AT3-11-947

OCD-HOBBS

HOBBS OCD

NOV 29 2011

RECEIVED

Form 3160-3
(April 2004)

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

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

5 Lease Serial No
NM-43562

6. If Indian, Allotee or Tribe Name

1a. Type of Work ☒ DRILL ☐ REENTER

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

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

8. Lease Name and Well No
Cascade 29 Federal No. 1H <38948>

2. Name of Operator
Cimarex Energy Co. of Colorado <162683>

9. API Well No
30-025- 40346

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 <96403>

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

At Surface 330 FNL & 350 FWL Unit D

At proposed prod Zone 330 FSL & 350 FWL Unit M Horizontal Bone Spring test

11 Sec., T. R. M or Blk. and Survey or Area
29-25S-33E

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

12 County or Parish
Lea

13 State
NM

15 Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig unit line if any)	16 No of acres in lease	17. Spacing Unit dedicated to this well
330'	640	W2W2 160 acres
18 Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft	**19 Proposed Depth**	**20 BLM/BIA Bond No. on File**
1300'	Pilot Hole 10300 MD 14509 TVD 9972	NM-2575
21 Elevations (Show whether DF, KDB, RT, GL, etc)	**22 Approximate date work will start***	**23 Estimated duration**
3423' GR	10.01.11	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	Name *(Printed/Typed)*	Date
Zeno Farris	Zeno Farris	08.12.11

Title
Manager Operations Administration

Approved By *(Signature)*	Name (Printed/Typed)	Date
James A. Amos		12/01/11
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

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)*

Carlsbad Controlled Water Basin

SEE ATTACHED FOR
CONDITIONS OF APPROVAL

Approval Subject to General Requirements
& Special Stipulations Attached

DEC 06 2011

Form 3160-5
(August 2007)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

OCD-HOBBS
HOBBS OCD

FORM APPROVED
OMB NO. 1004-0135
Expires July 31, 2010

EC

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to re-enter an abandoned well. Use form 3160-3 (APD) for such proposals.

NOV 29 2011

SUBMIT IN TRIPLICATE - Other instructions on reverse side.

RECEIVED

5. Lease Serial No
NMNM43562

6 If Indian, Allottee or Tribe Name

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

1. Type of Well
☒ Oil Well ☐ Gas Well ☐ Other

8. Well Name and No.
CASCADE FED 29 01

2 Name of Operator
CIMAREX ENERGY CO. OF COLORADO
Contact: BRETT JENNINGS
E-Mail: bajennings@cimarex.com

9. API Well No.
30-025-00000

3a. Address
600 N MARIENFELD ST STE 600
MIDLAND, TX 79701

3b. Phone No (include area code)
Ph: 432-620-1932
Fx: 432-620-1940

10 Field and Pool, or Exploratory
BONG SPRING; WILDCAT

4 Location of Well *(Footage, Sec , T , R , M , or Survey Description)*
Sec 29 T25S R33E

11. County or Parish, and State
LEA COUNTY, NM

12. CHECK APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION			
☒ Notice of Intent	☐ Acidize	☐ Deepen	☐ Production (Start/Resume)	☐ Water Shut-Off
☐ Subsequent Report	☐ Alter Casing	☐ Fracture Treat	☐ Reclamation	☐ Well Integrity
☐ Final Abandonment Notice	☐ Casing Repair	☐ New Construction	☐ Recomplete	☒ Other
	☐ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon	
	☐ Convert to Injection	☐ Plug Back	☐ Water Disposal	

13 Describe Proposed or Completed Operation (clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof If the proposal is to deepen directionally or recomplete horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA Required subsequent reports shall be filed within 30 days following completion of the involved operations If the operation results in a multiple completion or recompletion in a new interval, a Form 3160-4 shall be filed once testing has been completed Final Abandonment Notices shall be filed only after all requirements, including reclamation, have been completed, and the operator has determined that the site is ready for final inspection)

Cimarex proposes to construct a 300'x300'x8' fresh water frac pit on our Cascade Fed 29 lease as shown on attached plat and topo. Pit will service the Cascade 29 Fed wells and others in the area. Pit floor will be lined with Geofoam or caliche to protect against rocks if any. Pit will be fenced with a 5 wire barb wire fence with a 12' gate at the east side of the pit. The pit will service Cimarex Operated Bone Spring; Wildcat completions in the area. Fast lines from water haulers will be utilized along existing roads to fill the pit and transport fresh water to the wells for fracing. When drilling has ceased in the area, pit area will be reclaimed, contoured, and reseeded per BLM specifications.

MOA contribution for well pad will be sent under separate cover.

SEE ATTACHED FOR
CONDITIONS OF APPROVAL

14 I hereby certify that the foregoing is true and correct
Electronic Submission #121543 verified by the BLM Well Information System
For CIMAREX ENERGY CO. OF COLORADO, sent to the Hobbs

Name *(Printed/Typed)* BRETT JENNINGS — Title REGULATORY ANALYST

Signature (Electronic Submission) — Date 10/27/2011

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By — Title — Date 11/17/11

Conditions of approval, if any, are attached. Approval of this notice 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

Office CARLSBAD FIELD OFFICE

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.

**** OPERATOR-SUBMITTED ** OPERATOR-SUBMITTED ** OPERATOR-SUBMITTED ****

BLM LEASE NUMBER: NM-43562
COMPANY NAME: Cimarex Energy Co of Colorado
ASSOCIATED WELL NO. & NAME: Cascade 29 Federal 1H

FRAC POND CONDITIONS OF APPROVAL

A copy of the Sundry Notice and attachments, including stipulations, survey plat and diagram, will be on location during construction. BLM personnel may request to see a copy of your permit during construction to ensure compliance with all conditions of approval.

Holder agrees to comply with the following conditions of approval to the satisfaction of the Authorized Officer:

1. The Holder shall indemnify the United States against any liability for damage to life or property arising from the occupancy or use of public lands under this permit.

2. The Holder shall comply with all applicable Federal laws and regulations existing or hereafter enacted or promulgated.

3. Required Standard Conditions of Approval:

- Contact the Supervisory Environmental Protection Specialist, Jim Amos, at 575-234-5909 at least 24 hours prior to starting construction.
- The frac pond will only be authorized to contain freshwater and testing of water quality is required. Additives are not allowed without consent of the authorized officer.
- If at any time the water in the frac pond becomes polluted with salts or other contaminants, use of the frac pond will cease and desist, and all liquids will be removed from the frac pond and disposed of properly.
- Confine all construction and maintenance activity to the authorized area.
- Temporary pipelines flowing from the frac pond to the target well will be laid along existing roadways unless an exception has been granted by the authorized officer.
- Mineral materials extracted during construction of the frac pond will be stored on-location and/or used for constructing the frac pond.
- The frac pond will be lined.
- The operator shall stockpile topsoil approximately 25 feet outside the bermed perimeter of the pond in a low profile manner, reasonably protected from wind and water erosion

- Topsoil shall not be used for constructing the frac pond. The topsoil will be used for final reclamation purposes only.

- The frac pond shall be fenced on all sides.

- Install earthen erosion-control structures as are suitable for the specific terrain and soil conditions.

- The plastic lining will be removed prior to final abandonment

- Reclamation efforts will commence immediately after the frac pond is no longer needed for the purpose of completing wells.

- Within 3 months of completion of frac operations on associated wells, all earthwork and final reclamation must be completed. This includes reclaiming and/or removal of:

  Any roads approved for use with the pond

  Surface water lines

  Tanks, pumps, fencing etc.

- Porto-johns and trash containers will be on-location during fracturing operations or any other crew-intensive operations.

Requirements for Operations and Final Reclamation:

4. If, during any phase of the construction, operation, maintenance, or termination of the frac pond, any pollutant should be released from the contaminated frac pond, the control and total removal, disposal, and cleaning up of such pollutant, wherever found, shall be the responsibility of holder, regardless of fault.

5. The holder shall minimize disturbance to existing fences and other improvements on public lands. The holder is required to promptly repair improvements to at least their former state. Functional use of these improvements will be maintained at all times. The holder will contact the owner of any improvements prior to disturbing them. When necessary to pass through a fence line, the fence shall be braced on both sides of the passageway prior to cutting of the fence. No permanent gates will be allowed unless approved by the Authorized Officer.

6. Any cultural and/or paleontological resources (historic or prehistoric site or object) discovered by the holder, or any person working on his behalf shall be immediately reported to the Authorized Officer. Holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized

Officer. An evaluation of the discovery will be made by the Authorized Officer to determine appropriate actions to prevent the loss of significant cultural or scientific values. The holder will be responsible for the cost of evaluation and any decision as to proper mitigation measures will be made by the Authorized Officer after consulting with the holder.

7. The operator shall be held responsible if noxious weeds become established within the areas of operations. Weed control shall be required on the disturbed land where noxious weeds exist, which includes the roads, pads, associated pipeline corridor, and adjacent land affected by the establishment of weeds due to this action. The operator shall consult with the Authorized Officer for acceptable weed control methods, which include following EPA and BLM requirements and policies.

8. After all disturbed areas have been satisfactorily contoured and prepared for seeding the location needs to be revegetated with the seed mixture provided. Seeding may need to be repeated until revegetation is successful. Operators shall contact Jim Amos, Supervisor, Environmental Protection – (575)234-5909, **prior** to beginning surface reclamation operations.

9. Seeding is required: Use the following seed mix.

( ) seed mixture 1	( ) seed mixture 3
( ) seed mixture 2	( ) seed mixture 4
(x) LPC mixture	( ) Aplomado Falcon mix

10. The topsoil to be stripped is approximately 6 inches in depth.

11. Special Stipulations:

12. Upon failure of holder to control, dispose of, or clean up such discharge, or to repair all damages resulting there-from, the Authorized Officer may take such measures as he deems necessary to control and clean up the discharge and restore the area, including where appropriate, the aquatic environment and fish and wildlife habitats, at the full expense of the holder. Such action by the Authorized Officer shall not relieve holder of any responsibility as provided herein.

13. Lesser Prairie-Chicken
Oil and gas activities will not be allowed in lesser prairie-chicken habitat during the period from March 1st through June 15th annually. During that period, other activities that produce noise or involve human activity, such as the maintenance of oil and gas facilities, geophysical exploration other than 3-D operations, and pipeline, road, and well pad construction, will be allowed except between 3:00 am and 9:00 am. The 3:00 am to 9:00 am restriction will not apply to normal, around-the-clock operations, such as venting, flaring, or pumping, which do not require a human presence during this period. Normal vehicle use on existing roads will not be restricted. Exhaust noise from pump

jack engines must be muffled or otherwise controlled so as not to exceed 75 db measured at 30 ft. from the source of the noise.

EA File #__12-175____

BLM Serial #: NM43562
Company Reference: Cimarex Energy Co of Colorado
Well Name and Number: Cascade 29 Federal 1H

Seed Mixture for LPC Sand/Shinnery Sites

The holder shall seed all disturbed areas with the seed mixture listed below. The seed mixture shall be planted in the amounts specified in pounds of pure live seed (PLS)* per acre. There shall be no primary or secondary noxious weeds in the seed mixture. Seed will be tested and the viability testing of seed will be done in accordance with State law(s) and within nine (9) months prior to purchase. Commercial seed will be either certified or registered seed. The seed container will be tagged in accordance with State law(s) and available for inspection by the authorized officer.

Seed will be planted using a drill equipped with a depth regulator to ensure proper depth of planting where drilling is possible. The seed mixture will be evenly and uniformly planted over the disturbed area (smaller/heavier seeds have a tendency to drop the bottom of the drill and are planted first). The holder shall take appropriate measures to ensure this does not occur. Where drilling is not possible, seed will be broadcast and the area shall be raked or chained to cover the seed. When broadcasting the seed, the pounds per acre are to be doubled. The seeding will be repeated until a satisfactory stand is established as determined by the authorized officer. Evaluation of growth will not be made before completion of at least one full growing season after seeding.

Species to be planted in pounds of pure live seed* per acre:

Species	lb/acre
Plains Bristlegrass	5lbs/A
Sand Bluestem	5lbs/A
Little Bluestem	3lbs/A
Big Bluestem	6lbs/A
Plains Coreopsis	2lbs/A
Sand Dropseed	1lbs/A

*Pounds of pure live seed:

Pounds of seed **x** percent purity **x** percent germination = pounds pure live seed

Application to Drill
Cascade 29 Federal No. 1H
Cimarex Energy Co. of Colorado
Unit D, Section 29
T25S-R33E; Lea County, NM

HOBBS OCD

NOV 29 2011

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 & 350 FWL
BHL 330 FSL & 350 FWL

2 Elevation above sea level: 3423 GR

3 Geologic name of surface formation: Quaternery 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 10300 MD 14509 TVD 9972

6 Estimated tops of geological markers:

Rustler	994
T. Salt	1612
B. Salt	4682
Delaware	4917
Cherry Canyon	5962
Lower Brushy Canyon	8932
Bone Spring	9102

7 Possible mineral bearing formation:
Bone Spring Oil

8 Proposed Mud Circulating System:

Depth	Mud Wt	Visc	Fluid Loss	Type Mud
0' to 1100'	8.4 - 8.6	28	NC	FW
1600 1100' to 4800'	10.0	30-32	NC	Brine water
4800' to 14509'	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 10300 and log. Pump 30bbls MUDPUSHII 12ppg, followed by 1475 sks Type H Cement, D080 (Dispersant) 0.080 gal/sk, D177 (Retarder) 0.045gal/sk17.5 ppg yield 0.94 & 0% Excess. Set whipstock and kick off 8¾" lateral @ 9781 and drill to TD @ 14509 MD, 9972 TVD. Run 5½" 17# P-110 LTC from 0-14509 and cement.

Application to Drill
Cascade 29 Federal No. 1H
Cimarex Energy Co. of Colorado
Unit D, Section 29
T25S-R33E; Lea County, NM

9 Casing & Cementing Program:

String	Hole Size	Depth			Casing OD		Weight	Collar	Grade
Surface	17½"	0'	to	~~1100~~ 1100'	New	13⅜"	48#	STC	H-40
Intermediate	12¼"	0'	to	4800'	New	9⅝"	~~36~~ 40#	LTC	J-55
Production	8¾"	0'	to	14509'	New	5½"	17#	LTC	P-110

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:1100SKS 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:1120SKS 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 900' **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 305 according to the State Engineer. Fresh water zones will be protected by setting 13⅜" casing at 1100 and cementing to surface. Hydrocarbon zones will be protected by setting 9⅝" casing at 4800 and cementing to surface, and by setting 5½" casing at 14509 and cementing to 900.

Collapse Factor	*Burst Factor*	*Tension Factor*
1.125	1.125	1.6

11 Pressure control Equipment:
Exhibit "E". A 13⅜" 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 215.' 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 utilized if drilling in potential H2S area.

BOP unit will be hydraulically operated. BOP will be nippled 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 surface casing through the running of production casing, the well will be equipped with a 5000 psi BOP system.

Before drilling out of surface casing 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. Before drilling out of intermediate casing BOP's will be tested by an independent service company to 250 psi low and 5000 psi high. Hydril will be tested to 250 psi low and 2500 psi high.

12 Testing, Logging and Coring Program: See COA

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

13 Potential Hazards:

No abnormal pressures or temperatures are expected. In accordance with Onshore Order 6, Cimarex does not anticipate that there will be enough H_2S from the surface to the Bone Spring formations to meet the BLM's minimum requirements for the submission of an "H_2S Drilling Operation Plan" or "Public Protection Plan" for the drilling and completion of this well. Since we have an H_2S Safety package on all wells, attached is an "H_2S 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 **4487 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 potentialed as **an oil well.**

Cimarex Energy Co. (Midland)

Lea County (NAD 83)
Sec 29-T25S-R33E
Cascade 29 Fed 1H

Wellbore #1

Plan: Design #1

Standard Planning Report

11 August, 2011

Great White Directional Services

Planning Report

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Well Cascade 29 Fed 1H
Company:	Cimarex Energy Co. (Midland)	**TVD Reference:**	WELL @ 0.0usft (Original Well Elev)
Project:	Lea County (NAD 83)	**MD Reference:**	WELL @ 0.0usft (Original Well Elev)
Site:	Sec 29-T25S-R33E	**North Reference:**	Grid
Well:	Cascade 29 Fed 1H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Project Lea County (NAD 83)

Map System:	US State Plane 1983	**System Datum:**	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site Sec 29-T25S-R33E

Site Position:		**Northing:**	403,768.80 usft	**Latitude:**	32° 6' 28.535 N
From:	Map	**Easting:**	767,866.70 usft	**Longitude:**	103° 36' 6.179 W
Position Uncertainty:	0.0 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	0.39 °

Well Cascade 29 Fed 1H

Well Position	**+N/-S**	0.0 usft	**Northing:**	403,768.80 usft	**Latitude:**	32° 6' 28.535 N
	+E/-W	0.0 usft	**Easting:**	767,866.70 usft	**Longitude:**	103° 36' 6.179 W
Position Uncertainty		0.0 usft	**Wellhead Elevation:**		**Ground Level:**	0.0 usft

Wellbore Wellbore #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	08/11/11	7.57	60.07	48,553

Design Design #1

Audit Notes:

Version:		**Phase:**	PLAN	**Tie On Depth:**	0.0

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	179.64

Plan Sections

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
9,781.0	0.00	0.00	9,781.0	0.0	0.0	0.00	0 00	0.00	0.00	
10,081.0	90.00	179.63	9,972.0	-191.0	1.2	30.00	30.00	0.00	179.63	
14,509.4	90 00	179.64	9,972.0	-4,619.3	29.4	0.00	0.00	0.00	87.73	Cascade PBHL

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
9,781.0	0.00	0.00	9,781.0	0.0	0.0	0.0	0.00	0.00	0.00
KOP - 30°/100 DLS @ 179.63° AZI									
10,081.0	90.00	179.63	9,972.0	-191.0	1.2	191.0	30.00	30.00	0.00
EOC - Hold to TD									
14,509.4	90.00	179.64	9,972.0	-4,619.3	29.4	4,619.4	0.00	0.00	0.00
TD at 14509.4 - Cascade PBHL									

Great White Directional Services

Planning Report

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Well Cascade 29 Fed 1H
Company:	Cimarex Energy Co. (Midland)	**TVD Reference:**	WELL @ 0.0usft (Original Well Elev)
Project:	Lea County (NAD 83)	**MD Reference:**	WELL @ 0.0usft (Original Well Elev)
Site:	Sec 29-T25S-R33E	**North Reference:**	Grid
Well:	Cascade 29 Fed 1H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
Cascade PBHL - plan hits target center - Point	0.00	0.00	9,972.0	-4,619.3	29.4	399,149.50	767,896.10	32° 5' 42.823 N	103° 36' 6.201 W

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
9,781.0	9,781.0	0.0	0.0	KOP - 30°/100 DLS @ 179.63° AZI
10,081.0	9,972.0	-191.0	1.2	EOC - Hold to TD
14,509.4	9,972.0	-4,619.3	29.4	TD at 14509.4

CIMAREX

Company: Cimarex Energy Co. (Midland)
Project: Lea County (NAD 83)
Site: Sec 29-T25S-R33E
Well: Cascade 29 Fed 1H
Wellbore: Wellbore #1
Design: Design #1
Lat: 32° 6' 28.535 N
Long: 103° 36' 6.179 W
GL: 0.0
KB: WELL @ 0.0usft (Original Well Elev)

GREAT WHITE DIRECTIONAL SERVICES, L.L.C.

Azimuths to Grid North
True North: -0.39°
Total Correction/Magnetic North: 7.18°

Magnetic Field
Strength: 48553.0snT
Dip Angle: 60.07°
Date: 08/11/2011
Model: IGRF2010

REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well Cascade 29 Fed 1H, Grid North
Vertical (TVD) Reference: WELL @ 0.0usft (Original Well Elev)
Section (VS) Reference: Slot - (0.0N, 0.0E)
Measured Depth Reference: WELL @ 0.0usft (Original Well Elev)
Calculation Method: Minimum Curvature

WELL DETAILS: Cascade 29 Fed 1H

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	403768.80	767856.70	32° 6' 28.535 N	103° 36' 6.179 W	

Ground Level: 0.0

PROJECT DETAILS: Lea County (NAD 83)

Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: New Mexico Eastern Zone

System Datum: Mean Sea Level

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
Cascade PBHL	9972.0	-4619.3	29.4	32° 5' 42.823 N	103° 36' 6.201 W	Point

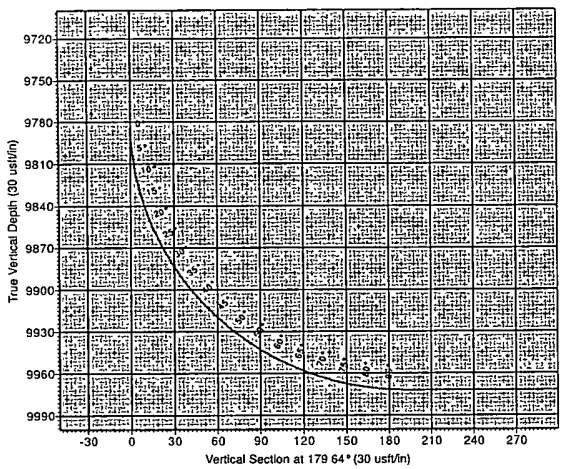
SITE DETAILS: Sec 29-T25S-R33E

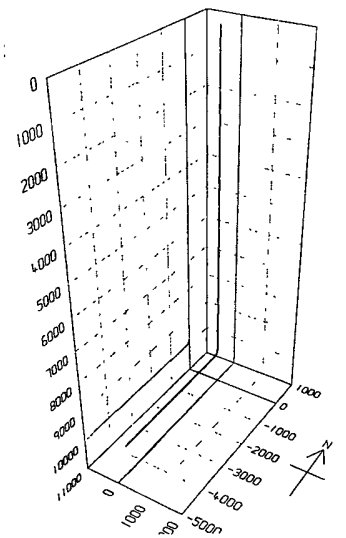
Site Centre Latitude: 32° 6' 28.535 N
Longitude: 103° 36' 6.179 W

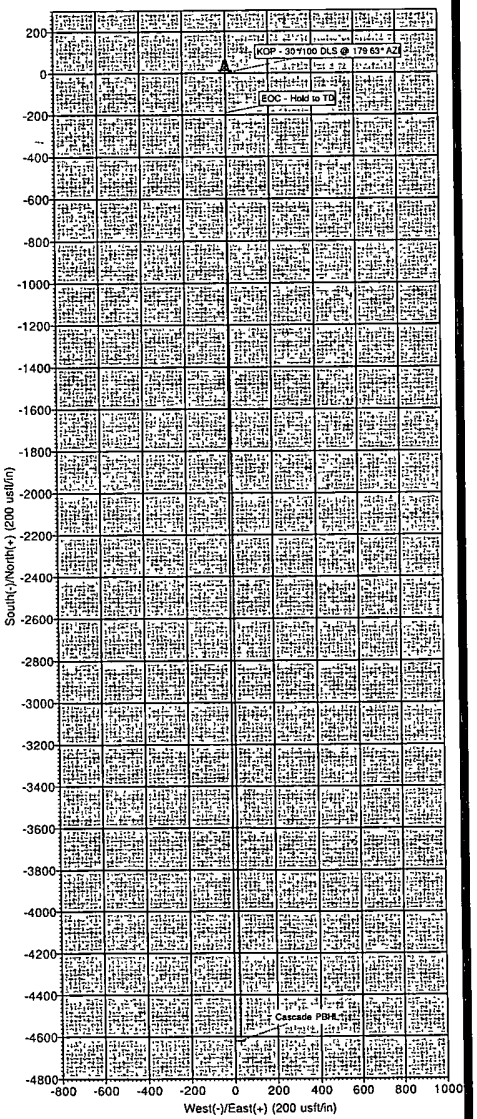
Positional Uncertainty: 0.0
Convergence: 0.39
Local North: Grid

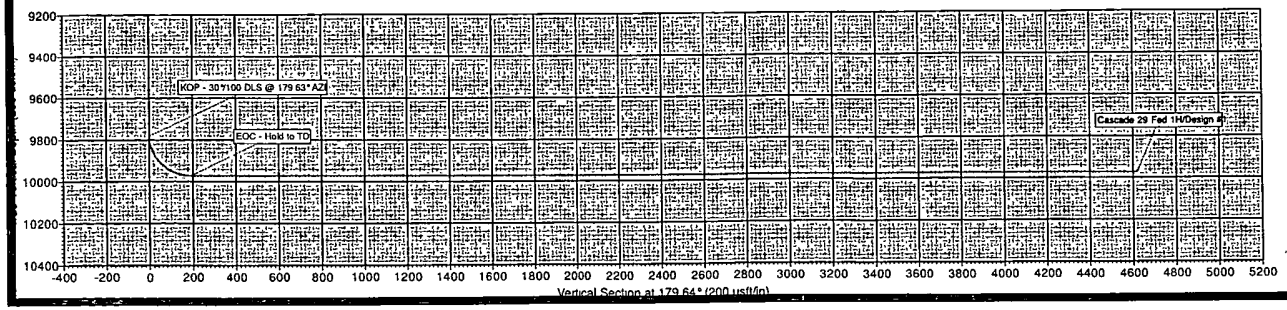
SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Annotation
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
9781.0	0.00	0.00	9781.0	0.0	0.0	0.00	0.00	0.0	KOP - 30°/100 DLS @ 179.63° AZI
10081.0	90.00	179.63	9972.0	-191.0	1.2	30.00	179.63	191.0	EOC - Hold to TD
14509.4	90.00	179.64	9972.0	-4619.3	29.4	0.00	87.73	4619.4	TD at 14509.4









SR & A

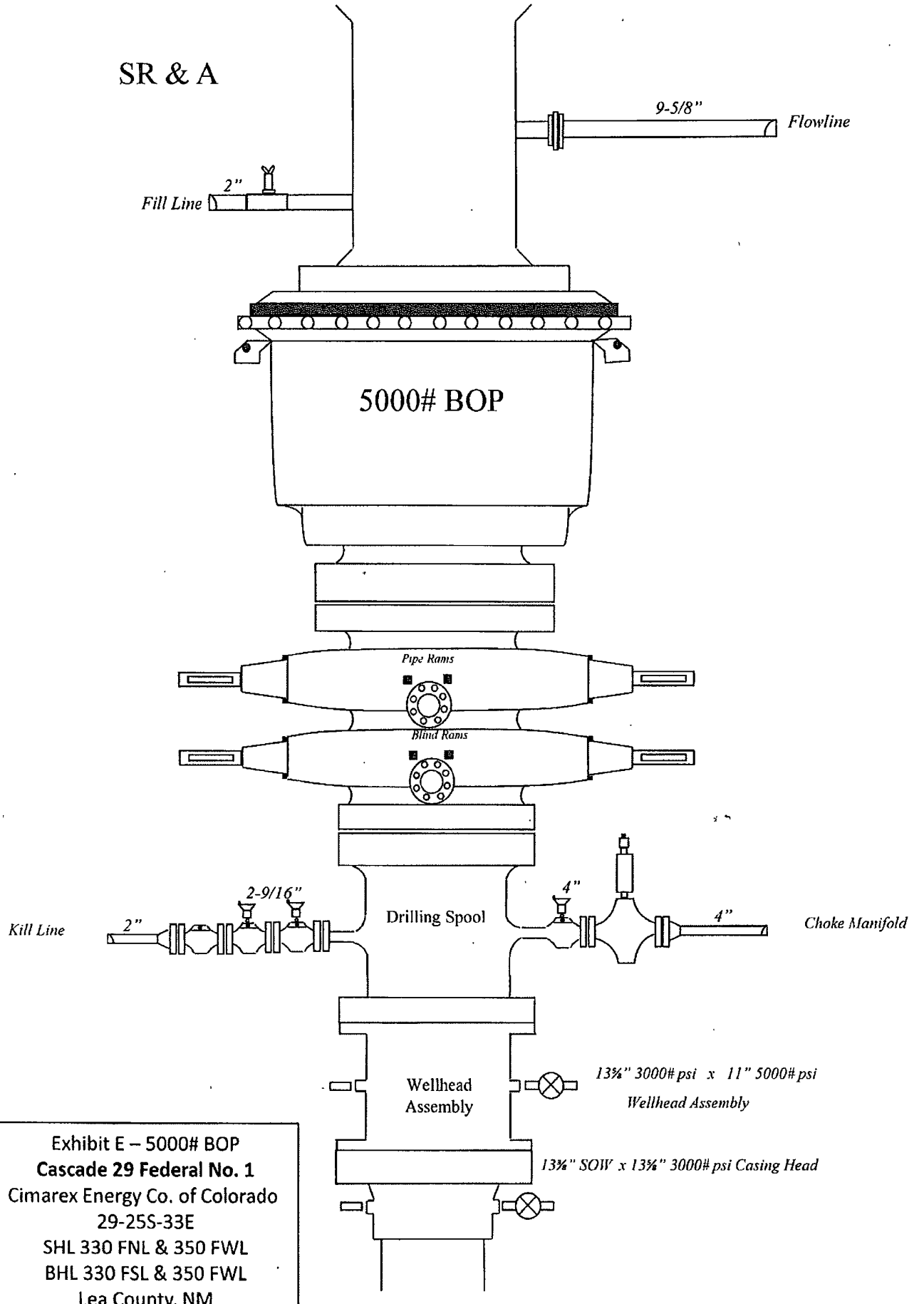
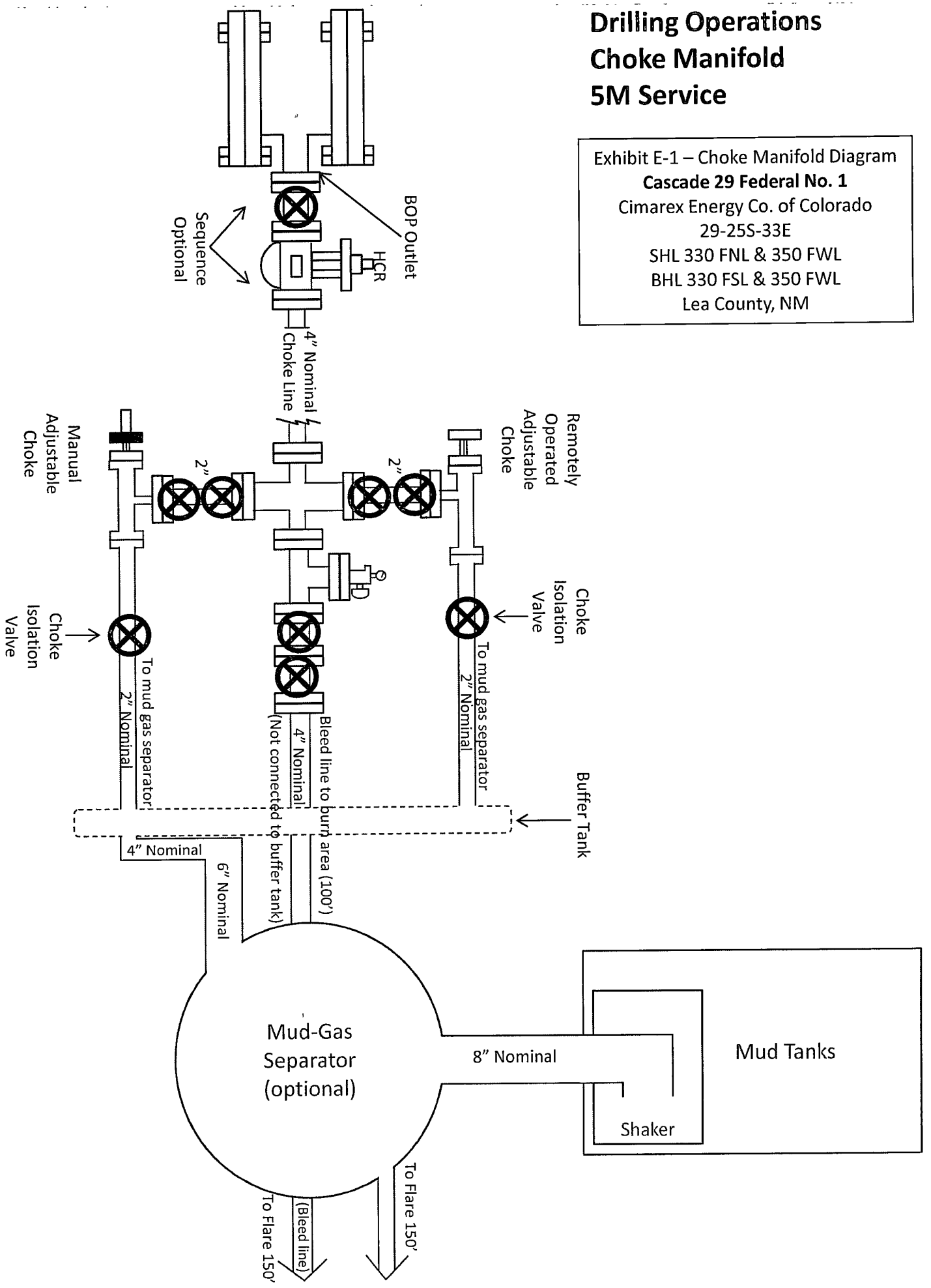


Exhibit E – 5000# BOP
Cascade 29 Federal No. 1
Cimarex Energy Co. of Colorado
29-25S-33E
SHL 330 FNL & 350 FWL
BHL 330 FSL & 350 FWL
Lea County, NM

Drilling Operations
Choke Manifold
5M Service

Exhibit E-1 – Choke Manifold Diagram
Cascade 29 Federal No. 1
Cimarex Energy Co. of Colorado
29-25S-33E
SHL 330 FNL & 350 FWL
BHL 330 FSL & 350 FWL
Lea County, NM



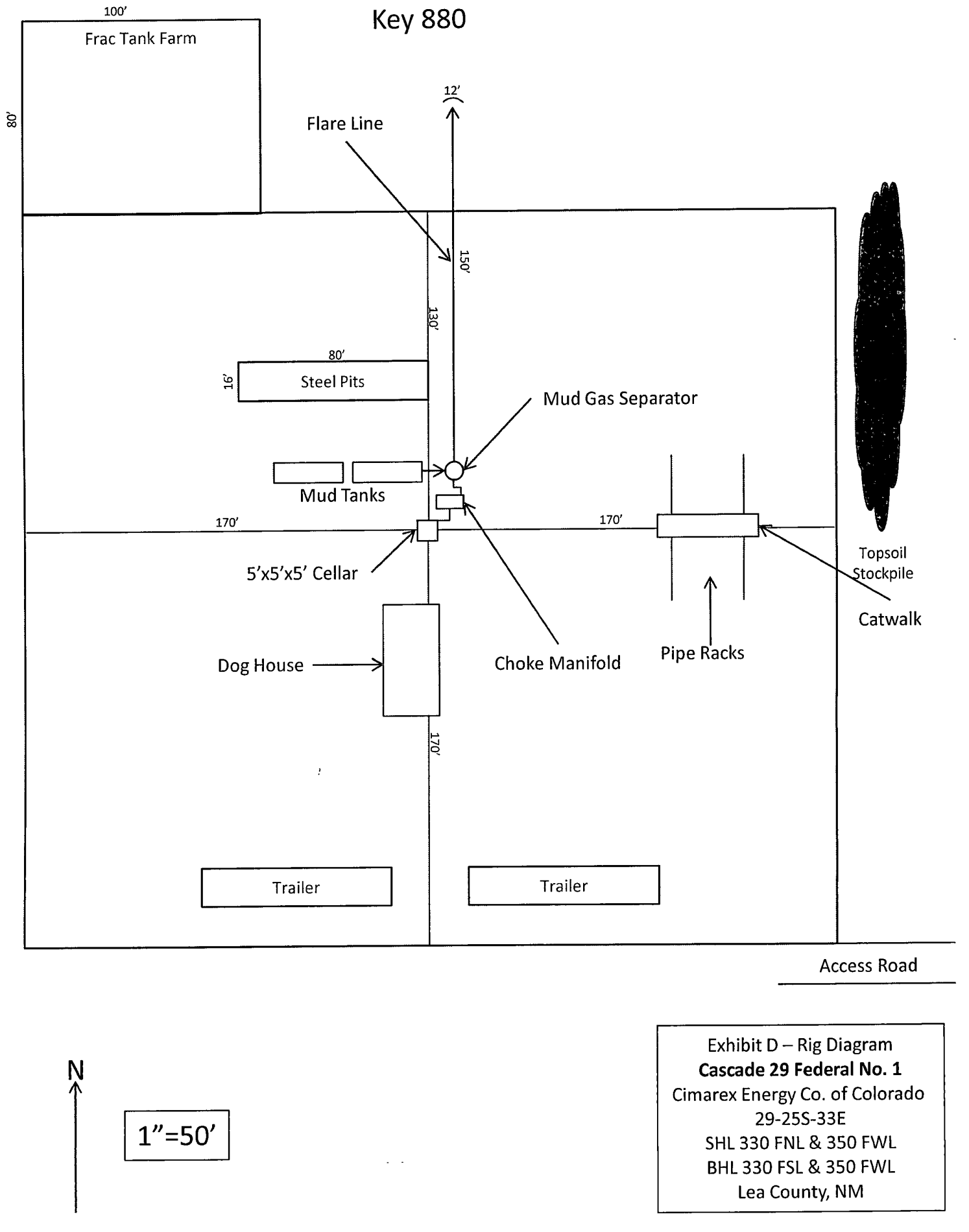


Exhibit D – Rig Diagram
Cascade 29 Federal No. 1
Cimarex Energy Co. of Colorado
29-25S-33E
SHL 330 FNL & 350 FWL
BHL 330 FSL & 350 FWL
Lea County, NM