

OCD-ARTESIA

Form 3160-3  
(April 2004)



# RESUBMITTAL

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

HIGH CAVEKARST

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

## APPLICATION FOR PERMIT TO DRILL OR REENTER

1a. Type of Work: <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER		5. Lease Serial No. LC-065347
1b. Type of Well: <input type="checkbox"/> Oil Well <input checked="" type="checkbox"/> Gas Well <input type="checkbox"/> Other <input checked="" type="checkbox"/> Single Zone <input type="checkbox"/> 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 PO Box 140907; Irving, TX 75014-0907		8. Lease Name and Well No. Estill AD Federal No. 4 33619
3b. Phone No. (include area code) 972-401-3111		9. API Well No. 30-015- 35629
4. Location of Well (Report location clearly and in accordance with any State requirements. *) At Surface 488' FSL & 2260' FWL At proposed prod. Zone 1500' FSL & 1000' FWL		10. Field and Pool, or Exploratory White City; Penn (Gas)
14. Distance in miles and direction from nearest town or post office* 17 miles South of Carlsbad		11. Sec., T. R. M. or Blk. and Survey or Area 9-24S-26E
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line if any) 488'	16. No of acres in lease 2318.08	12. County or Parish Eddy
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. 1686'	19. Proposed Depth 13000'	13. State NM
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 3463' GR	22. Approximate date work will start* 6/15/2007	20. BLM/BIA Bond No. on File NM-2575
23. Estimated duration 35-45 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 <i>Zeno Farris</i>	Name (Printed/Typed) Zeno Farris	Date 03.30.07
Title Manager Operations Administration		
Approved By (Signature) <i>/s/ James Stovall</i>	Name (Printed/Typed) /s/ James Stovall	Date MAY 16 2007
Office FIELD MANAGER	Office CARLSBAD FIELD OFFICE	

Application approval does not warrant or certify conduct operations thereon.

Conditions of approval, if any, are attached.

Title 18 U.S.S. Section 1001 and Title 43 U.S.C. States any false, fictitious, or fraudulent statement.

\* (Instructions on page 2)

If earthen pits are used in association with the drilling of this well, an OCD pit permit must be obtained prior to pit construction.

case which would entitle the applicant to

**APPROVAL FOR 2 YEARS**

ke to any department or agency of the United

SEE ATTACHED FOR  
CONDITIONS OF APPROVAL

APPROVAL SUBJECT TO  
GENERAL REQUIREMENTS  
AND SPECIAL STIPULATIONS  
ATTACHED



**Cimarex Energy Co. of Colorado**

5215 North O'Connor Blvd. • Suite 1500 • Irving, TX 75039 • (972) 401-3111 • Fax (972) 443-6486

Mailing Address: P.O. Box 140907 • Irving, TX 75014-0907

*A wholly-owned subsidiary of Cimarex Energy Co., a NYSE Listed Company, "XEC"*

**STATEMENT ACCEPTING RESPONSIBILITY FOR OPERATIONS**

Bureau of Land  
Management  
620 East Greene Street  
Carlsbad, NM 88220

Attn: Ms. Linda Denniston

Cimarex Energy Co. of Colorado accepts all applicable terms, conditions, stipulations, and restrictions concerning operations conducted on the leased land, or portion thereof, as described below:

Lease No.: LC-065347 - All Section 19-24S-26E

County: Eddy County, NM

Formation(s): Morrow

Bond Coverage: Statewide BLM Bond

BLM Bond File No.: NM-2575

Authorized Signature: Zeno Farris  
Representing Cimarex Energy Co. of Colorado

Name: Zeno Farris

Title: Manager, Operations Administration

Date: March 30, 2007

**DISTRICT IV**  
1220 S. ST. FRANCIS DR., SANTA FE, NM 87505

**OIL CONSERVATION DIVISION**  
1220 SOUTH ST. FRANCIS DR.  
Santa Fe, New Mexico 87505

Form C-102  
Revised JUNE 10, 2003  
Submit to Appropriate District Office  
State Lease - 4 Copies  
Fee Lease - 3 Copies

# WELL LOCATION AND ACREAGE DEDICATION PLAT

☐ AMENDED REPORT

API Number		Pool Code 87280	Pool Name White City; Penn (Gas)
Property Code	Property Name ESTILL AD FEDERAL		Well Number 4
OGRID No. 162683	Operator Name Cimarex Energy Co. of Colorado		Elevation 3463'

### Surface Location

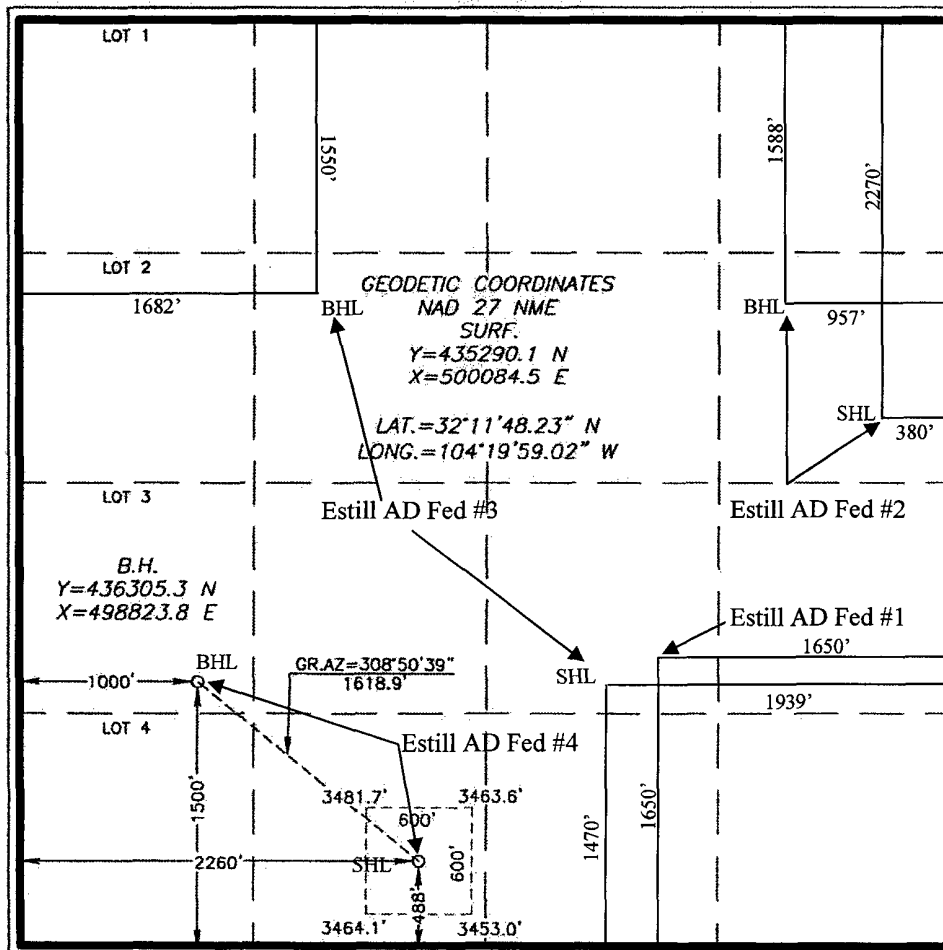
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
N	19	24-S	26-E		488	SOUTH	2260	WEST	EDDY

## Bottom Hole Location If Different From Surface

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
3	19	24-S	26-E		1500	SOUTH	1000	WEST	EDDY

Dedicated Acres	Joint or Infill	Consolidation Code	Order No.
638.08	Y		

NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED  
OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION



## OPERATOR CERTIFICATION

I hereby certify the the information  
contained herein is true and complete to the  
best of my knowledge and belief.

Zeno Farris  
Signature

Zeno Farris

Printed Name  
Mgr Operations Admin

Title 03-30-07

Date: \_\_\_\_\_

### SURVEYOR CERTIFICATION

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me in and under my supervision and that the same are true and correct to the best of my belief.

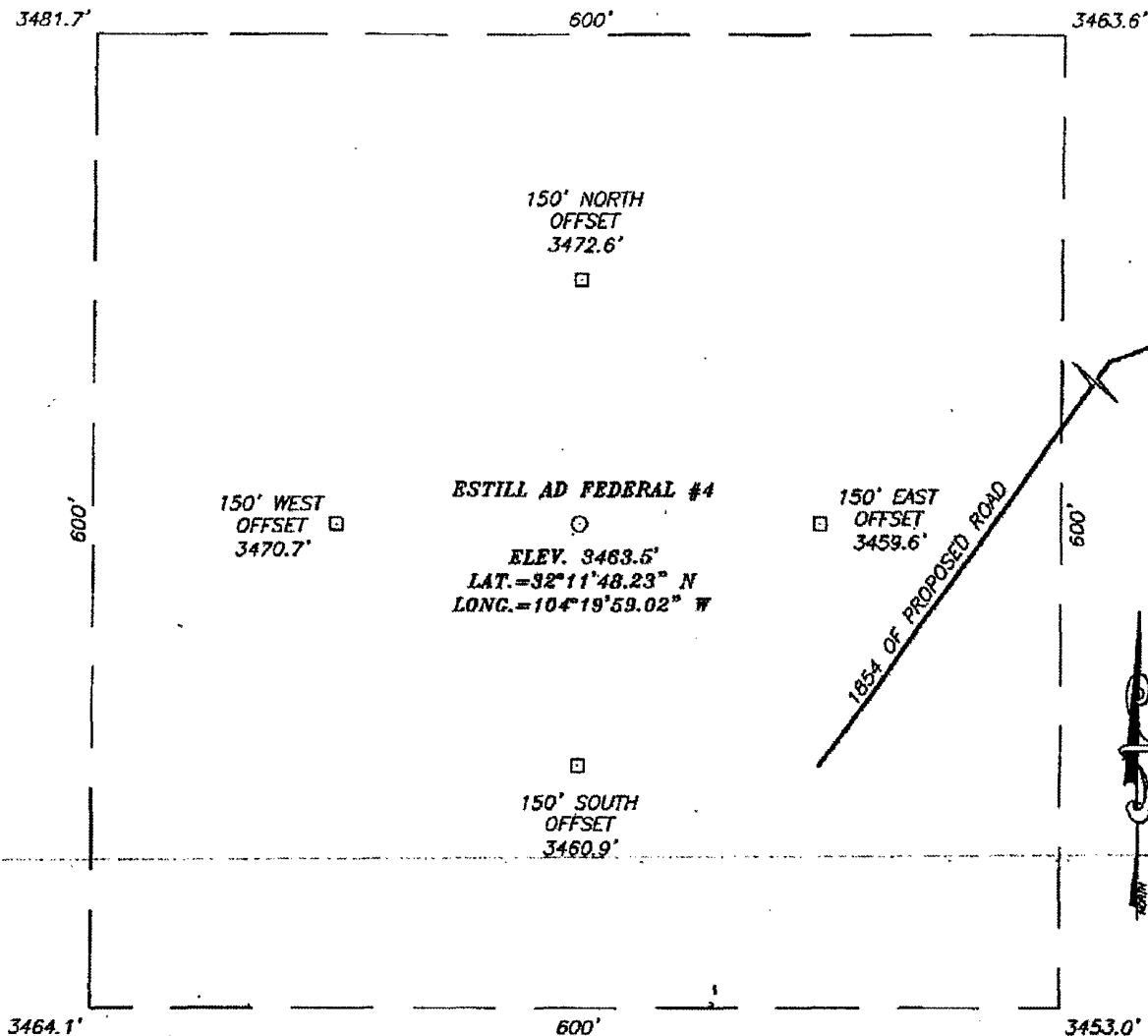
FEBRUARY 3, 2005

Date Surveyed \_\_\_\_\_  
Signature & Seal of \_\_\_\_\_  
Professional Surveyor \_\_\_\_\_

Gary A. Eakman 2/9/05  
05.11.0075

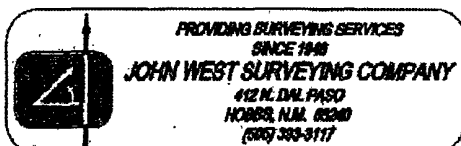
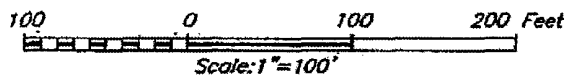
Certificate No. GARY EIDSON 12641

**SECTION 19, TOWNSHIP 24 SOUTH, RANGE 26 EAST, N.M.P.M.,**  
**EDDY COUNTY, NEW MEXICO**



**DIRECTIONS TO LOCATION**

FROM THE INTERSECTION OF U.S. HWY.  
 #62-180 AND CO. RD. #772 (MEANS RD.) GO  
 SOUTH ON CO. RD. #772 FOR APPROX. 0.1  
 MILES TO A CALICHE ROAD ON THE RIGHT.  
 TURN RIGHT AND GO APPROX. 0.3 MILES TO A  
 WELL PAD. GO W/SW ALONG A PROPOSED  
 ROAD SURVEY APPROX. 1854' TO THIS  
 LOCATION.

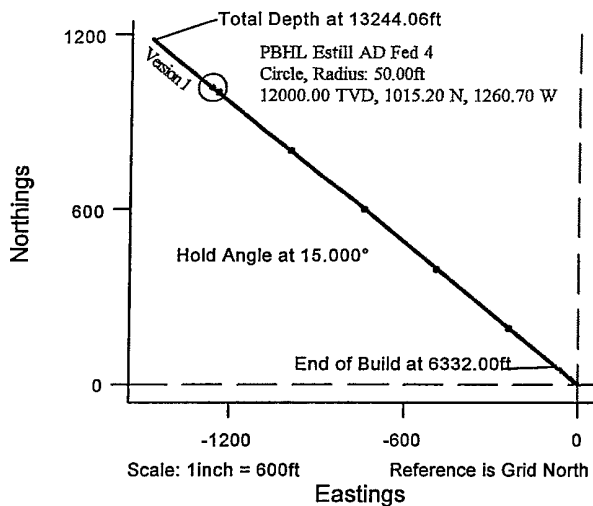


**GRUY PETROLEUM MANAGEMENT COMPANY**

**ESTILL AD FEDERAL #4 WELL**  
 LOCATED 488 FEET FROM THE SOUTH LINE  
 AND 2260 FEET FROM THE WEST LINE OF SECTION 19,  
 TOWNSHIP 24 SOUTH, RANGE 26 EAST, N.M.P.M.,  
 EDDY COUNTY, NEW MEXICO.

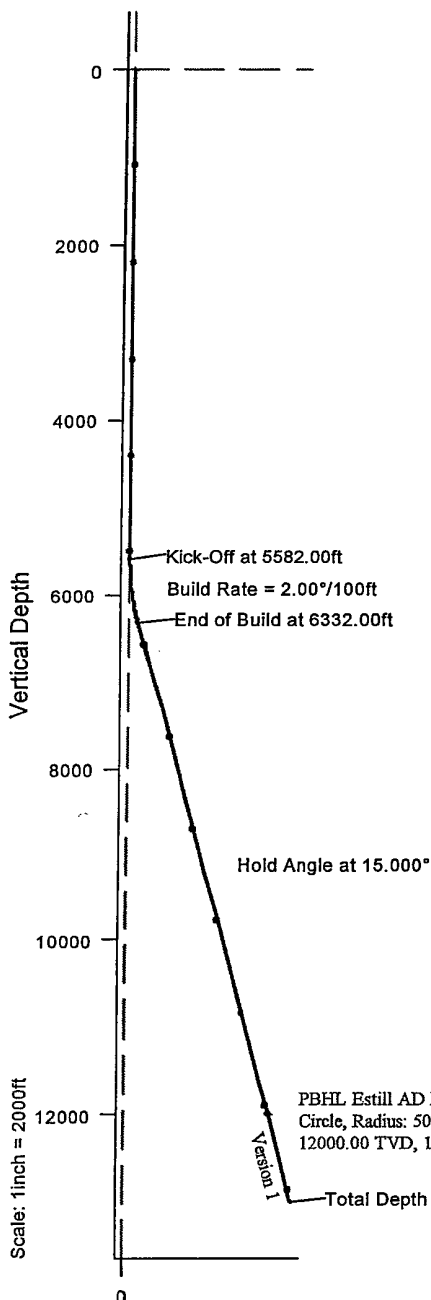
Survey Date: 2/3/05	Sheet 1 of 1 Sheets
W.O. Number: 05.11.0075	Dr By: J.R.
Date: 2/8/05	Disk: CD#5
05110075	Scale: 1"=100'

New Mexico  
Eddy County  
Sec. 19-T24S-R26E  
Estill AD Federal #4  
Version 1



#### Estill AD Federal #4 Surface Location

RKB Elevation: 3486.00ft above Mean Sea Level  
Ref. Global Coordinates: 435290.10 N, 500084.50 E  
Ref. Geographical Coordinates: 32° 11' 48.2264" N, 104° 19' 59.0166" W



#### Version 1 Proposal Data

Coordinate System : NAD27 New Mexico State Planes, Eastern Zone							
Measured Depth	Incl.	Azim.	Vertical Depth	Northings	Eastings	Vertical Section	Dogleg Rate
0.00	0.000	0.000	0.00	0.00 N	0.00 E	0.00	
Kick-Off Point 5582.00	0.000	0.000	5582.00	0.00 N	0.00 E	0.00	0.00
Hold Angle 6332.00	15.000	308.843	6323.46	61.22 N	76.03 W	97.62	2.00
Continue Hold 12208.78	15.000	308.843	12000.00	1015.20 N	1260.70 W	1618.64	0.00
Total Depth 13244.06	15.000	308.843	13000.00	1183.26 N	1469.40 W	1886.59	0.00

#### Version 1 Bottom Hole Location

Ref. RKB(3463°+23°KB): 13000.00ft  
Ref. Ground Level: 12944.00ft  
Ref. Mean Sea Level: 9514.00ft  
Ref. Wellhead: 1183.26 N, 1469.40 W  
Ref. Global Coordinates: 436473.36 N, 498615.10 E  
Ref. Geographical Coordinates: 32° 11' 59.9361" N, 104° 20' 16.1180" W

Section Azimuth: 308.843° (Grid North)

Vertical Section

Prepared by:  
Dennis Cook

Date/Time:  
15 February, 2005 - 16:07

Checked:

Approved:

## Application to Drill

Cimarex Energy Co. of Colorado  
Estill AD Federal No. 4  
Unit N Section 19  
T24S R26E Eddy 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 488' FSL & 2260' FWL  
BHL 1500' FSL & 1000' FWL
- 2 Elevation above sea level: 3463' 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: 13000'

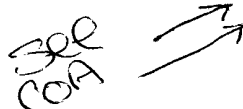
- 6 Estimated tops of geological markers:

Salt 1304'  
Delaware 1591'  
Bone Spring 5228'  
Wolfcamp 8333'  
Cisco-Canyon 9868'  
Strawn 10175'  
Atoka 10440'  
Morrow 11011'

- 7 Possible mineral bearing formation:

Atoka	Gas
Morrow	Gas

- 8 Casing program:



Hole Size	Interval	Casing OD	Weight	Thread	Collar	Grade
17-1/2"	0-250'	13-3/8"	48	8-R	ST&C	H-40
12-1/4"	0-2735'	9-5/8"	40	8-R	LT&C	J-55
8-3/4"	0-13000'	5-1/2"	17	8-R	LT&C	P-110

## Application to Drill

Cimarex Energy Co. of Colorado  
Estill AD Federal No. 4  
Unit N Section 19  
T24S R26E Eddy County, NM

### 9 Cementing & Setting Depth:

13-3/8"	Surface	Set 250' of 13-3/8" H-40 48 # ST&C casing. Cement with 240 sx Class C cement + additives, circulate cement to surface.
9-5/8"	Intermediate	Set 2735' of 9-5/8" J-55 40# LT&C casing. Cement with 1000 sx POZ/C + additives, circulate cement to surface.
5-1/2"	Production	Set 13000' of 5-1/2" P-110 17# LT&C casing. Cement with 3500 sx Super H + additives. TOC 0.'

COA

### 10 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 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. BOP unit will be hydraulically operated. BOP will be nipped up on the 9 5/8" casing and will be 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 pipe through the running of production casing, the well will be equipped with a 500 psi BOP system.

5000

We are requesting a variance for the 13-3/8" surface casing and BOP testing from Onshore Order No. 2, which states that all casing strings below the conductor shall be pressure tested to 0.22 psi per foot or 1500 psi, whichever is greater, but not to exceed 70% of the manufacturer's stated maximum internal yield. We are requesting a variance to test the 13-3/8" casing to 1000 psi using rig pumps. The BOP will be tested to 5000 PSI by an independent service company.

COA

### 11 Proposed Mud Circulating System:

Depth	Mud Wt	Viscosity	Fluid Loss	Type Mud
0 - 250'	8.4 - 8.6	30 - 32	May lose circ.	Fresh water spud mud. Add paper to control seepage and high viscosity sweeps to clean hole.
250' - 2735'	9.7 - 10.0	28 - 29	May lose circ.	Brine water. Add paper as needed to control seepage and add lime to control pH (9-10). Use high viscosity sweeps to clean hole.
2735' - 13000'	8.4 - 10.0	28 - 29	NC	Brine water. Paper for seepage. Lime for PH (9 - 9.5).

COA

COA

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. Mud system monitoring equipment with derrick floor indicators and visual/audio alarms shall be installed and operative prior to drilling into the Wolfcamp formation. This equipment will remain in use until production casing is run and cemented.

## **Application to Drill**

Cimarex Energy Co. of Colorado  
Estill AD Federal No. 4  
Unit N Section 19  
T24S R26E Eddy County, NM

12 Testing, Logging and Coring Program:

- A. Mud logging program: Two-man unit from 2735' 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:

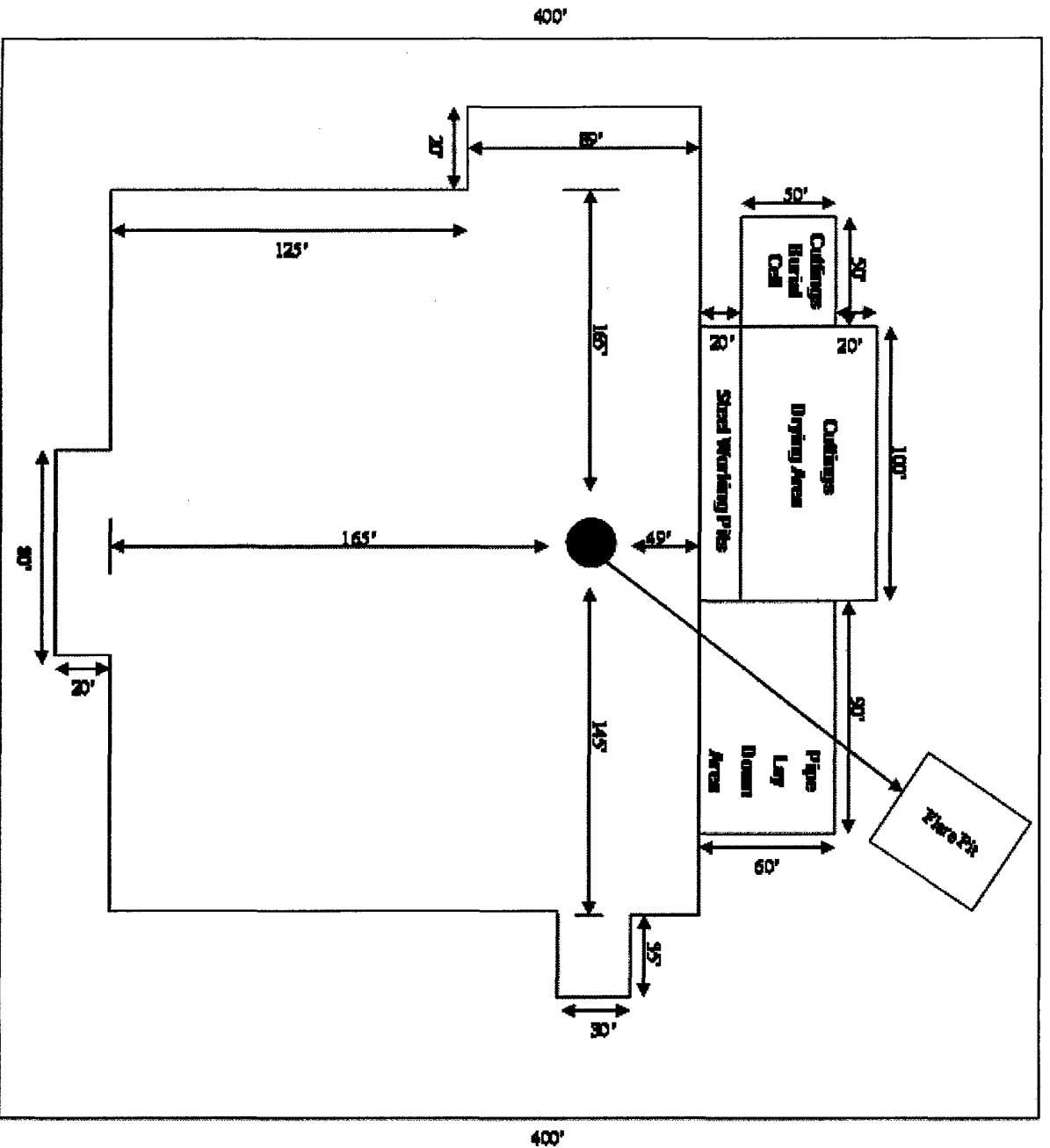
No abnormal pressures or temperatures are expected. The area has a potential H2S hazard. An H2S drilling plan is attached. Adequate flare lines will be installed off the mud / gas separator where gas may be flared safely. All personnel will be familiar with all aspects of safe operation of equipment being used. Estimated BHP 4000 PSI, estimated BHT 175.

14 Anticipated Starting Date and Duration of Operations:

Road and location construction will begin after BLM approval of APD. Anticipated spud date as soon as approved. Drilling expected to take 35-45 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. The Morrow pay will be perforated and stimulated. The well will be tested and potentialized as a gas well.



*Site North  
1-18-2008 East*

## Rig 80

**Cimarex Energy Co. of  
Colorado**  
Irving, TX

Exhibit D - Rig Layout  
Estill AD Federal No. 4  
Cimarex Energy Co. of Colorado  
SHL 488' FSL & 2260' FWL  
BHL 1500' FSL & 1000' FWL  
19-24S-26E  
Eddy County, NM

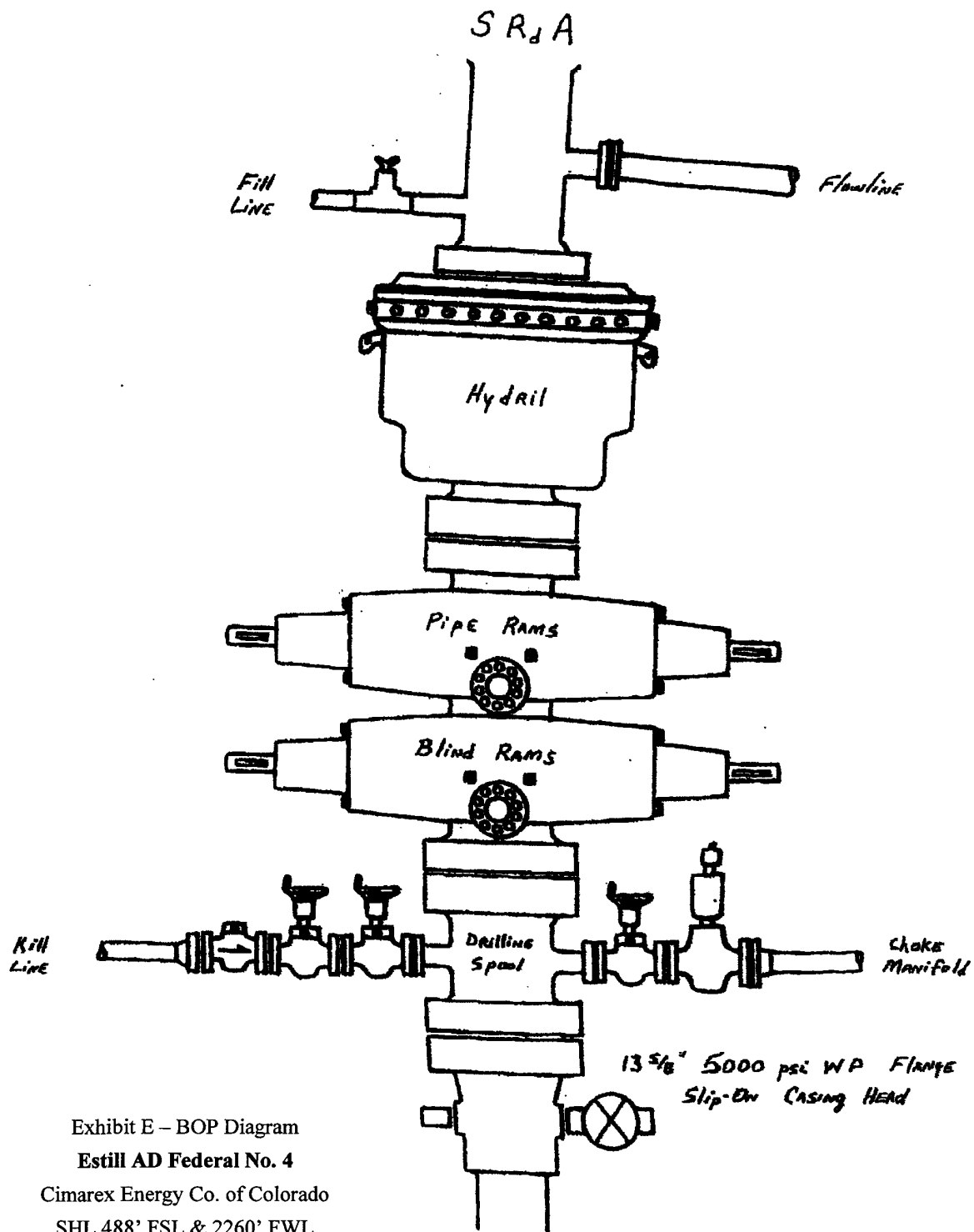


Exhibit E – BOP Diagram  
 Estill AD Federal No. 4  
 Cimarex Energy Co. of Colorado  
 SHL 488' FSL & 2260' FWL  
 BHL 1500' FSL & 1000' FWL  
 19-24S-26E  
 Eddy County, NM

DRILLING OPERATIONS  
CHOKE MANIFOLD  
5M SERVICE

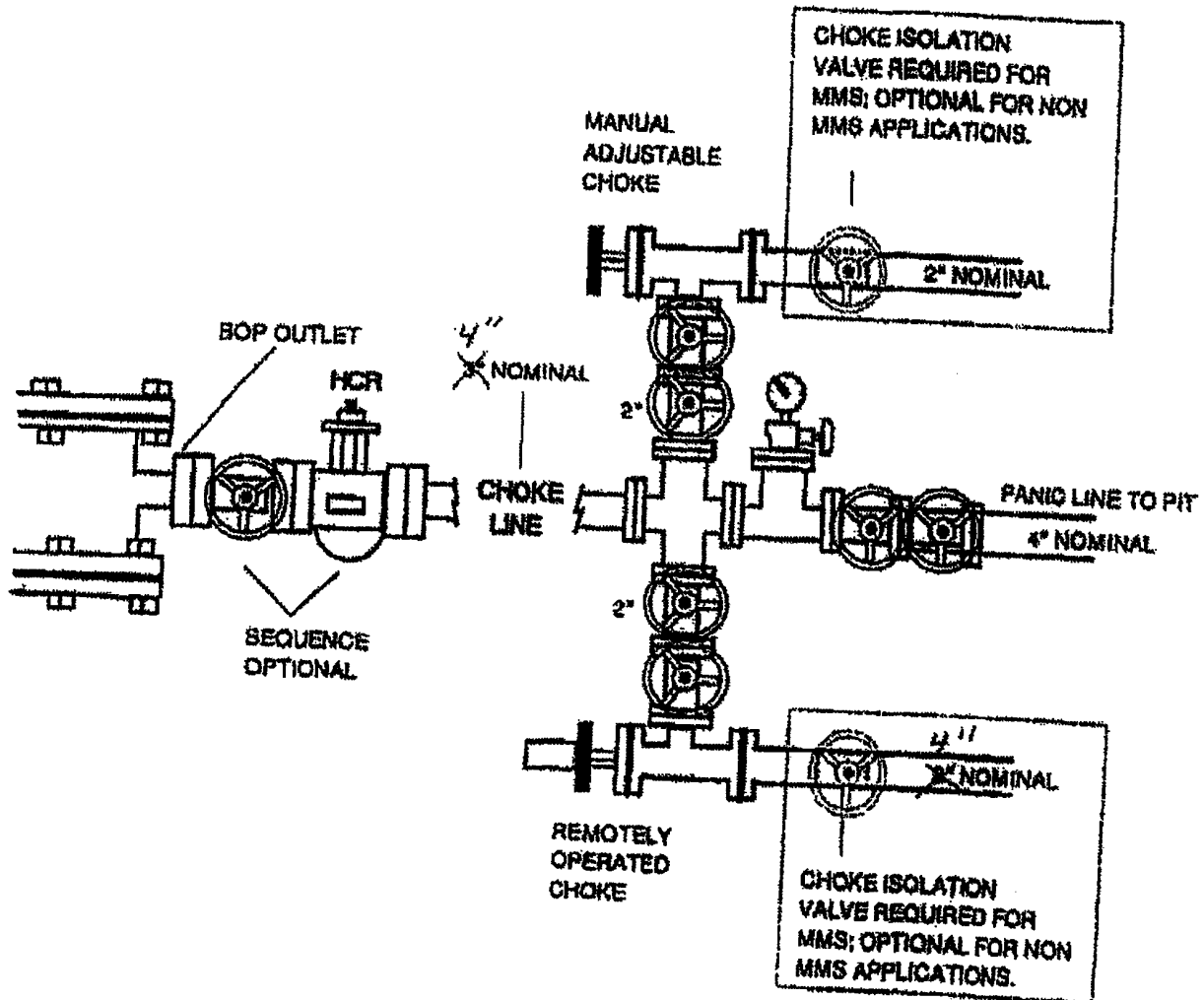


Exhibit E1 – Choke Manifold

Estill AD Federal No. 4

Cimarex Energy Co. of Colorado

SHL 488' FSL & 2260' FWL

BHL 1500' FSL & 1000' FWL

19-24S-26E

Eddy County, NM

## **Hydrogen Sulfide Drilling Operations Plan**

Cimarex Energy Co. of Colorado  
Estill AD Federal No. 4  
Unit N Section 19  
T24S R26E Eddy County, NM

- 1 All Company and Contract personnel admitted on location must be trained by a qualified H2S safety instructor to the following:

- A. Characteristics of H2S
- B. Physical effects and hazards
- C. Proper use of safety equipment and life support systems.
- D. Principle and operation of H2S detectors, warning system and briefing areas.
- E. Evacuation procedure, routes and first aid.
- F. Proper use of 30 minute pressure demand air pack.

- 2 H2S Detection and Alarm Systems

- A. H2S detectors and audio alarm system to be located at bell nipple, end of flow line (mud pit) and on derrick floor or doghouse.

- 3 Windsock and/or wind streamers

- A. Windsock at mudpit area should be high enough to be visible.
- B. Windsock at briefing area should be high enough to be visible.

- 4 Condition Flags and Signs

- A. Warning sign on access road to location.
- B. Flags to be displayed on sign at entrance to location. Green flag indicates normal safe condition. Yellow flag indicates potential pressure and danger. Red flag indicates danger (H2S present in dangerous concentration). Only emergency personnel admitted to location.

- 5 Well control equipment

- A. See exhibit "E"

- 6 Communication

- A. While working under masks chalkboards will be used for communication.
- B. Hand signals will be used where chalk board is inappropriate.
- C. Two way radio will be used to communicate off location in case of emergency help is required. In most cases cellular telephones will be available at most drilling foreman's trailer or living quarters.

- 7 Drillstem Testing not anticipated.

## **Hydrogen Sulfide Drilling Operations Plan**

Cimarex Energy Co. of Colorado

Estill AD Federal No. 4

Unit N Section 19

T24S R26E Eddy County, NM

- 8 Drilling contractor supervisor will be required to be familiar with the effects H<sub>2</sub>S has on tubular goods and other mechanical equipment.
- 9 If H<sub>2</sub>S is encountered, mud system will be altered if necessary to maintain control of formation. A mud gas separator will be brought into service along with H<sub>2</sub>S scavengers if necessary.



**Gruy Petroleum Management Co.  
New Mexico  
Eddy County  
Sec. 19-T24S-R26E  
Estill AD Federal #4 - Version 1**

**Sperry-Sun**

# **Proposal Report**

**15 February, 2005**

Proposal Ref: pro8177

Prepared by: Dennis Cook
Checked by:
Approved by:

**HALLIBURTON**

**HALLIBURTON**

Gruy Petroleum Management Co.  
New Mexico  
Eddy County

**Proposal Report for Sec. 19-T24S-R26E - Estill AD Federal #4 - Version 1**

Measured Depth (ft)	Incl.	Grid Azim.	Sub-Sea Depth (ft)	Vertical Depth (ft)	Local Coordinates		Global Coordinates		Dogleg Rate (°/100ft)	Vertical Section	Comment
					Northings (ft)	Eastings (ft)	Northings (ft)	Eastings (ft)			
0.00	0.000	0.000	-3486.00	0.00	0.00 N	0.00 E	435290.10 N	500084.50 E		0.00	
5582.00	0.000	0.000	2096.00	5582.00	0.00 N	0.00 E	435290.10 N	500084.50 E	0.00	0.00	
5600.00	0.360	308.843	2114.00	5600.00	0.04 N	0.04 W	435290.14 N	500084.46 E	2.00	0.06	
5700.00	2.360	308.843	2213.97	5699.97	1.52 N	1.89 W	435291.62 N	500082.61 E	2.00	2.43	
5800.00	4.360	308.843	2313.79	5799.79	5.20 N	6.46 W	435295.30 N	500078.04 E	2.00	8.29	
5900.00	6.360	308.843	2413.35	5899.35	11.06 N	13.73 W	435301.16 N	500070.77 E	2.00	17.63	
6000.00	8.360	308.843	2512.52	5998.52	19.09 N	23.71 W	435309.19 N	500060.79 E	2.00	30.44	
6100.00	10.360	308.843	2611.18	6097.18	29.29 N	36.38 W	435319.39 N	500048.12 E	2.00	46.70	
6200.00	12.360	308.843	2709.22	6195.22	41.65 N	51.72 W	435331.75 N	500032.78 E	2.00	66.40	
6300.00	14.360	308.843	2806.51	6292.51	56.14 N	69.71 W	435346.24 N	500014.79 E	2.00	89.51	
6332.00	15.000	308.843	2837.46	6323.46	61.22 N	76.03 W	435351.32 N	500008.47 E	2.00	97.62	
6400.00	15.000	308.843	2903.14	6389.14	72.26 N	89.74 W	435362.36 N	499994.76 E	0.00	115.22	
6500.00	15.000	308.843	2999.74	6485.74	88.50 N	109.90 W	435378.60 N	499974.60 E	0.00	141.10	
6600.00	15.000	308.843	3096.33	6582.33	104.73 N	130.05 W	435394.83 N	499954.45 E	0.00	166.98	
6700.00	15.000	308.843	3192.92	6678.92	120.96 N	150.21 W	435411.06 N	499934.29 E	0.00	192.86	
6800.00	15.000	308.843	3289.52	6775.52	137.19 N	170.37 W	435427.29 N	499914.13 E	0.00	218.74	
6900.00	15.000	308.843	3386.11	6872.11	153.43 N	190.53 W	435443.53 N	499893.97 E	0.00	244.63	
7000.00	15.000	308.843	3482.70	6968.70	169.66 N	210.69 W	435459.76 N	499873.81 E	0.00	270.51	
7100.00	15.000	308.843	3579.29	7065.29	185.89 N	230.85 W	435475.99 N	499853.65 E	0.00	296.39	
7200.00	15.000	308.843	3675.89	7161.89	202.13 N	251.01 W	435492.23 N	499833.49 E	0.00	322.27	
7300.00	15.000	308.843	3772.48	7258.48	218.36 N	271.16 W	435508.46 N	499813.34 E	0.00	348.15	
7400.00	15.000	308.843	3869.07	7355.07	234.59 N	291.32 W	435524.69 N	499793.18 E	0.00	374.03	
7500.00	15.000	308.843	3965.66	7451.66	250.83 N	311.48 W	435540.93 N	499773.02 E	0.00	399.92	
7600.00	15.000	308.843	4062.26	7548.26	267.06 N	331.64 W	435557.16 N	499752.86 E	0.00	425.80	
7700.00	15.000	308.843	4158.85	7644.85	283.29 N	351.80 W	435573.39 N	499732.70 E	0.00	451.68	

# Proposal Report for Sec. 19-T24S-R26E - Estill AD Federal #4 - Version 1

Measured Depth (ft)	Incl.	Grid Azim.	Sub-Sea Depth (ft)	Vertical Depth (ft)	Local Coordinates		Global Coordinates		Dogleg Rate (°/100ft)	Vertical Section	Comment
					Northings (ft)	Eastings (ft)	Northings (ft)	Eastings (ft)			
7800.00	15.000	308.843	4255.44	7741.44	299.52 N	371.96 W	435589.62 N	499712.54 E	0.00	477.56	
7900.00	15.000	308.843	4352.03	7838.03	315.76 N	392.11 W	435605.86 N	499692.39 E	0.00	503.44	
8000.00	15.000	308.843	4448.63	7934.63	331.99 N	412.27 W	435622.09 N	499672.23 E	0.00	529.33	
8100.00	15.000	308.843	4545.22	8031.22	348.22 N	432.43 W	435638.32 N	499652.07 E	0.00	555.21	
8200.00	15.000	308.843	4641.81	8127.81	364.46 N	452.59 W	435654.56 N	499631.91 E	0.00	581.09	
8300.00	15.000	308.843	4738.40	8224.40	380.69 N	472.75 W	435670.79 N	499611.75 E	0.00	606.97	
8400.00	15.000	308.843	4835.00	8321.00	396.92 N	492.91 W	435687.02 N	499591.59 E	0.00	632.85	
8500.00	15.000	308.843	4931.59	8417.59	413.15 N	513.07 W	435703.25 N	499571.43 E	0.00	658.74	
8600.00	15.000	308.843	5028.18	8514.18	429.39 N	533.22 W	435719.49 N	499551.28 E	0.00	684.62	
8700.00	15.000	308.843	5124.77	8610.77	445.62 N	553.38 W	435735.72 N	499531.12 E	0.00	710.50	
8800.00	15.000	308.843	5221.37	8707.37	461.85 N	573.54 W	435751.95 N	499510.96 E	0.00	736.38	
8900.00	15.000	308.843	5317.96	8803.96	478.09 N	593.70 W	435768.19 N	499490.80 E	0.00	762.26	
9000.00	15.000	308.843	5414.55	8900.55	494.32 N	613.86 W	435784.42 N	499470.64 E	0.00	788.15	
9100.00	15.000	308.843	5511.14	8997.14	510.55 N	634.02 W	435800.65 N	499450.48 E	0.00	814.03	
9200.00	15.000	308.843	5607.74	9093.74	526.79 N	654.17 W	435816.89 N	499430.33 E	0.00	839.91	
9300.00	15.000	308.843	5704.33	9190.33	543.02 N	674.33 W	435833.12 N	499410.17 E	0.00	865.79	
9400.00	15.000	308.843	5800.92	9286.92	559.25 N	694.49 W	435849.35 N	499390.01 E	0.00	891.67	
9500.00	15.000	308.843	5897.51	9383.51	575.48 N	714.65 W	435865.58 N	499369.85 E	0.00	917.55	
9600.00	15.000	308.843	5994.11	9480.11	591.72 N	734.81 W	435881.82 N	499349.69 E	0.00	943.44	
9700.00	15.000	308.843	6090.70	9576.70	607.95 N	754.97 W	435898.05 N	499329.53 E	0.00	969.32	
9800.00	15.000	308.843	6187.29	9673.29	624.18 N	775.13 W	435914.28 N	499309.37 E	0.00	995.20	
9900.00	15.000	308.843	6283.89	9769.89	640.42 N	795.28 W	435930.52 N	499289.22 E	0.00	1021.08	
10000.00	15.000	308.843	6380.48	9866.48	656.65 N	815.44 W	435946.75 N	499269.06 E	0.00	1046.96	
10100.00	15.000	308.843	6477.07	9963.07	672.88 N	835.60 W	435962.98 N	499248.90 E	0.00	1072.85	
10200.00	15.000	308.843	6573.66	10059.66	689.11 N	855.76 W	435979.21 N	499228.74 E	0.00	1098.73	

## Proposal Report for Sec. 19-T24S-R26E - Estill AD Federal #4 - Version 1

Measured Depth (ft)	Incl.	Grid Azim.	Sub-Sea Depth (ft)	Vertical Depth (ft)	Local Coordinates		Global Coordinates		Dogleg Rate (°/100ft)	Vertical Section	Comment
					Northings (ft)	Eastings (ft)	Northings (ft)	Eastings (ft)			
10300.00	15.000	308.843	6670.26	10156.26	705.35 N	875.92 W	435995.45 N	499208.58 E	0.00	1124.61	
10400.00	15.000	308.843	6766.85	10252.85	721.58 N	896.08 W	436011.68 N	499188.42 E	0.00	1150.49	
10500.00	15.000	308.843	6863.44	10349.44	737.81 N	916.24 W	436027.91 N	499168.26 E	0.00	1176.37	
10600.00	15.000	308.843	6960.03	10446.03	754.05 N	936.39 W	436044.15 N	499148.11 E	0.00	1202.26	
10700.00	15.000	308.843	7056.63	10542.63	770.28 N	956.55 W	436060.38 N	499127.95 E	0.00	1228.14	
10800.00	15.000	308.843	7153.22	10639.22	786.51 N	976.71 W	436076.61 N	499107.79 E	0.00	1254.02	
10900.00	15.000	308.843	7249.81	10735.81	802.75 N	996.87 W	436092.85 N	499087.63 E	0.00	1279.90	
11000.00	15.000	308.843	7346.40	10832.40	818.98 N	1017.03 W	436109.08 N	499067.47 E	0.00	1305.78	
11100.00	15.000	308.843	7443.00	10929.00	835.21 N	1037.19 W	436125.31 N	499047.31 E	0.00	1331.67	
11200.00	15.000	308.843	7539.59	11025.59	851.44 N	1057.34 W	436141.54 N	499027.16 E	0.00	1357.55	
11300.00	15.000	308.843	7636.18	11122.18	867.68 N	1077.50 W	436157.78 N	499007.00 E	0.00	1383.43	
11400.00	15.000	308.843	7732.77	11218.77	883.91 N	1097.66 W	436174.01 N	498986.84 E	0.00	1409.31	
11500.00	15.000	308.843	7829.37	11315.37	900.14 N	1117.82 W	436190.24 N	498966.68 E	0.00	1435.19	
11600.00	15.000	308.843	7925.96	11411.96	916.38 N	1137.98 W	436206.48 N	498946.52 E	0.00	1461.07	
11700.00	15.000	308.843	8022.55	11508.55	932.61 N	1158.14 W	436222.71 N	498926.36 E	0.00	1486.96	
11800.00	15.000	308.843	8119.14	11605.14	948.84 N	1178.30 W	436238.94 N	498906.20 E	0.00	1512.84	
11900.00	15.000	308.843	8215.74	11701.74	965.08 N	1198.45 W	436255.18 N	498886.05 E	0.00	1538.72	
12000.00	15.000	308.843	8312.33	11798.33	981.31 N	1218.61 W	436271.41 N	498865.89 E	0.00	1564.60	
12100.00	15.000	308.843	8408.92	11894.92	997.54 N	1238.77 W	436287.64 N	498845.73 E	0.00	1590.48	
12200.00	15.000	308.843	8505.51	11991.51	1013.77 N	1258.93 W	436303.87 N	498825.57 E	0.00	1616.37	
12208.78	15.000	308.843	8514.00	12000.00	1015.20 N	1260.70 W	436305.30 N	498823.80 E	0.00	1618.64	Target - PBHL Estill AD Fed 4, 50.00 Radius., Current Target
12300.00	15.000	308.843	8602.11	12088.11	1030.01 N	1279.09 W	436320.11 N	498805.41 E	0.00	1642.25	
12400.00	15.000	308.843	8698.70	12184.70	1046.24 N	1299.25 W	436336.34 N	498785.25 E	0.00	1668.13	
12500.00	15.000	308.843	8795.29	12281.29	1062.47 N	1319.40 W	436352.57 N	498765.10 E	0.00	1694.01	
12600.00	15.000	308.843	8891.88	12377.88	1078.71 N	1339.56 W	436368.81 N	498744.94 E	0.00	1719.89	

**Proposal Report for Sec. 19-T24S-R26E - Estill AD Federal #4 - Version 1**

Measured Depth (ft)	Incl.	Grid Azim.	Sub-Sea Depth (ft)	Vertical Depth (ft)	Local Coordinates		Global Coordinates		Dogleg Rate (°/100ft)	Vertical Section	Comment
					Northings (ft)	Eastings (ft)	Northings (ft)	Eastings (ft)			
12700.00	15.000	308.843	8988.48	12474.48	1094.94 N	1359.72 W	436385.04 N	498724.78 E	0.00	1745.78	
12800.00	15.000	308.843	9085.07	12571.07	1111.17 N	1379.88 W	436401.27 N	498704.62 E	0.00	1771.66	
12900.00	15.000	308.843	9181.66	12667.66	1127.40 N	1400.04 W	436417.50 N	498684.46 E	0.00	1797.54	
13000.00	15.000	308.843	9278.26	12764.26	1143.64 N	1420.20 W	436433.74 N	498664.30 E	0.00	1823.42	
13100.00	15.000	308.843	9374.85	12860.85	1159.87 N	1440.36 W	436449.97 N	498644.14 E	0.00	1849.30	
13200.00	15.000	308.843	9471.44	12957.44	1176.10 N	1460.51 W	436466.20 N	498623.99 E	0.00	1875.19	
13244.06	15.000	308.843	9514.00	13000.00	1183.26 N	1469.40 W	436473.36 N	498615.10 E	0.00	1886.59	

All data is in Feet (US) unless otherwise stated. Directions and coordinates are relative to Grid North.  
Vertical depths are relative to RKB(3463'+23'KB). Northings and Eastings are relative to Wellhead.  
Global Northings and Eastings are relative to NAD27 New Mexico State Planes, Eastern Zone.

The Dogleg Severity is in Degrees per 100 feet.

Vertical Section is from Wellhead and calculated along an Azimuth of 308.843° (Grid).

Based upon Minimum Curvature type calculations, at a Measured Depth of 13244.06ft.,  
The Bottom Hole Displacement is 1886.59ft., in the Direction of 308.843° (Grid).

**Gruy Petroleum Management Co.**  
New Mexico  
Eddy County

**Targets associated with this wellpath**

Target Name	Target Entry Coordinates			Target Shape	Target Type
	TVD (ft)	Northings (ft)	Eastings (ft)		
PBHL Estill AD Fed 4	12000.00	1015.20 N	1260.70 W	Circle	Current Target
Mean Sea Level/Global Coordinates:	8514.00	436305.30 N	498823.80 E		
Geographical Coordinates:		32° 11' 58.2731" N	104° 20' 13.6891" W		

## North Reference Sheet for Sec. 19-T24S-R26E - Estill AD Federal #4

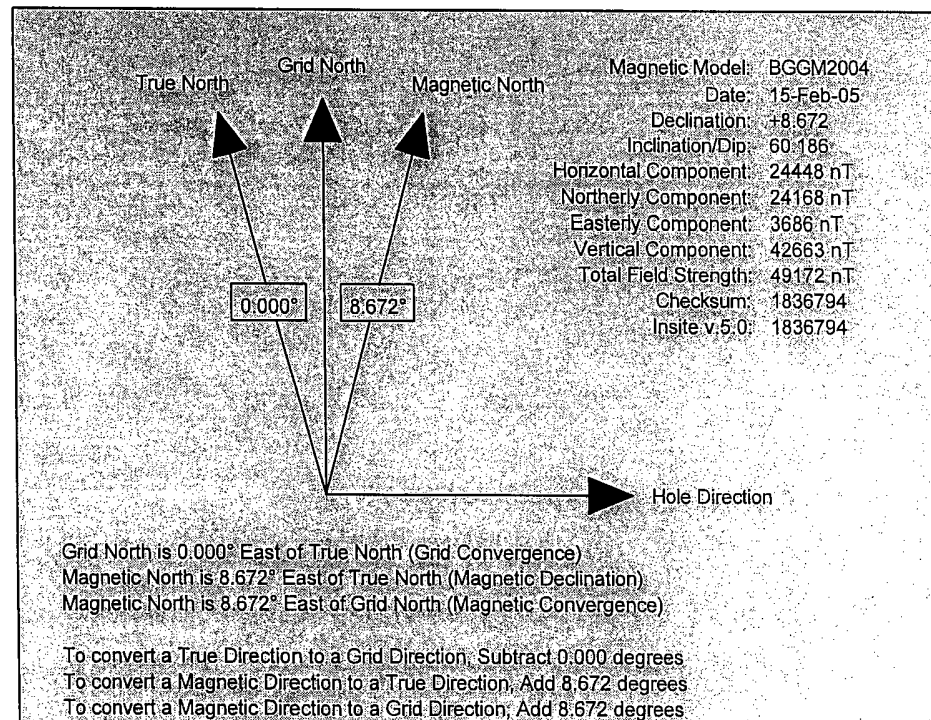
Coordinate System is NAD27 New Mexico State Planes, Eastern Zone, US Foot  
Source: Snyder, J.P., 1987, Map Projections - A Working Manual

Datum is North American Datum of 1927 (US48, AK, HI, and Canada)

Spheroid is Clarke - 1866  
Equatorial Radius: 6378206.400m.  
Polar Radius: 6356583.800m.  
Inverse Flattening: 294.978698213901

Projection method is Transverse Mercator or Gauss Kruger Projection  
Central Meridian is -104.333°  
Longitude Origin: 0.000°  
Latitude Origin: 31.000°  
False Easting: 152400.00m  
False Northing: 0.00m  
Scale Reduction: 0.99990909

Grid Coordinates of Well: 435290.10 N, 500084.50 E  
Geographical Coordinates of Well: 32° 11' 48.2264" N, 104° 19' 59.0166" W  
Surface Elevation of Well: 3486.00ft  
Grid Convergence at Surface is +0.000°  
Magnetic Convergence at Surface is -8.672° (15 February, 2005)



## Surface Use Plan

Cimarex Energy Co. of Colorado  
Estill AD Federal No. 4  
Unit N Section 19  
T24S R26E Eddy County, NM

- 1 Existing Roads: Area maps, Exhibit "B" is a reproduction of Lea Co. General Highway Map. Exhibit "C" is a reproduction of a USGS Topographic Map, showing existing roads and proposed roads. All existing roads will be maintained in a condition equal to or better than current conditions. Any new roads will be constructed to BLM specifications.
  - A. Exhibit "A" shows the proposed well site as staked.
  - B. From the intersection of US Hwy 62-180 and Co Rd 772 (Means Rd), go South on Co Rd 772 for approx 0.1 miles to a caliche road on the right. Turn right and go approx 0.3 miles to a well pad. Go Southwest along a proposed road survey approx 1854' to this location.
- 2 PLANNED ACCESS ROADS: 1854' of proposed road will be constructed on lease.
- 3 LOCATION OF EXISTING WELLS IN A ONE-MILE RADIUS EXHIBIT "A"
  - A. Water wells - None known
  - B. Disposal wells - None known
  - C. Drilling wells - None known
  - D. Producing wells - As shown on Exhibit "A"
  - E. Abandoned wells - As shown on Exhibit "A"

## **Conditions of Approval Cave and Karst**

Gruy Petroleum  
Estill AD Fed. #4  
Lease#: LC-065347

### **Cave/Karst Surface Mitigation**

The following stipulations will be applied to minimize impacts during construction, drilling and production.

#### **Berming:**

Any tank batteries will be constructed and bermed large enough to contain any spills that may occur.

Bermed areas will be lined with rip-stop padding to prevent tears or punctures in liners and lined with a permanent 20 mil plastic liner.

#### **Closed Mud System Using Steel Tanks with All Fluids and Cuttings Hauled Off.**

### **Cave/Karst Subsurface Mitigation**

The following stipulations will be applied to protect cave/karst and ground water concerns:

#### **Rotary Drilling with Fresh Water:**

Rotary drilling techniques in cave or karst areas will include the use of fresh water as a circulating medium in zones where caves or karst features are expected. Use depth to the deepest expected fresh water as listed in the geologist report.

#### **Fluorescent Dyes:**

Nontoxic Fluorescent dyes will be added when the hole is spudded and be circulated to the bottom of the karst layers. These dyes will track the fluids if lost circulation occurs. Arrangements need to be made to have BLM witness the two dyes being injected prior to spudding the hole.

##### **Fluorescein Dye (Acid Yellow 73):**

Sixteen ounces of Yellow Green (Acid Yellow 73) Fluorescent dye will be added to the drilling fluid during the drilling of the first 250 feet of the well.

#### **Directional Drilling:**

Kick off for directional drilling will occur at least 100 feet below the bottom of the cave (1550 ft) occurrence zone as identified in the geologic report.

**Casing:**

All casing will meet or exceed National Association of Corrosion Engineers specifications pertaining to the geology of the location and be run to American Petroleum Institute and BLM standards.

**Lost Circulation:**

ALL lost circulation zones from the surface to the base of the cave occurrence zone will be logged and reported.

Regardless of the type of drilling machinery used, if a bit drops of four feet or more and circulation losses greater than 75 percent occur simultaneously while drilling in any cave-bearing zone, drilling operations will immediately stop and the BLM will be notified by the operator. The BLM will assess the consequences of the situation and work with operator on corrective actions to resolve the problem.

If circulation is lost (75% loss of drilling fluid), the third casing string will be cemented to the surface.

**Delayed Blasting:**

Any blasting will be a phased and time delayed.

**Abandonment Cementing:**

Upon well abandonment the well bore will be cemented completely from 100 feet below the bottom of the cave bearing zone to the surface.

**Pressure Tests:**

Annual pressure tests will be performed by the Operator on all casing annuli. If the test results indicated a casing failure, remedial actions approved by the BLM will be undertaken to correct the problem.

**Differential Shut-off Systems:**

A leak detection system and differential shut off systems will be installed for pipelines and tanks used in production or drilling.

**Record Keeping:**

The Operator will track customary drilling activities, including the rate of penetration, pump pressure, weight on bit, bit drops, percent of mud returns, and presence or absence of cuttings returning to the surface. As part of customary record keeping, each detectable void or sudden increase in the rate of penetration not attributable to a change in the formation type should be documented and evaluated as it is encountered.

## CONDITIONS OF APPROVAL - DRILLING

Operator's Name: Cimarex Energy Co. of Colorado  
Well Name & No. 4-Estill AD Federal  
Location SHL: 0488 FSL, 2260 FWL, Section 19, T-24-S, R-26-E  
Location BHL: 1500 FSL, 1000 FWL, Section 19, T-24-S, R-26-E  
Lease: LC-065347

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### I. DRILLING OPERATIONS REQUIREMENTS:

- A. The Bureau of Land Management (BLM) is to be notified a minimum of 4 hours in advance for a representative to witness:
1. Spudding well
  2. Setting and/or Cementing of all casing strings
  3. BOPE tests
- Eddy County call the Carlsbad Field Office, 620 East Greene St., Carlsbad, NM 88220, (505) 361-2822
- B. Although H2S has not been reported in this section; it is always a potential hazard.
- C. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval.
- D. If floor controls are required, (3M or Greater) controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works are located, this does not include the dog house or stairway area.

### II. CASING:

- A. The 13-3/8 inch surface casing shall be set at above the salt at approximately 375 feet and cemented to the surface. **Fresh water mud to setting of surface casing.**
1. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with a surface log readout will be used or a cement bond log shall be run to verify the top of the cement.
  2. Wait on cement (WOC) time for a primary cement job will be a minimum of 12 hours for a non-water basin, 18 hours for a water basin, 24 hours in the potash area, or 500 pounds compression strength, whichever is greater. (This is to include the lead cement)
  3. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compression strength, whichever is greater.
  4. If cement falls back, remedial action will be done prior to drilling out that string.

**Possible lost circulation in the Capitan Reef, Delaware, and Bone Spring formations.  
Area is high cave/karst.**

- B. The minimum required fill of cement behind the 9-5/8 inch intermediate casing is **cement shall circulate to surface. Intermediate casing to be set below the salt and across the Bell Canyon at approximately 2150'**. If cement does not circulate see A.1 thru 4.
- C. The minimum required fill of cement behind the 5-1/2 inch production casing is **cement shall circulate to surface**. If cement does not circulate see A.1 thru 4.
- D. If hardband drill pipe is rotated inside casing; returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.

### **III. PRESSURE CONTROL:**

- A. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API RP 53.
- B. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **2000 (2M) PSI. BOP/BOPE will be tested as proposed in APD.**
- C. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the 9-5/8" intermediate casing shoe shall be **5000 (5M)) PSI.**
- D. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.
  - 1. The tests shall be done by an independent service company.
  - 2. The results of the test shall be reported to the appropriate BLM office.
  - 3. All tests are required to be recorded on a calibrated test chart. A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.
  - 4. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi in accordance with API RP 53. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug.
  - 5. BOP/BOPE must be tested by an independent service company within 500 feet of the top of the Wolfcamp formation. This test does not exclude the test prior to drilling out the casing shoe as per Onshore Order No. 2.
  - 6. A variance to test **only the surface casing (not BOPE)** to the reduced pressure of 1000 psi with the rig pumps is approved.

### **IV. DRILLING MUD:**

Mud system monitoring equipment, with derrick floor indicators and visual and audio alarms, shall be operating before drilling into the Wolfcamp formation, and shall be used until production casing is run and cemented.

**Engineer on call phone: 505-706-2779  
WWI 040507**