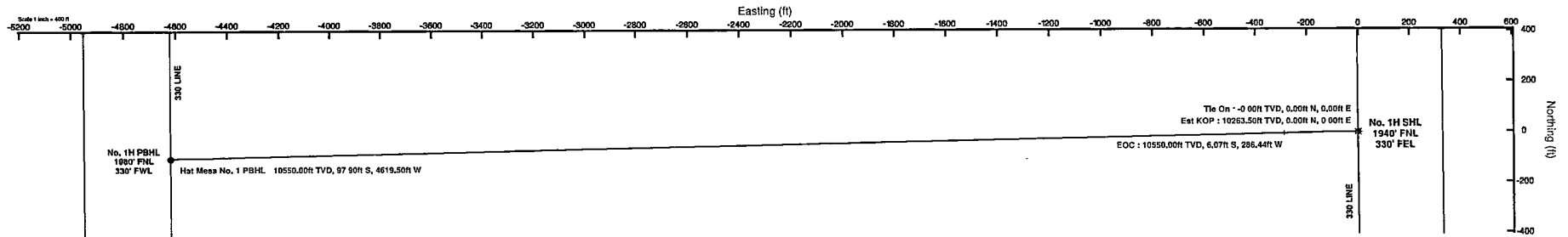
Slot: No. 1H SHL
Well: No. 1H
Wellbore: No. 1H PWB



Well Profile Data

Design Comment	MD (ft)	Inc (°)	Az (°)	TVD (ft)	Local N (ft)	Local E (ft)	DLS (%/100ft)	VS (ft)
Tie On	0.00	0.000	268.786	0.00	0.00	0.00	0.00	0.00
Est KOP	10263.50	0.000	268.786	10263.50	0.00	0.00	0.00	0.00
EOC	10713.53	90.000	268.786	10550.00	-6.07	-286.44	20.00	286.50
Hat Mesa No. 1 PBHL	15047.57	90.000	268.786	10550.00	-97.90	-4619.50	0.00	4620.54

Plot reference wellpath is Prelim_1	
True vertical depths are referenced to Rig on No. 1H SHL (RKB)	Grid System: NAD83 / TM New Mexico SP, Eastern Zone (3001), US feet
Measured depths are referenced to Rig on No. 1H SHL (RKB)	North Reference: Grid north
Rig on No. 1H SHL (RKB) to Mean Sea Level 3794 feet	Scale: True distance
Mean Sea Level to Mud line (At Slot No. 1H SHL) -3794 feet	Depths are in feet
Coordinates are in feet referenced to Slot	Created by: callphik on 5/25/2011



Application to Drill
Hat Mesa 10 Federal Com No. 1
 Cimarex Energy Co. of Colorado
 Unit H, Section 10
 T21S-R32E; Lea County, NM

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

- 1 Location: SHL 1940 FNL & 330 FEL
 BHL 1980 FNL & 330 FWL
- 2 Elevation above sea level: 3794 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 15048 TVD 10550
- 6 Estimated tops of geological markers:

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

Delaware	Oil
Bone Spring	Oil

8 Proposed Mud Circulating System:

Depth	Mud Wt	Visc	Fluid Loss	Type Mud
0' to 1475' 1590	8.4 - 8.6	28	NC	FW
1475' to 3450' 3300	10.0	30-32	NC	Brine water
3450' to 5210' 5450	10.0	30-32	NC	FW, Brine
5210' to 15048'	8.4	30-32	NC	2% KCL

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

Proposed drilling Plan

After setting surface 1 & 2 and intermediate casing, drill 8 3/4" hole to 10264 and log. Then kick off 8 3/4" lateral at 10264 and drill to TD at 15048 MD, 10550 TVD. Set 5 1/2" 17# P110 LTC from 0-15048 and cement to 200' inside intermediate shoe (5280).

Application to Drill
Hat Mesa 10 Federal Com No. 1
 Cimarex Energy Co. of Colorado
 Unit H, Section 10
 T21S-R32E; Lea County, NM

9 Casing & Cementing Program:

String	Hole Size	Depth	Casing OD	Weight	Collar	Grade
Surface	26"	0' to 1590' 1475'	New 20"	106#	STC	J/K-55
Surface 2	17½"	0' to 3300' 3450'	New 13½"	68#	STC	L-80
Intermediate	12½"	0' to 5450' 5210'	New 9½"	40#	LTC	N-80
Production	8½"	0' to 15048'	New 5½"	17#	LTC	P-110

10 Cementing:

Surface

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

Surface 2

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

Intermediate

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

Production

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

TOC 4810' 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 140 according to the State Engineer. Fresh water zones will be protected by setting 20" casing at 1475 and cementing to surface and 13½" casing at 3450 and cementing to surface. Hydrocarbon zones will be protected by setting 9½" casing at 5480 and cementing to surface, and by setting 5½" casing at 15048 and cementing to 4810.

<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 13½" 5000 PSI working pressure B.O.P. consisting of one set of blind rams and one set of pipe rams and a 5000# annular type preventer. A choke manifold and 120 gallon accumulator with floor and remote operating stations and auxiliary power system. Rotating head below 6000'. A kelly cock will be installed and maintained in operable condition and a drill string safety valve in the open position will be available on the rig floor. Mud gas separator will be available if drilling in H2S areas.

BOP unit will be hydraulically operated. BOP will be nipped up and operated at least once a day while drilling and the blind rams will be operated when out of hole during trips. No abnormal pressure or temperature is expected while drilling. From the base of the 20" surface pipe, the well will be equipped with a 2M diverter system with rotating head (see exhibit E-1). From the base of the surface pipe through the running of production casing, the well will be equipped with a 5000 psi BOP system.

The BOP will be tested to 250 psi low and 5000 psi high by an independent service company. Hydril will be tested to 250 psi low and 2500 psi high.

Application to Drill
Hat Mesa 10 Federal Com No. 1
Cimarex Energy Co. of Colorado
Unit H, Section 10
T21S-R32E; Lea County, NM

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

- A. Mud logging program: 2 man unit from 5480 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 **3000 psi** Estimated BHT **130°**

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

Drilling expected to take 30-35 days

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

15 Other Facets of Operations:

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

Bone Spring pay will be perforated and stimulated.

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



Planned Wellpath Report

Prelim_1
Page 1 of 6



REFERENCE WELLPATH IDENTIFICATION

Operator	Cimarex Energy Co.	Slot	No. 1H SHL
Area	Lea County, NM	Well	No. 1H
Field	(Hat Mesa) Sec 10, T21S, R32E	Wellbore	No. 1H PWB
Facility	Hat Mesa 10 Fed Com No 1H		

REPORT SETUP INFORMATION

Projection System	NAD83 / TM New Mexico SP, Eastern Zone (3001), US feet	Software System	WellArchitect® 3.0.0
North Reference	Grid	User	Calhphik
Scale	0.999959	Report Generated	5/25/2011 at 2:36:07 PM
Convergence at slot	0.36° East	Database/Source file	WA Midland/No. 1H_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	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W
Facility Reference Pt			750441.70	544591.70	32°29'43.138"N	103°39'18.407"W
Field Reference Pt			750441.70	544591.70	32°29'43.138"N	103°39'18.407"W

WELLPATH DATUM

Calculation method	Minimum curvature	Rig on No. 1H SHL (RKB) to GL	0.00ft
Horizontal Reference Pt	Slot	Rig on No. 1H SHL (RKB) to Mean Sea Level	3794.00ft
Vertical Reference Pt	Rig on No. 1H SHL (RKB)	Rig on No. 1H SHL (RKB) to Mud Line at Slot (No. 1H SHL)	0.00ft
MD Reference Pt	Rig on No. 1H SHL (RKB)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	268.79°



Planned Wellpath Report

Prelim_1
Page 2 of 6



REFERENCE WELLPATH IDENTIFICATION

Operator	Cimarex Energy Co.	Slot	No. 1H SHL
Area	Lea County, NM	Well	No. 1H
Field	(Hat Mesa) Sec 10, T21S, R32E	Wellbore	No. 1H PWB
Facility	Hat Mesa 10 Fed Com No 1H		

WELLPATH DATA (158 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	268.786	0.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	Tie On
100.00†	0.000	268.786	100.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
200.00†	0.000	268.786	200.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
300.00†	0.000	268.786	300.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
400.00†	0.000	268.786	400.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
500.00†	0.000	268.786	500.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
600.00†	0.000	268.786	600.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
700.00†	0.000	268.786	700.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
800.00†	0.000	268.786	800.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
900.00†	0.000	268.786	900.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
1000.00†	0.000	268.786	1000.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
1100.00†	0.000	268.786	1100.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
1200.00†	0.000	268.786	1200.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
1300.00†	0.000	268.786	1300.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
1400.00†	0.000	268.786	1400.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
1500.00†	0.000	268.786	1500.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
1600.00†	0.000	268.786	1600.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
1700.00†	0.000	268.786	1700.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
1800.00†	0.000	268.786	1800.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
1900.00†	0.000	268.786	1900.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
2000.00†	0.000	268.786	2000.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
2100.00†	0.000	268.786	2100.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
2200.00†	0.000	268.786	2200.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
2300.00†	0.000	268.786	2300.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
2400.00†	0.000	268.786	2400.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
2500.00†	0.000	268.786	2500.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
2600.00†	0.000	268.786	2600.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
2700.00†	0.000	268.786	2700.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
2800.00†	0.000	268.786	2800.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
2900.00†	0.000	268.786	2900.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
3000.00†	0.000	268.786	3000.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
3100.00†	0.000	268.786	3100.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
3200.00†	0.000	268.786	3200.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
3300.00†	0.000	268.786	3300.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
3400.00†	0.000	268.786	3400.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
3500.00†	0.000	268.786	3500.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
3600.00†	0.000	268.786	3600.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
3700.00†	0.000	268.786	3700.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
3800.00†	0.000	268.786	3800.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
3900.00†	0.000	268.786	3900.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
4000.00†	0.000	268.786	4000.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
4100.00†	0.000	268.786	4100.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
4200.00†	0.000	268.786	4200.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
4300.00†	0.000	268.786	4300.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
4400.00†	0.000	268.786	4400.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	



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REFERENCE WELLPATH IDENTIFICATION

Operator	Cimarex Energy Co.	Slot	No. 1H SHL
Area	Lea County, NM	Well	No. 1H
Field	(Hat Mesa) Sec 10, T21S, R32E	Wellbore	No. 1H PWB
Facility	Hat Mesa 10 Fed Com No 1H		

WELLPATH DATA (158 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	268.786	4500.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
4600.00†	0.000	268.786	4600.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
4700.00†	0.000	268.786	4700.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
4800.00†	0.000	268.786	4800.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
4900.00†	0.000	268.786	4900.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
5000.00†	0.000	268.786	5000.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
5100.00†	0.000	268.786	5100.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
5200.00†	0.000	268.786	5200.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
5300.00†	0.000	268.786	5300.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
5400.00†	0.000	268.786	5400.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
5500.00†	0.000	268.786	5500.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
5600.00†	0.000	268.786	5600.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
5700.00†	0.000	268.786	5700.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
5800.00†	0.000	268.786	5800.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
5900.00†	0.000	268.786	5900.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
6000.00†	0.000	268.786	6000.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
6100.00†	0.000	268.786	6100.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
6200.00†	0.000	268.786	6200.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
6300.00†	0.000	268.786	6300.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
6400.00†	0.000	268.786	6400.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
6500.00†	0.000	268.786	6500.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
6600.00†	0.000	268.786	6600.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
6700.00†	0.000	268.786	6700.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
6800.00†	0.000	268.786	6800.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
6900.00†	0.000	268.786	6900.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
7000.00†	0.000	268.786	7000.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
7100.00†	0.000	268.786	7100.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
7200.00†	0.000	268.786	7200.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
7300.00†	0.000	268.786	7300.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
7400.00†	0.000	268.786	7400.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
7500.00†	0.000	268.786	7500.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
7600.00†	0.000	268.786	7600.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
7700.00†	0.000	268.786	7700.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
7800.00†	0.000	268.786	7800.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
7900.00†	0.000	268.786	7900.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
8000.00†	0.000	268.786	8000.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
8100.00†	0.000	268.786	8100.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
8200.00†	0.000	268.786	8200.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
8300.00†	0.000	268.786	8300.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
8400.00†	0.000	268.786	8400.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
8500.00†	0.000	268.786	8500.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
8600.00†	0.000	268.786	8600.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
8700.00†	0.000	268.786	8700.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
8720.00†	0.000	268.786	8720.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	Cherry Canyon
8800.00†	0.000	268.786	8800.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	



Planned Wellpath Report

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REFERENCE WELLPATH IDENTIFICATION

Operator	Cimarex Energy Co.	Slot	No. 1H SHL
Area	Lea County, NM	Well	No. 1H
Field	(Hat Mesa) Sec 10, T21S, R32E	Wellbore	No. 1H PWB
Facility	Hat Mesa 10 Fed Com No 1H		

WELLPATH DATA (158 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	268.786	8900.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
9000.00†	0.000	268.786	9000.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
9030.00†	0.000	268.786	9030.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	Bone Spring
9100.00†	0.000	268.786	9100.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
9200.00†	0.000	268.786	9200.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
9300.00†	0.000	268.786	9300.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
9400.00†	0.000	268.786	9400.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
9500.00†	0.000	268.786	9500.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
9600.00†	0.000	268.786	9600.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
9700.00†	0.000	268.786	9700.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
9725.00†	0.000	268.786	9725.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	1st Bone Spring
9800.00†	0.000	268.786	9800.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
9900.00†	0.000	268.786	9900.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
10000.00†	0.000	268.786	10000.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
10100.00†	0.000	268.786	10100.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
10200.00†	0.000	268.786	10200.00	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	
10263.50	0.000	268.786	10263.50	0.00	0.00	0.00	750441.70	544591.70	32°29'43.138"N	103°39'18.407"W	0.00	Est KOP
10300.00†	7.299	268.786	10299.90	2.32	-0.05	-2.32	750439.38	544591.65	32°29'43.138"N	103°39'18.434"W	20.00	
10325.48†	12.396	268.786	10325.00	6.68	-0.14	-6.68	750435.02	544591.56	32°29'43.137"N	103°39'18.485"W	20.00	2nd Bone Spring
10400.00†	27.298	268.786	10394.89	31.91	-0.68	-31.90	750409.80	544591.02	32°29'43.134"N	103°39'18.779"W	20.00	
10500.00†	47.297	268.786	10474.04	92.19	-1.95	-92.17	750349.53	544589.75	32°29'43.125"N	103°39'19.483"W	20.00	
10600.00†	67.295	268.786	10527.80	175.92	-3.73	-175.88	750265.83	544587.97	32°29'43.112"N	103°39'20.461"W	20.00	
10700.00†	87.294	268.786	10549.68	272.97	-5.78	-272.91	750168.80	544585.92	32°29'43.098"N	103°39'21.594"W	20.00	
10713.53	90.000	268.786	10550.00	286.50	-6.07	-286.44	750155.28	544585.63	32°29'43.096"N	103°39'21.752"W	20.00	EOC
10800.00†	90.000	268.786	10550.00	372.97	-7.90	-372.88	750068.83	544583.80	32°29'43.083"N	103°39'22.761"W	0.00	
10900.00†	90.000	268.786	10550.00	472.97	-10.02	-472.86	749968.86	544581.68	32°29'43.069"N	103°39'23.928"W	0.00	
11000.00†	90.000	268.786	10550.00	572.97	-12.14	-572.84	749868.89	544579.56	32°29'43.054"N	103°39'25.096"W	0.00	
11100.00†	90.000	268.786	10550.00	672.97	-14.26	-672.82	749768.91	544577.44	32°29'43.039"N	103°39'26.263"W	0.00	
11200.00†	90.000	268.786	10550.00	772.97	-16.38	-772.79	749668.94	544575.32	32°29'43.025"N	103°39'27.431"W	0.00	
11300.00†	90.000	268.786	10550.00	872.97	-18.50	-872.77	749568.97	544573.20	32°29'43.010"N	103°39'28.598"W	0.00	
11400.00†	90.000	268.786	10550.00	972.97	-20.62	-972.75	749468.99	544571.08	32°29'42.995"N	103°39'29.766"W	0.00	
11500.00†	90.000	268.786	10550.00	1072.97	-22.74	-1072.73	749369.02	544568.97	32°29'42.981"N	103°39'30.933"W	0.00	
11600.00†	90.000	268.786	10550.00	1172.97	-24.85	-1172.70	749269.05	544566.85	32°29'42.966"N	103°39'32.100"W	0.00	
11700.00†	90.000	268.786	10550.00	1272.97	-26.97	-1272.68	749169.07	544564.73	32°29'42.951"N	103°39'33.268"W	0.00	
11800.00†	90.000	268.786	10550.00	1372.97	-29.09	-1372.66	749069.10	544562.61	32°29'42.936"N	103°39'34.435"W	0.00	
11900.00†	90.000	268.786	10550.00	1472.97	-31.21	-1472.64	748969.13	544560.49	32°29'42.922"N	103°39'35.603"W	0.00	
12000.00†	90.000	268.786	10550.00	1572.97	-33.33	-1572.61	748869.15	544558.37	32°29'42.907"N	103°39'36.770"W	0.00	
12100.00†	90.000	268.786	10550.00	1672.97	-35.45	-1672.59	748769.18	544556.25	32°29'42.892"N	103°39'37.938"W	0.00	
12200.00†	90.000	268.786	10550.00	1772.97	-37.57	-1772.57	748669.21	544554.13	32°29'42.878"N	103°39'39.105"W	0.00	
12300.00†	90.000	268.786	10550.00	1872.97	-39.69	-1872.55	748569.23	544552.02	32°29'42.863"N	103°39'40.272"W	0.00	
12400.00†	90.000	268.786	10550.00	1972.97	-41.81	-1972.52	748469.26	544549.90	32°29'42.848"N	103°39'41.440"W	0.00	
12500.00†	90.000	268.786	10550.00	2072.97	-43.92	-2072.50	748369.29	544547.78	32°29'42.833"N	103°39'42.607"W	0.00	
12600.00†	90.000	268.786	10550.00	2172.97	-46.04	-2172.48	748269.31	544545.66	32°29'42.819"N	103°39'43.775"W	0.00	
12700.00†	90.000	268.786	10550.00	2272.97	-48.16	-2272.46	748169.34	544543.54	32°29'42.804"N	103°39'44.942"W	0.00	
12800.00†	90.000	268.786	10550.00	2372.97	-50.28	-2372.43	748069.37	544541.42	32°29'42.789"N	103°39'46.109"W	0.00	



Planned Wellpath Report

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REFERENCE WELLPATH IDENTIFICATION

Operator	Cimarex Energy Co.	Slot	No. 1H SHL
Area	Lea County, NM	Well	No. 1H
Field	(Hat Mesa) Sec 10, T21S, R32E	Wellbore	No. 1H PWB
Facility	Hat Mesa 10 Fed Com No 1H		

WELLPATH DATA (158 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
12900.00†	90.000	268.786	10550.00	2472.97	-52.40	-2472.41	747969.39	544539.30	32°29'42.774"N	103°39'47.277"W	0.00	
13000.00†	90.000	268.786	10550.00	2572.97	-54.52	-2572.39	747869.42	544537.18	32°29'42.760"N	103°39'48.444"W	0.00	
13100.00†	90.000	268.786	10550.00	2672.97	-56.64	-2672.37	747769.45	544535.07	32°29'42.745"N	103°39'49.612"W	0.00	
13200.00†	90.000	268.786	10550.00	2772.97	-58.76	-2772.34	747669.47	544532.95	32°29'42.730"N	103°39'50.779"W	0.00	
13300.00†	90.000	268.786	10550.00	2872.97	-60.88	-2872.32	747569.50	544530.83	32°29'42.715"N	103°39'51.947"W	0.00	
13400.00†	90.000	268.786	10550.00	2972.97	-62.99	-2972.30	747469.53	544528.71	32°29'42.701"N	103°39'53.114"W	0.00	
13500.00†	90.000	268.786	10550.00	3072.97	-65.11	-3072.28	747369.55	544526.59	32°29'42.686"N	103°39'54.281"W	0.00	
13600.00†	90.000	268.786	10550.00	3172.97	-67.23	-3172.25	747269.58	544524.47	32°29'42.671"N	103°39'55.449"W	0.00	
13700.00†	90.000	268.786	10550.00	3272.97	-69.35	-3272.23	747169.61	544522.35	32°29'42.656"N	103°39'56.616"W	0.00	
13800.00†	90.000	268.786	10550.00	3372.97	-71.47	-3372.21	747069.63	544520.23	32°29'42.642"N	103°39'57.784"W	0.00	
13900.00†	90.000	268.786	10550.00	3472.97	-73.59	-3472.19	746969.66	544518.11	32°29'42.627"N	103°39'58.951"W	0.00	
14000.00†	90.000	268.786	10550.00	3572.97	-75.71	-3572.16	746869.69	544516.00	32°29'42.612"N	103°40'00.118"W	0.00	
14100.00†	90.000	268.786	10550.00	3672.97	-77.83	-3672.14	746769.72	544513.88	32°29'42.597"N	103°40'01.286"W	0.00	
14200.00†	90.000	268.786	10550.00	3772.97	-79.95	-3772.12	746669.74	544511.76	32°29'42.582"N	103°40'02.453"W	0.00	
14300.00†	90.000	268.786	10550.00	3872.97	-82.06	-3872.10	746569.77	544509.64	32°29'42.568"N	103°40'03.621"W	0.00	
14400.00†	90.000	268.786	10550.00	3972.97	-84.18	-3972.07	746469.80	544507.52	32°29'42.553"N	103°40'04.788"W	0.00	
14500.00†	90.000	268.786	10550.00	4072.97	-86.30	-4072.05	746369.82	544505.40	32°29'42.538"N	103°40'05.956"W	0.00	
14600.00†	90.000	268.786	10550.00	4172.97	-88.42	-4172.03	746269.85	544503.28	32°29'42.523"N	103°40'07.123"W	0.00	
14700.00†	90.000	268.786	10550.00	4272.97	-90.54	-4272.01	746169.88	544501.16	32°29'42.508"N	103°40'08.290"W	0.00	
14800.00†	90.000	268.786	10550.00	4372.97	-92.66	-4371.99	746069.90	544499.05	32°29'42.494"N	103°40'09.458"W	0.00	
14900.00†	90.000	268.786	10550.00	4472.97	-94.78	-4471.96	745969.93	544496.93	32°29'42.479"N	103°40'10.625"W	0.00	
15000.00†	90.000	268.786	10550.00	4572.97	-96.90	-4571.94	745869.96	544494.81	32°29'42.464"N	103°40'11.793"W	0.00	
15047.57	90.000	268.786	10550.00 ¹	4620.54	-97.90	-4619.50	745822.40	544493.80	32°29'42.457"N	103°40'12.348"W	0.00	Hat Mesa No. 1 PBHL

HOLE & CASING SECTIONS - Ref Wellbore: No. 1H PWB Ref Wellpath: Prelim_1

String/Diameter	Start MD [ft]	End MD [ft]	Interval [ft]	Start TVD [ft]	End TVD [ft]	Start N/S [ft]	Start E/W [ft]	End N/S [ft]	End E/W [ft]
12in Open Hole	0.00	5480.00	5480.00	0.00	5480.00	0.00	0.00	0.00	0.00
9.625in Casing	0.00	5480.00	5480.00	0.00	5480.00	0.00	0.00	0.00	0.00



Planned Wellpath Report

Prelim_1
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REFERENCE WELLPATH IDENTIFICATION

Operator	Cimarex Energy Co.	Slot	No. 1H SHL
Area	Lea County, NM	Well	No. 1H
Field	(Hat Mesa) Sec 10, T21S, R32E	Wellbore	No. 1H PWB
Facility	Hat Mesa 10 Fed Com No 1H		

TARGETS

Name	MD [ft]	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
1) Hat Mesa No. 1H PBHL	15047.57	10550.00	-97.90	-4619.50	745822.40	544493.80	32°29'42.457"N	103°40'12.348"W	point

SURVEY PROGRAM - Ref Wellbore: No. 1H PWB Ref Wellpath: Prelim_1

Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
0.00	15047.57	NaviTrak (Standard)		No. 1H PWB

20" Diverter System

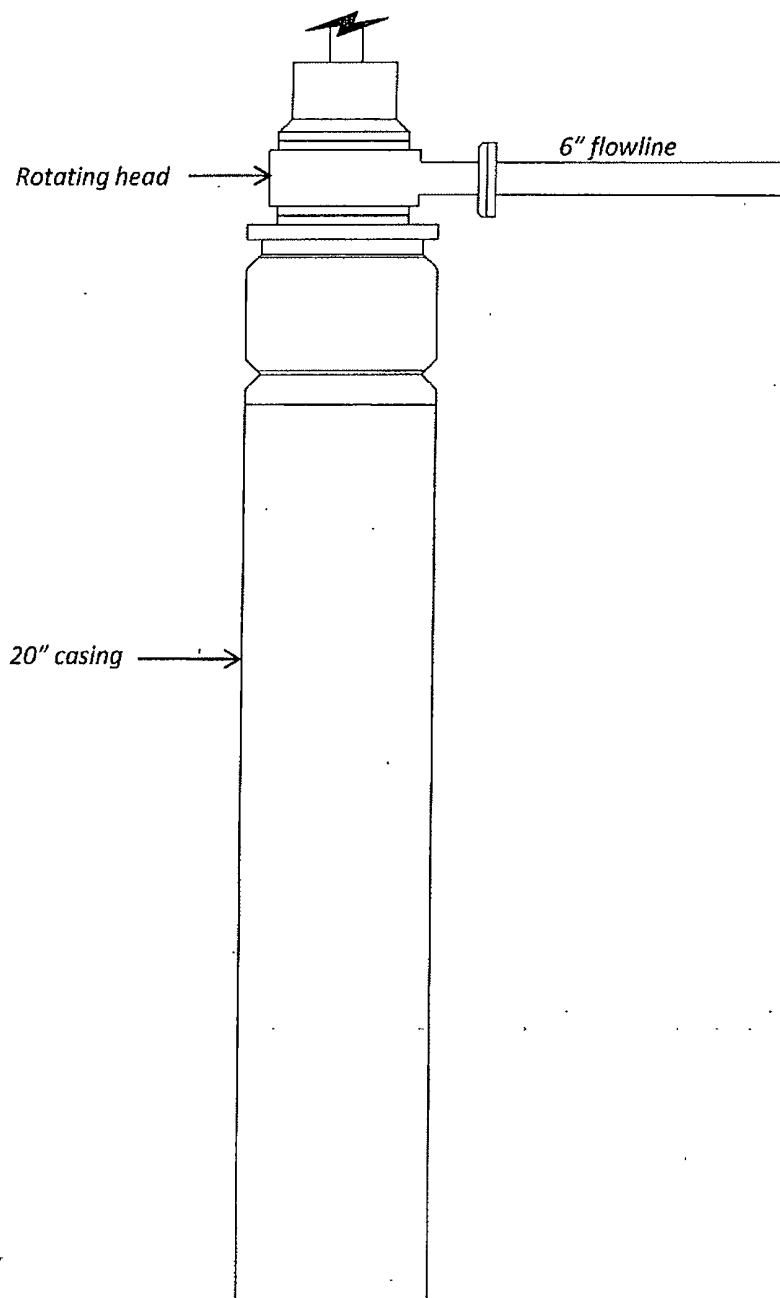


Exhibit E-1 – 20" Diverter System
Hat Mesa 10 Federal Com No. 1
Cimarex Energy Co. of Colorado
10-21S-32E
SHL 1940 FNL & 330 FEL
BHL 1980 FNL & 330 FWL
Lea County, NM

SR & A

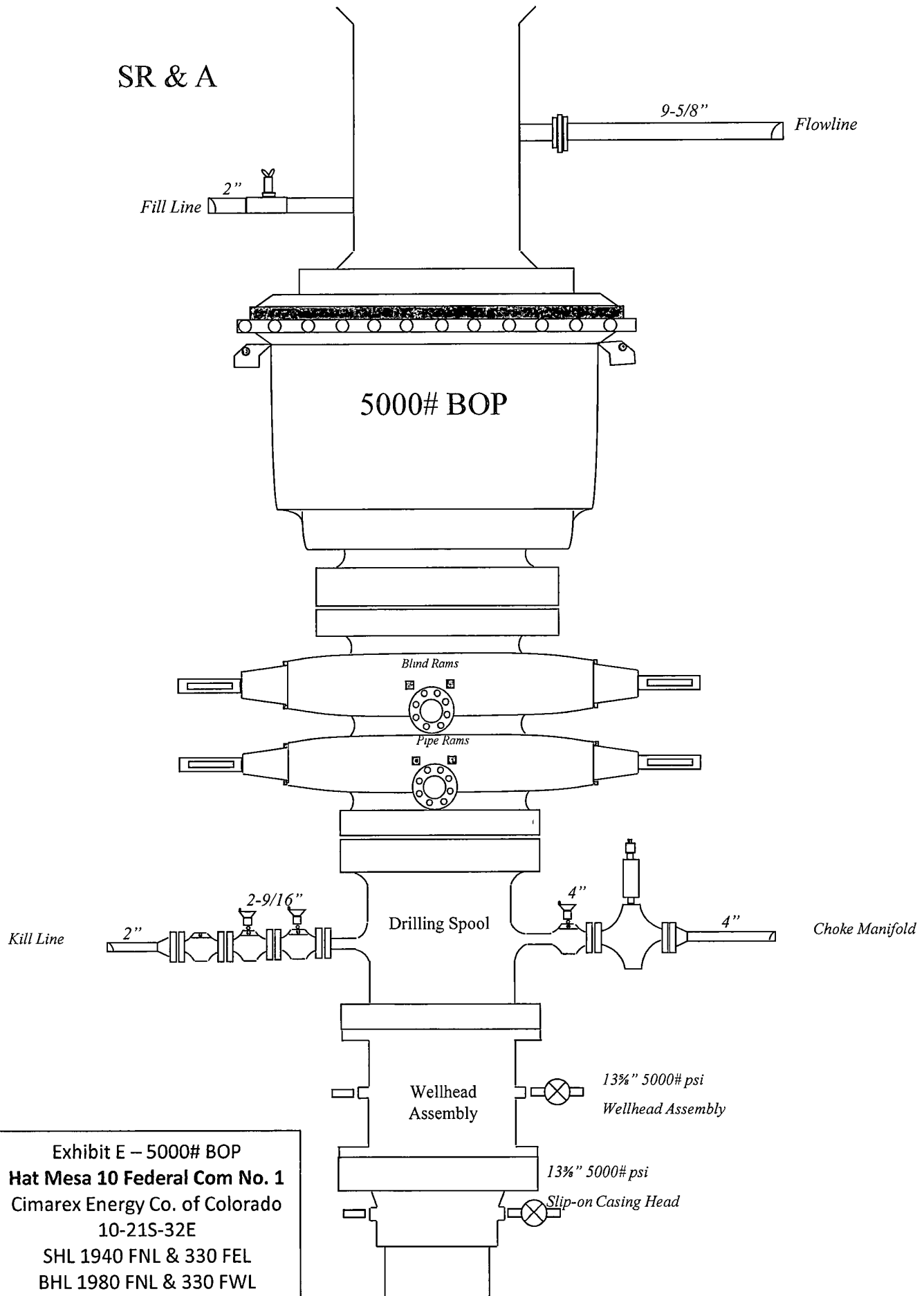
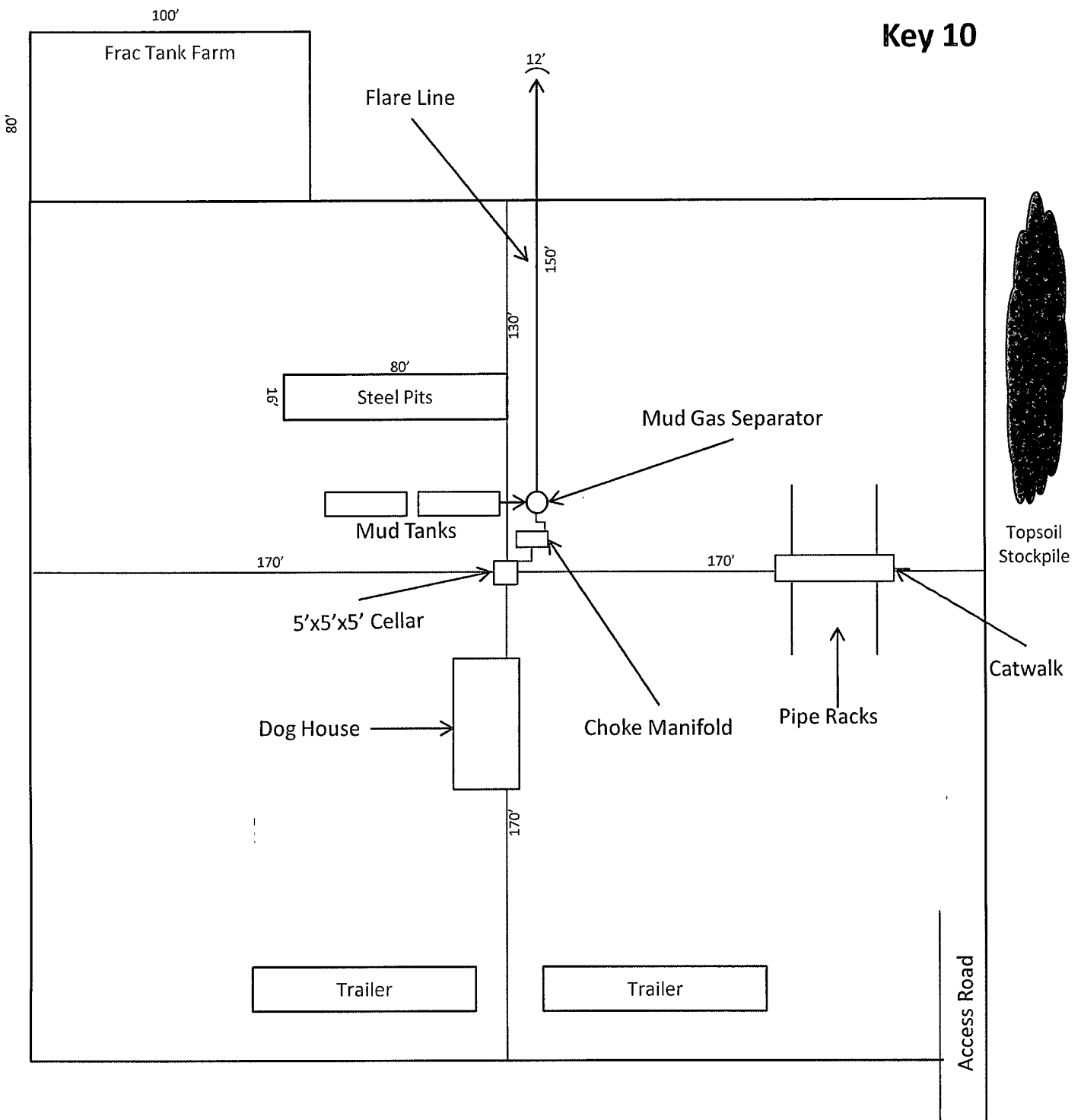


Exhibit E – 5000# BOP
Hat Mesa 10 Federal Com No. 1
Cimarex Energy Co. of Colorado
10-21S-32E
SHL 1940 FNL & 330 FEL
BHL 1980 FNL & 330 FWL
Lea County, NM



1"=50'



Exhibit D – Rig Diagram
Hat Mesa 10 Federal Com No. 1
 Cimarex Energy Co. of Colorado
 10-21S-32E
 SHL 1940 FNL & 330 FEL
 BHL 1980 FNL & 330 FWL
 Lea County, NM