

ATS-11-45

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OCD Hobbs

DEC 23 2010

HOBBSOCD

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

1a. Type of Work: <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER		5. Lease Serial No. NM-36916
1b. Type of Well: <input checked="" type="checkbox"/> Oil Well <input 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. North Maduro Federal Unit NM 72498
3a. Address 600 N. Marienfeld St., Ste. 600; Midland, TX 79701		8. Lease Name and Well No. North Maduro Federal Unit No. 4 (300536)
3b. Phone No. (include area code) 432-571-7800		9. API Well No. 30-025- 39998
4. Location of Well (Report location clearly and in accordance with any State requirements. *) At Surface 660 FNL & 410 FWL (D) At BHL 660 FNL & 330 FEL At proposed prod. Zone 660 FNL & 410 FWL Horizontal Bone Spring test		10. Field and Pool, or Exploratory Tonto; Bone Spring, South (59476)
14. Distance in miles and direction from nearest town or post office*		11. Sec., T. R. M. or Blk. and Survey or Area 20-19S-33E
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line if any) 410'	16. No of acres in lease 320 acres	12. County or Parish Lea
17. Spacing Unit dedicated to this well N2N2 160 acres	18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. N/A	13. State NM
19. Proposed Depth MD 14408' TVD 9950'	20. BLM/BIA Bond No. on File NM-2575	
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 3617' GR	22. Approximate date work will start* 12.15.10	23. Estimated duration 25-30 days

24. Attachments

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

- |   |  |
|---|--|
| 1. Well plat certified by a registered surveyor   | 4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).    |
| 2. A Drilling Plan  | 5. Operator Certification  |
| 3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO shall be filed with the appropriate Forest Service Office). | 6. Such other site specific information and/or plans as may be required by the authorized officer. |

25. Signature <i>Zeno Farris</i>	Name (Printed/Typed) Zeno Farris	Date 10.07.10
Title Manager Operations Administration		
Approved By (Signature) <i>/s/ Don Peterson</i>	Name (Printed/Typed) <i>/s/ Don Peterson</i>	Date DEC 23 2010
Title FIELD MANAGER	Office CARLSBAD FIELD OFFICE	

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

Conditions of approval, if any, are attached.

Title 18 U.S.S. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious, or fraudulent statements or representations as to any matter within its jurisdiction.

\* (Instructions on page 2)

APPROVAL FOR TWO YEARS

Capitan Controlled Water Basin

*KZ 12/28/10*

SEE ATTACHED FOR  
CONDITIONS OF APPROVAL

Approval Subject to General Requirements  
& Special Stipulations Attached

DISTRICT I  
1625 N. French Dr., Hobbs, NM 88240  
DISTRICT II  
1301 W. Grand Avenue, Artesia, NM 88210  
DISTRICT III  
1000 Rio Brazos Rd., Aztec, NM 87410  
DISTRICT IV  
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico  
Energy, Minerals and Natural Resources Department

Form C-102  
Revised July 16, 2010

Submit one copy to appropriate  
District Office

OIL CONSERVATION DIVISION  
1220 South St. Francis Dr.  
Santa Fe, New Mexico 87505

WELL LOCATION AND ACREAGE DEDICATION PLAT

☐ AMENDED REPORT

API Number <b>30-025-39998</b>	Pool Code <b>59476</b>	Pool Name <b>TONTO; Bone Spring, SOUTH</b>
Property Code <b>300536</b>	Property Name <b>NORTH MADURO FEDERAL UNIT</b>	Well Number <b>4 H</b>
OGRID No. <b>162683</b>	Operator Name <b>CIMAREX ENERGY CO. OF COLORADO</b>	Elevation <b>3617'</b>

Surface Location

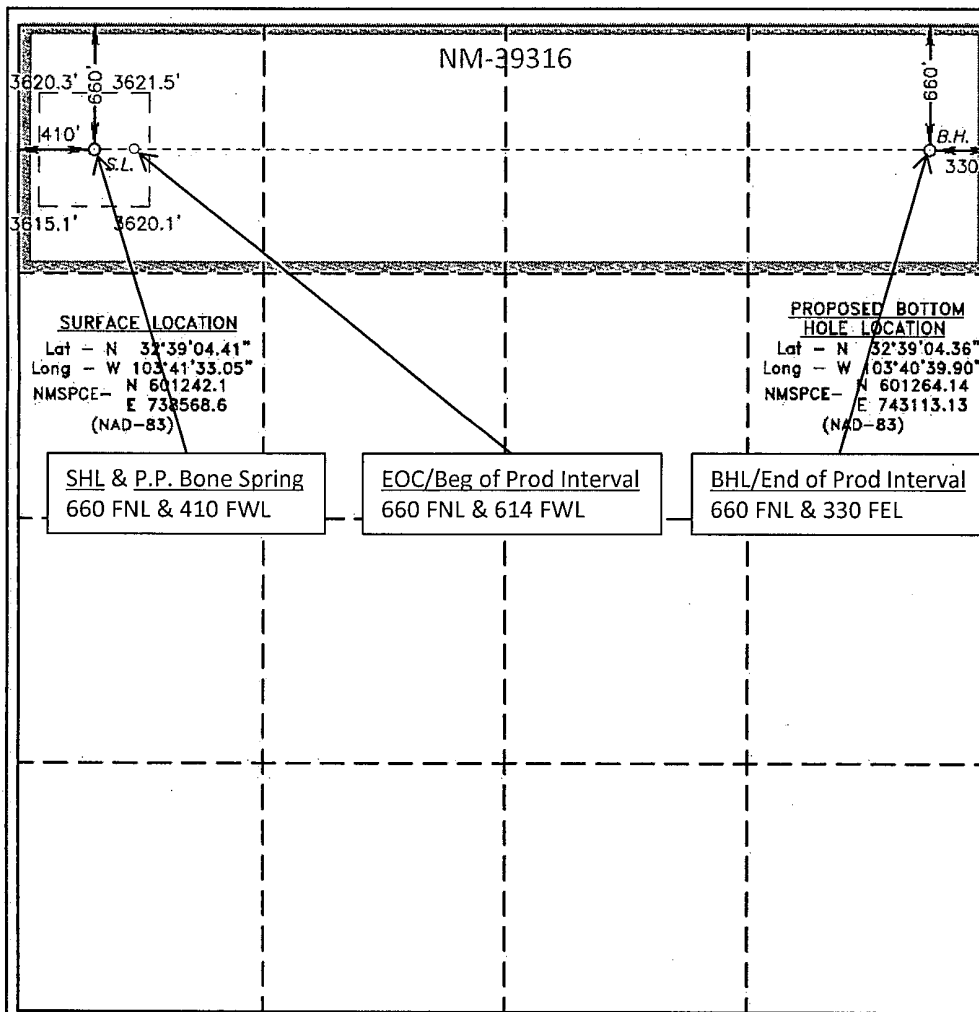
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
D	20	19 S	33 E		660	NORTH	410	WEST	LEA

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
A	20	19 S	33 E		660	NORTH	330	EAST	LEA

Dedicated Acres	Joint or Infill	Consolidation Code	Order No.
160.00			

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 that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

**Zeno Farris**

Signature 10/7/2010

Printed Name Zeno Farris

Email Address

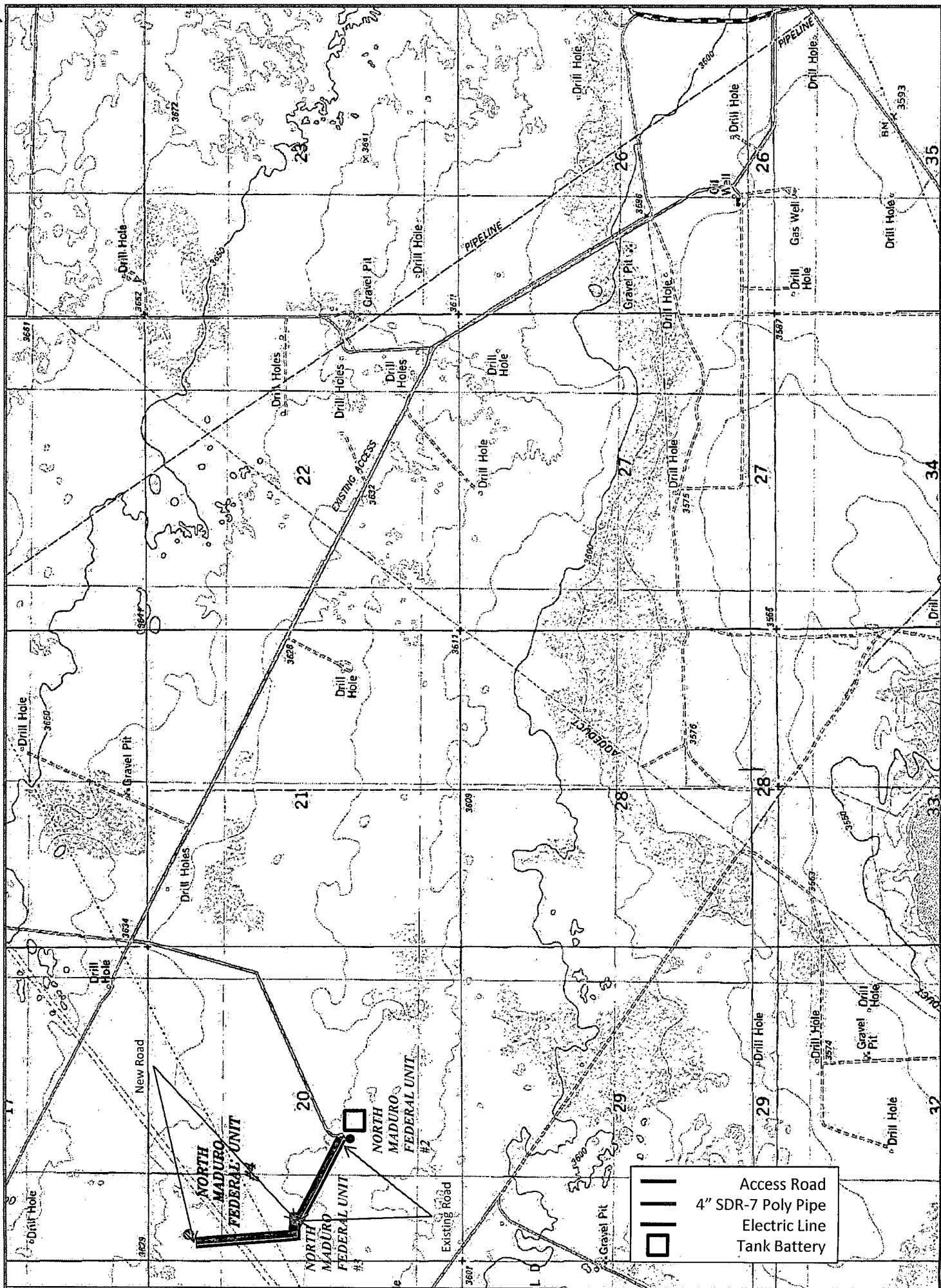
SURVEYOR CERTIFICATION

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

Date Surveyed  
Signature of Surveyor or Professional Surveyor

Certificate No. Gary L. Jones 7977

BASIN SURVEYS 23145



LEASE ROAD TO THE NORTH MADURO FEDERAL UNIT #4  
 Section 20, Township 19 South, Range 33 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 23145

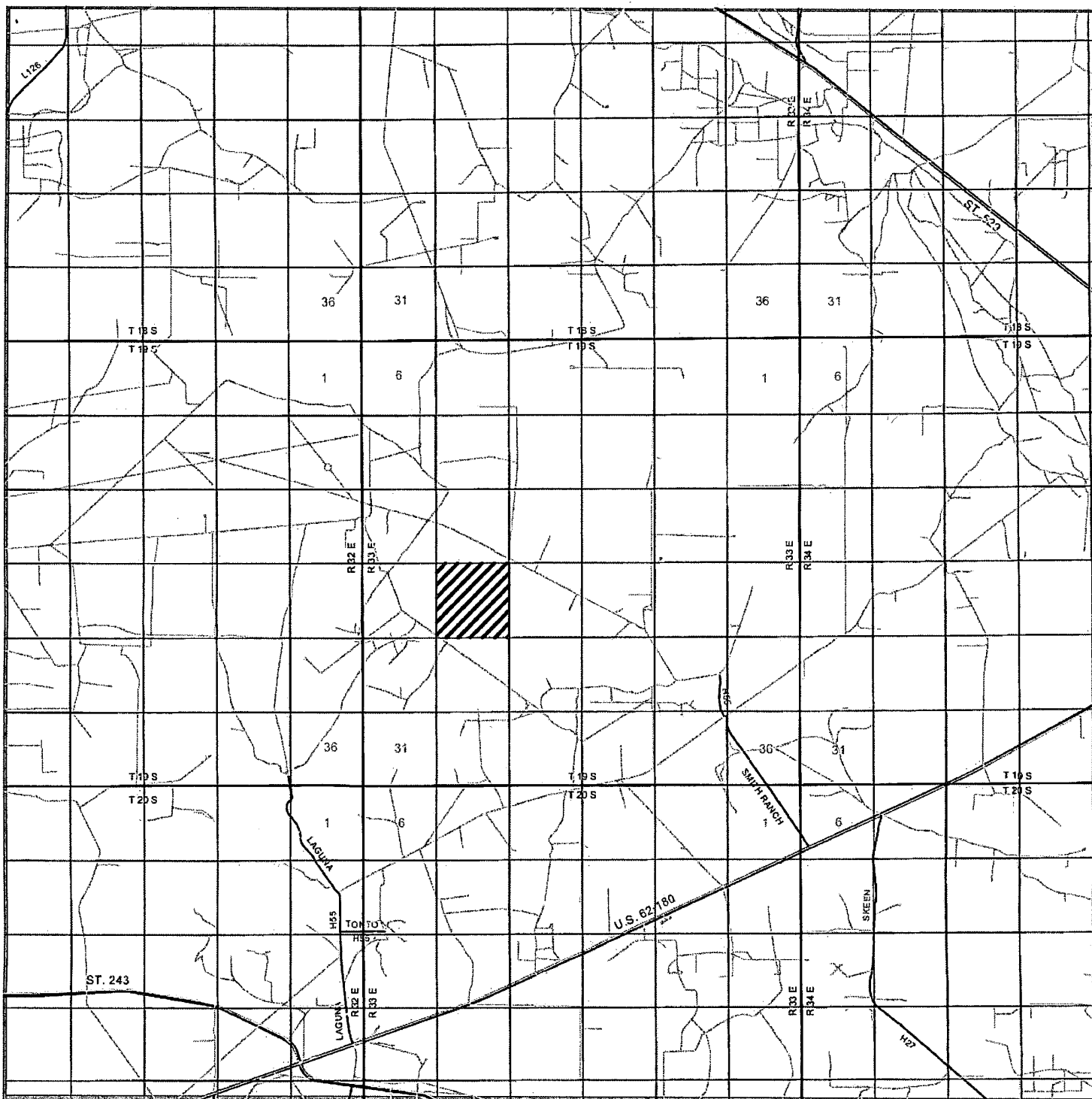
Survey Date: 07-26-2010

Scale: 1" = 2000'

Date: 09-16-2010

**CIMAREX**  
**ENERGY CO.**  
**OF COLORADO**

Exhibit C



**NORTH MADURO FEDERAL UNIT #4**  
 Located 660' FNL and 410' FWL  
 Section 20, Township 19 South, Range 33 East,  
 N.M.P.M., Lea County, New Mexico.

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 (575) 392-2206 - Fax  
 basinsurveys.com

W.O. Number: JMS 23145

Survey Date: 07-26-2010

Scale: 1" = 2 Miles

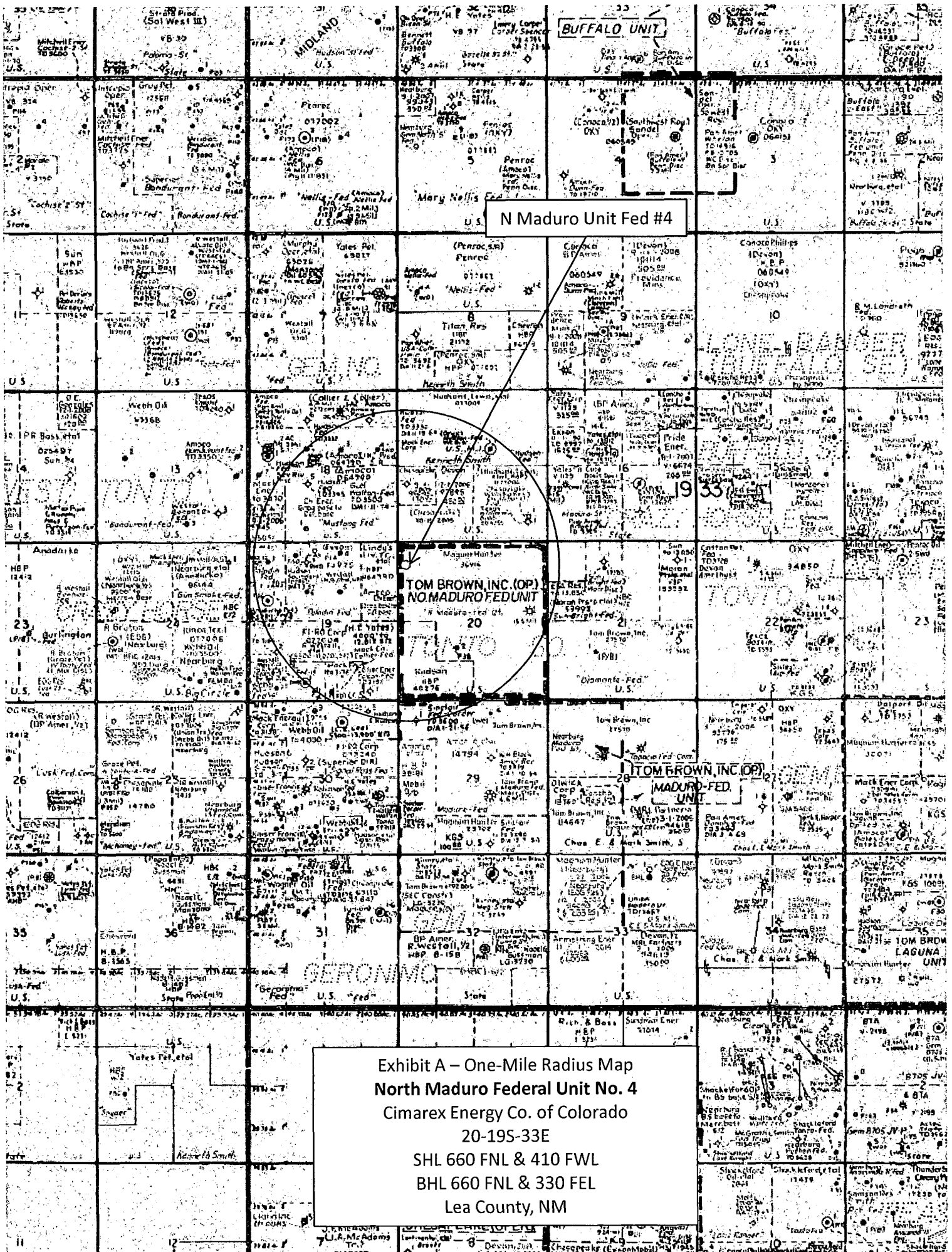
Date: 08-19-2010



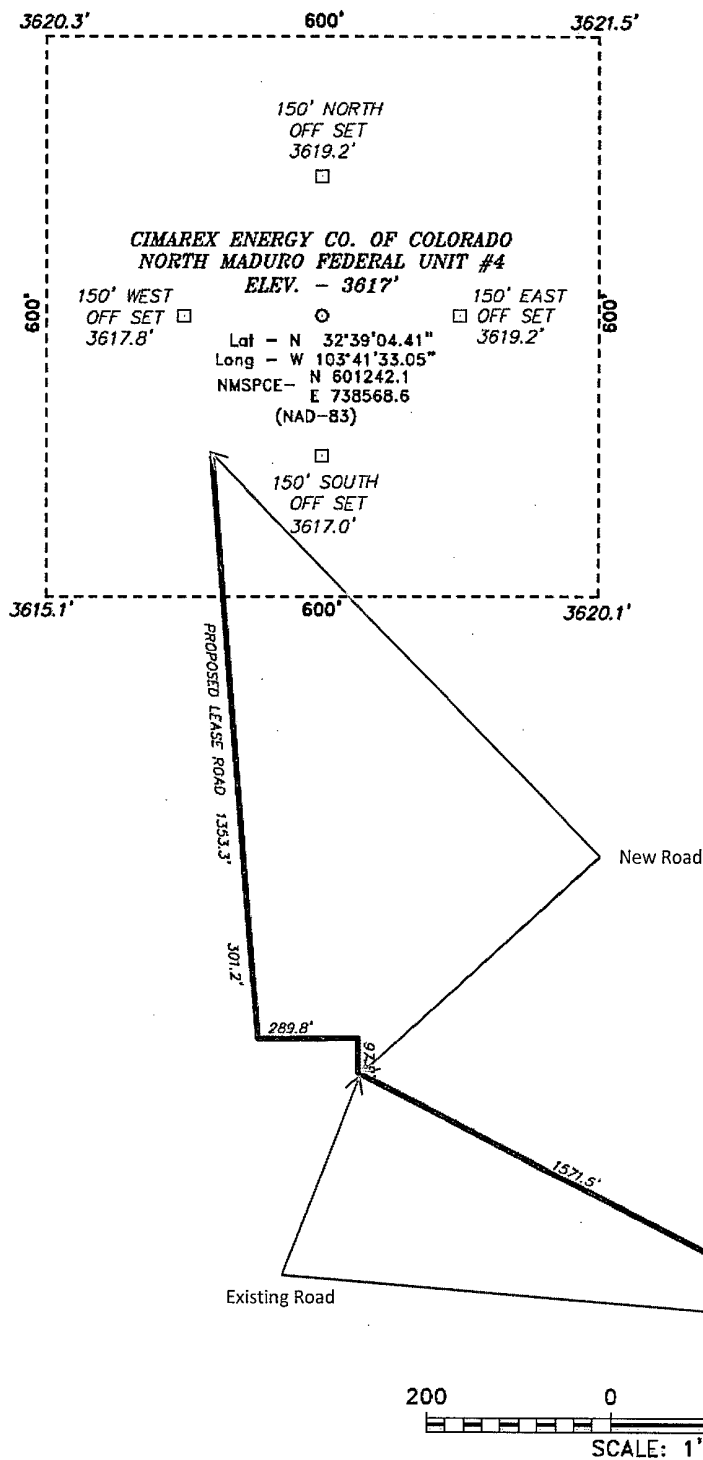
**CIMAREX**  
**ENERGY CO.**  
**OF COLORADO**

**Exhibit B**

Exhibit A – One-Mile Radius Map  
 North Maduro Federal Unit No. 4  
 Cimarex Energy Co. of Colorado  
 20-19S-33E  
 SHL 660 FNL & 410 FWL  
 BHL 660 FNL & 330 FEL  
 Lea County, NM



SECTION 20, TOWNSHIP 19 SOUTH, RANGE 33 EAST, N.M.P.M.,  
LEA COUNTY, NEW MEXICO.



Directions to Location:

FROM THE JUNCTION OF 62-180 AND SMITH ROAD,  
GO NORTH ON SMITH ROAD TURNING INTO A LEASE  
ROAD FOR 3.8 MILES TO LEASE ROAD, ON LEASE  
ROAD GO SOUTHERLY 1.0 MILES TO WELL PAD AND  
PROPOSED LEASE ROAD.

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

W.O. Number: 23145 Drawn By: J. SMALL

Date: 08-19-2010 Disk: JMS 23145

**CIMAREX ENERGY CO. OF COLORADO**

REF: NORTH MADURO FEDERAL UNIT #4 / WELL PAD TOPO

THE NORTH MADURO FEDERAL UNIT #4 LOCATED 660'

FROM THE NORTH LINE AND 410' FROM THE WEST LINE OF

SECTION 20, TOWNSHIP 19 SOUTH, RANGE 33 EAST,

N.M.P.M., LEA COUNTY, NEW MEXICO.

Survey Date: 07-26-2010 Sheet 1 of 1 Sheets

Exhibit C-1

Application to Drill  
**North Maduro Federal Unit No. 4**  
Cimarex Energy Co. of Colorado  
Unit D, Section 20  
T19S-R33E, Lea County, NM

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

- 1 Location:           SHL    660 FNL & 410 FWL  
                          BHL    660 FNL & 330 FEL
- 2 Elevation above sea level:       3617' 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 14408'       TVD 9950'
- 6 Estimated tops of geological markers:  
Cherry Canyon           6000'  
Bone Spring           7770'  
1st BSS           8920'  
2nd BSS           9650'
- 7 Possible mineral bearing formation:  
Bone Spring           Oil
- 8 Proposed Mud Circulating System:

Depth		Mud Wt	Visc	Fluid Loss	Type Mud
0'	to 1380'	8.4 - 8.6	28	NC	FW
1380'	to <del>4950'</del> <sup>5200</sup>	10.0	30-32	NC	Brine water
<del>4950'</del>	to 14408'	8.4 - 9.5	30-32	NC	FW, brine

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.

8a. Proposed drilling Plan

Drill 8 3/4" hole to KOP @ 9726' and kick off to drill and drill through the curve to lateral TD @ 14408.' Run 5½" 17# P-110 LTC from 0'-14408'.

Application to Drill  
**North Maduro Federal Unit No. 4**  
 Cimarex Energy Co. of Colorado  
 Unit D, Section 20  
 T19S-R33E, Lea County, NM

9 Casing & Cementing Program:

String	Hole Size	Depth	Casing OD	Weight	Collar	Grade
Surface	17½"	0' to 1380'	New 13½"	48#	STC	H-40
Intermediate	12¼"	0' to <del>5200</del> 4950'	New 9½"	40#	LTC	<del>HK-55</del>
Production	8¾"	0' to 14408'	New 5½"	17#	LTC	P-110

*N-80*  
*Per Zeno Far*  
*12/20/10*  
*CPW*

*see COA*

10 Cementing:

**Surface** 1450 sx Premium Plus + 2% CaCl<sub>2</sub> (wt 14.8, yld 1.35)  
**TOC Surface**

**Intermediate** Lead: 300 sx Econocem + 3% Salt + 2% CaCl<sub>2</sub> + 3 lbm/sk Gilsonite (wt 11.7, yld 2.06)  
Tail: 650 sks Premium Plus + 1% CaCl<sub>2</sub> (wt 14.8, yld 1.34)  
**TOC Surface**

*] see COA*

**Production** Lead: 500 sx EconoCem + # Gilsonite (wt 11.9, yld 2.48)  
Tail: 1760 sx Halcem (wt 15.6, yld 1.19)  
**TOC 4600'**

Fresh water zones will be protected by setting 13½" casing at 1380' and cementing to surface. Hydrocarbon zones will be protected by setting 9½" casing at 4950' and cementing to surface, and by setting 5 1/2" casing at 14408' and cementing to 4600'.

*5200'*

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

*13 5/8"*

11 Pressure control Equipment:

Exhibit "E". A 13½" 5000 PSI working pressure B.O.P. tested to 3000 PSI consisting of one set of blind rams and one set of pipe rams and a 5000# annular type preventer. A choke manifold and 120 gallon accumulator with floor and remote operating stations and auxiliary power system. Rotating head 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 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 pipe through the running of production casing, the well will be equipped with a 5000 psi BOP system tested to 3000 psi.

BOPS will be tested by an independent service company to 250 psi low and 3000 psi high. Hydril will be tested to 250 psi low and 1500 psi high.



Application to Drill  
**North Maduro Federal Unit No. 4**  
Cimarex Energy Co. of Colorado  
Unit D, Section 20  
T19S-R33E, Lea County, NM

12 Testing, Logging and Coring Program:

- 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.

*see COA*

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<sub>2</sub>S from the surface to the Bone Spring formations to meet the BLM's minimum requirements for the submission of an "H<sub>2</sub>S Drilling Operation Plan" or "Public Protection Plan" for the drilling and completion of this well. Since we have an H<sub>2</sub>S Safety package on all wells, attached is an "H<sub>2</sub>S 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.**



Location: Lea County, NM  
Field: (N Maduro) Sec 29, T19S, R33E  
Facility: N Maduro Fed No. 4H

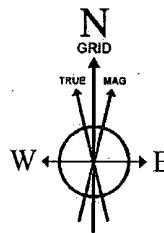
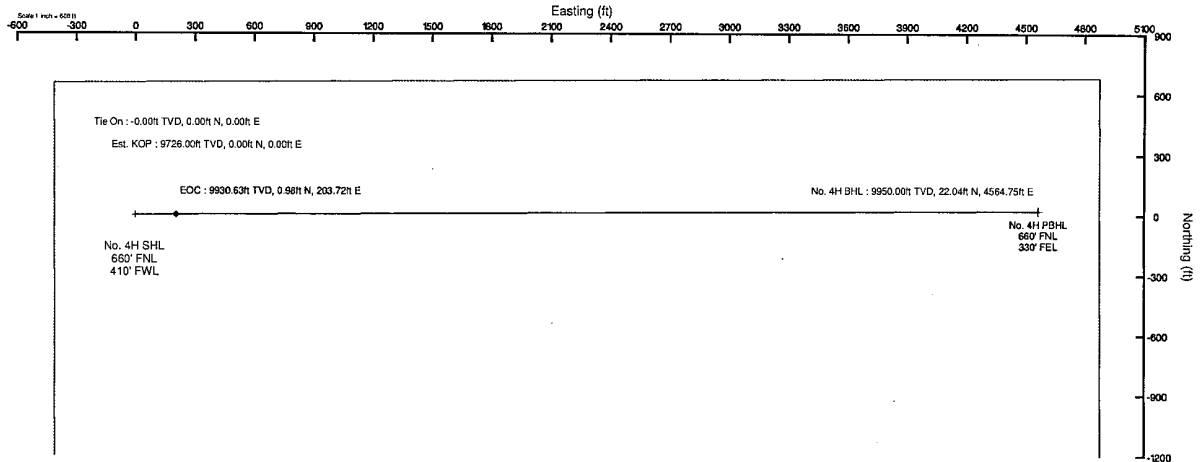
# Cimarex Energy Co.

Slot: No. 4H SHL  
Well: No. 4H  
Wellbore: No. 4H PWB



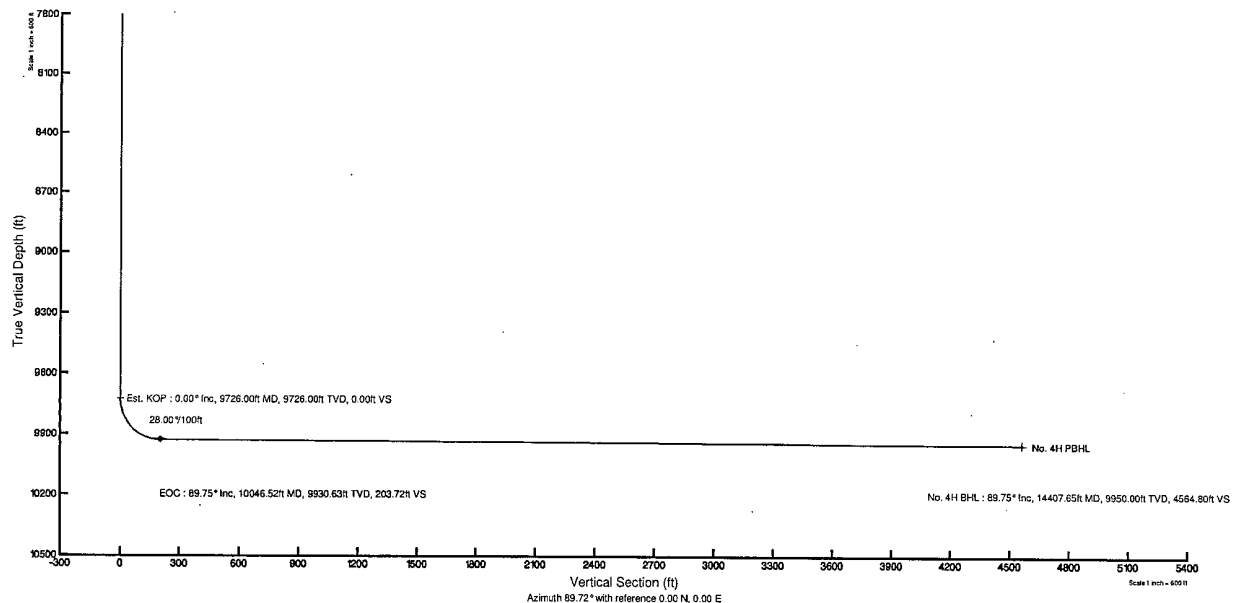
## Well Profile Data

Design Comment	MD (ft)	Inc (°)	Az (°)	TVD (ft)	Local N (ft)	Local E (ft)	DLS (°/100ft)	VS (ft)
Tie On	0.00	0.000	89.723	0.00	0.00	0.00	0.00	0.00
Est. KOP	9726.00	0.000	89.723	9726.00	0.00	0.00	0.00	0.00
EOC	10046.52	89.745	89.723	9930.63	0.98	203.72	28.00	203.72
No. 4H BHL	14407.65	89.745	89.723	9950.00	22.04	4564.75	0.00	4564.80



BGGM (1945.0 to 2011.0) Dip: 60.60° Field: 49003.3 nT  
Magnetic North is 7.80 degrees East of True North (at 9/21/2010)  
Grid North is 0.35 degrees East of True North  
To correct azimuth from True to Grid subtract 0.35 degrees  
To correct azimuth from Magnetic to Grid add 7.45 degrees  
For example: if the Magnetic North Azimuth = 90 degs, then the Grid North Azimuth = 90 + 7.45 = 97.45

Plot reference wellpath is Prelim. 2	
True vertical depths are referenced to Rig on No. 4H SHL (KB)	Grid System: NAD83 / TM New Mexico State Planes, Eastern Zone (3001), US feet
Measured depths are referenced to Rig on No. 4H SHL (KB)	North Reference: Grid north
Rig on No. 4H SHL (KB) to Mean Sea Level: 3634.5 feet	Scale: True distance
Mean Sea Level to Mud line (Facility: N Maduro Fed No. 4H): -3617 feet	Depths are in feet
Coordinates are in feet referenced to Facility Center	Created by: Victor Hernandez on 9/23/2010





# Planned Wellpath Report

Prelim\_2  
Page 1 of 4



## REFERENCE WELLPATH IDENTIFICATION

Operator	Cimarex Energy Co.	Slot	No. 4H SHL
Area	Lea County, NM	Well	No. 4H
Field	(N Maduro) Sec 29, T19S, R33E	Wellbore	No. 4H PWB
Facility	N Maduro Fed No. 4H		

## REPORT SETUP INFORMATION

Projection System	NAD83 / TM New Mexico State Planes, Eastern Zone (3001), US feet	Software System	WellArchitect® 2.0
North Reference	Grid	User	Victor Hernandez
Scale	0.999954	Report Generated	9/23/2010 at 11:02:53 AM
Convergence at slot	0.35° East	Database/Source file	WA_Midland/No. 4H_PWB.xml

## WELLPATH LOCATION

	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[USft]	Northing[USft]	Latitude	Longitude
Slot Location	0.00	0.00	738568.60	601242.10	32°39'04.414"N	103°41'33.052"W
Facility Reference Pt			738568.60	601242.10	32°39'04.414"N	103°41'33.052"W
Field Reference Pt			738568.60	601242.10	32°39'04.414"N	103°41'33.052"W

## WELLPATH DATUM

Calculation method	Minimum curvature	Rig on No. 4H SHL (KB) to Facility Vertical Datum	17.50ft
Horizontal Reference Pt	Facility Center	Rig on No. 4H SHL (KB) to Mean Sea Level	3634.50ft
Vertical Reference Pt	Rig on No. 4H SHL (KB)	Facility Vertical Datum to Mud Line (Facility)	0.00ft
MD Reference Pt	Rig on No. 4H SHL (KB)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	89.72°



# Planned Wellpath Report

Prelim\_2

Page 2 of 4



## REFERENCE WELLPATH IDENTIFICATION

Operator	Cimarex Energy Co.	Slot	No. 4H SHL
Area	Lea County, NM	Well	No. 4H
Field	(N Maduro) Sec 29, T19S, R33E	Wellbore	No. 4H PWB
Facility	N Maduro Fed No. 4H		

## WELLPATH DATA (50 stations) † = interpolated/extrapolated station

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [srv ft]	Grid North [srv ft]	Latitude	Longitude	DLS [°/100ft]	Comments
0.00	0.000	89.723	0.00	0.00	0.00	0.00	738568.60	601242.10	32°39'04.414"N	103°41'33.052"W	0.00	Tie On
9726.00	0.000	89.723	9726.00	0.00	0.00	0.00	738568.60	601242.10	32°39'04.414"N	103°41'33.052"W	0.00	Est. KOP
9826.00†	28.000	89.723	9822.07	23.95	0.12	23.95	738592.55	601242.22	32°39'04.414"N	103°41'32.772"W	28.00	
9926.00†	56.000	89.723	9895.64	90.20	0.44	90.20	738658.80	601242.54	32°39'04.413"N	103°41'31.997"W	28.00	
10026.00†	84.000	89.723	9929.51	183.24	0.88	183.24	738751.83	601242.98	32°39'04.412"N	103°41'30.909"W	28.00	
10046.52	89.745	89.723	9930.63	203.72	0.98	203.72	738772.31	601243.08	32°39'04.412"N	103°41'30.669"W	28.00	EOC
10126.00†	89.745	89.723	9930.98	283.20	1.37	283.20	738851.78	601243.47	32°39'04.411"N	103°41'29.740"W	0.00	
10226.00†	89.745	89.723	9931.42	383.20	1.85	383.19	738951.77	601243.95	32°39'04.409"N	103°41'28.570"W	0.00	
10326.00†	89.745	89.723	9931.87	483.20	2.33	483.19	739051.77	601244.43	32°39'04.408"N	103°41'27.401"W	0.00	
10426.00†	89.745	89.723	9932.31	583.20	2.82	583.19	739151.76	601244.92	32°39'04.407"N	103°41'26.231"W	0.00	
10526.00†	89.745	89.723	9932.76	683.19	3.30	683.19	739251.75	601245.40	32°39'04.406"N	103°41'25.061"W	0.00	
10626.00†	89.745	89.723	9933.20	783.19	3.78	783.18	739351.75	601245.88	32°39'04.405"N	103°41'23.892"W	0.00	
10726.00†	89.745	89.723	9933.64	883.19	4.26	883.18	739451.74	601246.36	32°39'04.403"N	103°41'22.722"W	0.00	
10826.00†	89.745	89.723	9934.09	983.19	4.75	983.18	739551.73	601246.85	32°39'04.402"N	103°41'21.553"W	0.00	
10926.00†	89.745	89.723	9934.53	1083.19	5.23	1083.18	739651.73	601247.33	32°39'04.401"N	103°41'20.383"W	0.00	
11026.00†	89.745	89.723	9934.98	1183.19	5.71	1183.18	739751.72	601247.81	32°39'04.400"N	103°41'19.214"W	0.00	
11126.00†	89.745	89.723	9935.42	1283.19	6.20	1283.17	739851.71	601248.30	32°39'04.398"N	103°41'18.044"W	0.00	
11226.00†	89.745	89.723	9935.87	1383.19	6.68	1383.17	739951.71	601248.78	32°39'04.397"N	103°41'16.875"W	0.00	
11326.00†	89.745	89.723	9936.31	1483.19	7.16	1483.17	740051.70	601249.26	32°39'04.396"N	103°41'15.705"W	0.00	
11426.00†	89.745	89.723	9936.75	1583.19	7.64	1583.17	740151.69	601249.74	32°39'04.395"N	103°41'14.535"W	0.00	
11526.00†	89.745	89.723	9937.20	1683.18	8.13	1683.16	740251.68	601250.23	32°39'04.393"N	103°41'13.366"W	0.00	
11626.00†	89.745	89.723	9937.64	1783.18	8.61	1783.16	740351.68	601250.71	32°39'04.392"N	103°41'12.196"W	0.00	
11726.00†	89.745	89.723	9938.09	1883.18	9.09	1883.16	740451.67	601251.19	32°39'04.391"N	103°41'11.027"W	0.00	
11826.00†	89.745	89.723	9938.53	1983.18	9.58	1983.16	740551.66	601251.68	32°39'04.390"N	103°41'09.857"W	0.00	
11926.00†	89.745	89.723	9938.98	2083.18	10.06	2083.16	740651.66	601252.16	32°39'04.388"N	103°41'08.688"W	0.00	
12026.00†	89.745	89.723	9939.42	2183.18	10.54	2183.15	740751.65	601252.64	32°39'04.387"N	103°41'07.518"W	0.00	
12126.00†	89.745	89.723	9939.86	2283.18	11.02	2283.15	740851.64	601253.12	32°39'04.386"N	103°41'06.349"W	0.00	
12226.00†	89.745	89.723	9940.31	2383.18	11.51	2383.15	740951.63	601253.61	32°39'04.385"N	103°41'05.179"W	0.00	
12326.00†	89.745	89.723	9940.75	2483.18	11.99	2483.15	741051.63	601254.09	32°39'04.383"N	103°41'04.009"W	0.00	
12426.00†	89.745	89.723	9941.20	2583.18	12.47	2583.15	741151.62	601254.57	32°39'04.382"N	103°41'02.840"W	0.00	



# Planned Wellpath Report

Prelim\_2  
Page 3 of 4



## REFERENCE WELLPATH IDENTIFICATION

Operator	Cimarex Energy Co.	Slot	No. 4H SHL
Area	Lea County, NM	Well	No. 4H
Field	(N Maduro) Sec 29, T19S, R33E	Wellbore	No. 4H PWB
Facility	N Maduro Fed No. 4H		

## WELLPATH DATA (50 stations) † = interpolated/extrapolated station

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [srv ft]	Grid North [srv ft]	Latitude	Longitude	DLS [°/100ft]	Comments
12526.00†	89.745	89.723	9941.64	2683.17	12.96	2683.14	741251.61	601255.06	32°39'04.381"N	103°41'01.670"W	0.00	
12626.00†	89.745	89.723	9942.09	2783.17	13.44	2783.14	741351.61	601255.54	32°39'04.380"N	103°41'00.501"W	0.00	
12726.00†	89.745	89.723	9942.53	2883.17	13.92	2883.14	741451.60	601256.02	32°39'04.378"N	103°40'59.331"W	0.00	
12826.00†	89.745	89.723	9942.97	2983.17	14.40	2983.14	741551.59	601256.50	32°39'04.377"N	103°40'58.162"W	0.00	
12926.00†	89.745	89.723	9943.42	3083.17	14.89	3083.13	741651.59	601256.99	32°39'04.376"N	103°40'56.992"W	0.00	
13026.00†	89.745	89.723	9943.86	3183.17	15.37	3183.13	741751.58	601257.47	32°39'04.374"N	103°40'55.823"W	0.00	
13126.00†	89.745	89.723	9944.31	3283.17	15.85	3283.13	741851.57	601257.95	32°39'04.373"N	103°40'54.653"W	0.00	
13226.00†	89.745	89.723	9944.75	3383.17	16.34	3383.13	741951.56	601258.43	32°39'04.372"N	103°40'53.483"W	0.00	
13326.00†	89.745	89.723	9945.19	3483.17	16.82	3483.13	742051.56	601258.92	32°39'04.371"N	103°40'52.314"W	0.00	
13426.00†	89.745	89.723	9945.64	3583.17	17.30	3583.12	742151.55	601259.40	32°39'04.369"N	103°40'51.144"W	0.00	
13526.00†	89.745	89.723	9946.08	3683.16	17.78	3683.12	742251.54	601259.88	32°39'04.368"N	103°40'49.975"W	0.00	
13626.00†	89.745	89.723	9946.53	3783.16	18.27	3783.12	742351.54	601260.37	32°39'04.367"N	103°40'48.805"W	0.00	
13726.00†	89.745	89.723	9946.97	3883.16	18.75	3883.12	742451.53	601260.85	32°39'04.365"N	103°40'47.636"W	0.00	
13826.00†	89.745	89.723	9947.42	3983.16	19.23	3983.12	742551.52	601261.33	32°39'04.364"N	103°40'46.466"W	0.00	
13926.00†	89.745	89.723	9947.86	4083.16	19.72	4083.11	742651.52	601261.81	32°39'04.363"N	103°40'45.297"W	0.00	
14026.00†	89.745	89.723	9948.30	4183.16	20.20	4183.11	742751.51	601262.30	32°39'04.361"N	103°40'44.127"W	0.00	
14126.00†	89.745	89.723	9948.75	4283.16	20.68	4283.11	742851.50	601262.78	32°39'04.360"N	103°40'42.957"W	0.00	
14226.00†	89.745	89.723	9949.19	4383.16	21.16	4383.11	742951.49	601263.26	32°39'04.359"N	103°40'41.788"W	0.00	
14326.00†	89.745	89.723	9949.64	4483.16	21.65	4483.10	743051.49	601263.75	32°39'04.357"N	103°40'40.618"W	0.00	
14407.65	89.745	89.723	9950.00	4564.80	22.04	4564.75	743133.13	601264.14	32°39'04.356"N	103°40'39.663"W	0.00	No. 4H BHL

## HOLE & CASING SECTIONS Ref Wellbore: No. 4H PWB Ref Wellpath: Prelim\_2

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]
4.75in Open Hole	9735.00	14407.65	4672.65	9735.00	9950.00	0.00	0.20	22.04	4564.75



# Planned Wellpath Report

Prelim\_2  
Page 4 of 4



## REFERENCE WELLPATH IDENTIFICATION

Operator	Cimarex Energy Co.	Slot	No. 4H SHL
Area	Lea County, NM	Well	No. 4H
Field	(N Maduro) Sec 29, T19S, R33E	Wellbore	No. 4H PWB
Facility	N Maduro Fed No. 4H		

## TARGETS

Name	MD [ft]	TVD [ft]	North [ft]	East [ft]	Grid East [srv ft]	Grid North [srv ft]	Latitude	Longitude	Shape
1) No. 4H PBHL	14407.65	9950.00	22.04	4564.75	743133.13	601264.14	32°39'04.356"N	103°40'39.663"W	point

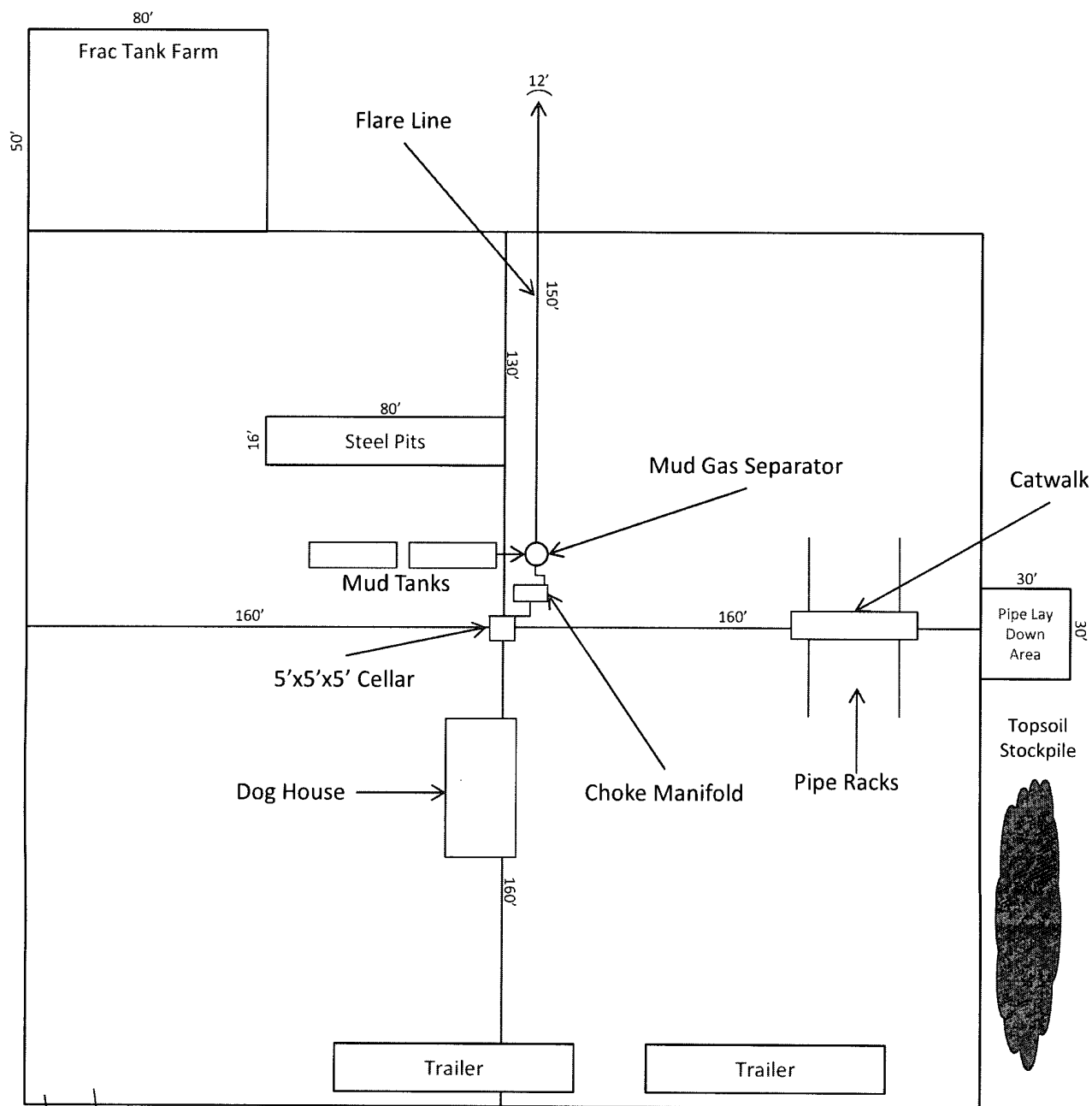
## SURVEY PROGRAM Ref Wellbore: No. 4H PWB Ref Wellpath: Prelim\_2

Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
17.50	14407.65	NaviTrak (Standard)		No. 4H PWB

**MIDWEST**  
**HOSE AND SPECIALTY INC.**

<b>INTERNAL HYDROSTATIC TEST REPORT</b>		
<b>Customer:</b> CACTUS DRILLING		<b>P.O. Number:</b> RIG#147
<b>HOSE SPECIFICATIONS</b>		
<b>Type:</b> CHOKER & KILL		<b>Length:</b> 35'
<b>I.D.</b> 4" <b>INCHES</b>		<b>O.D.</b> 5"
<b>WORKING PRESSURE</b> 10,000 <b>PSI</b>	<b>TEST PRESSURE</b> 15,000	<b>BURST PRESSURE</b>
<b>COUPLINGS</b>		
<b>Stem Part No.</b> E4.0X64WB		<b>Ferrule No.</b> FERRULE-128
<b>Type of Coupling:</b> 4-1/16 10K FLANGE(BX-155)		<b>Die Size:</b>
<b>PROCEDURE</b>		
<i>Hose assembly pressure tested with water at ambient temperature.</i>		
<b>TIME HELD AT TEST PRESSURE</b> 15 <b>MIN.</b>		<b>ACTUAL BURST PRESSURE:</b> 0 <b>PSI</b>
<b>COMMENTS:</b> SERIAL#63270		
<b>Date:</b> 7/14/2010	<b>Tested By:</b> BOBBY FINK	<b>Approved:</b> BRENT BURNETT

Key 10



1"=50'

N

Exhibit D – Rig Diagram  
**North Maduro Federal Unit No. 4**  
Cimarex Energy Co. of Colorado  
20-19S-33E  
SHL 660 FNL & 410 FWL  
BHL 660 FNL & 330 FEL  
Lea County, NM



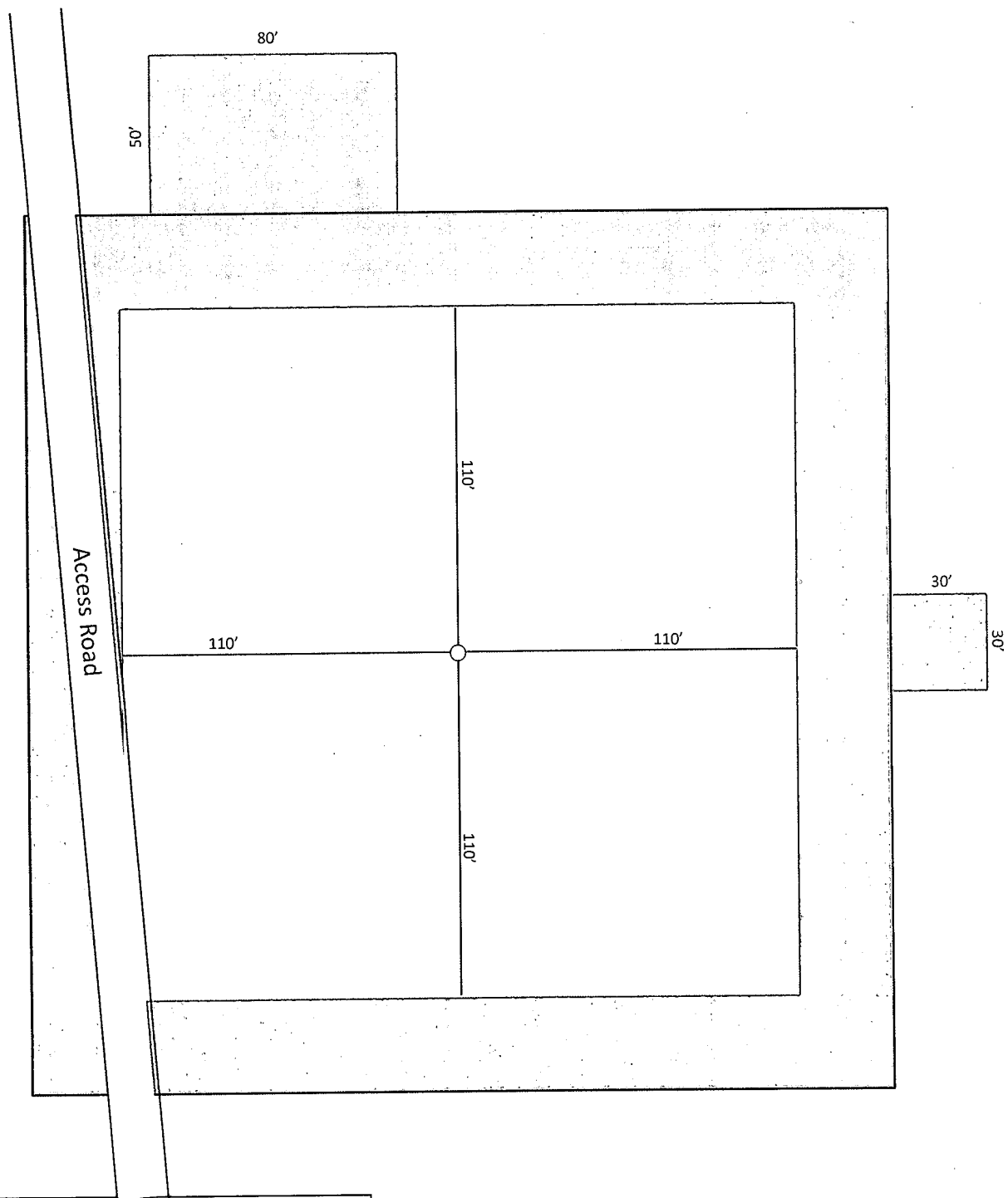
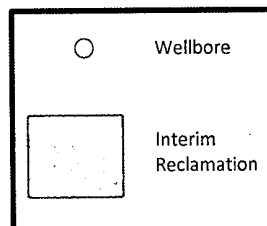


Exhibit D-1  
**North Maduro Federal Unit No. 4**  
Cimarex Energy Co. of Colorado  
20-19S-33E  
SHL 660 FNL & 410 FWL  
BHL 660 FNL & 330 FEL  
Lea County, NM



1"=50'

SR & A

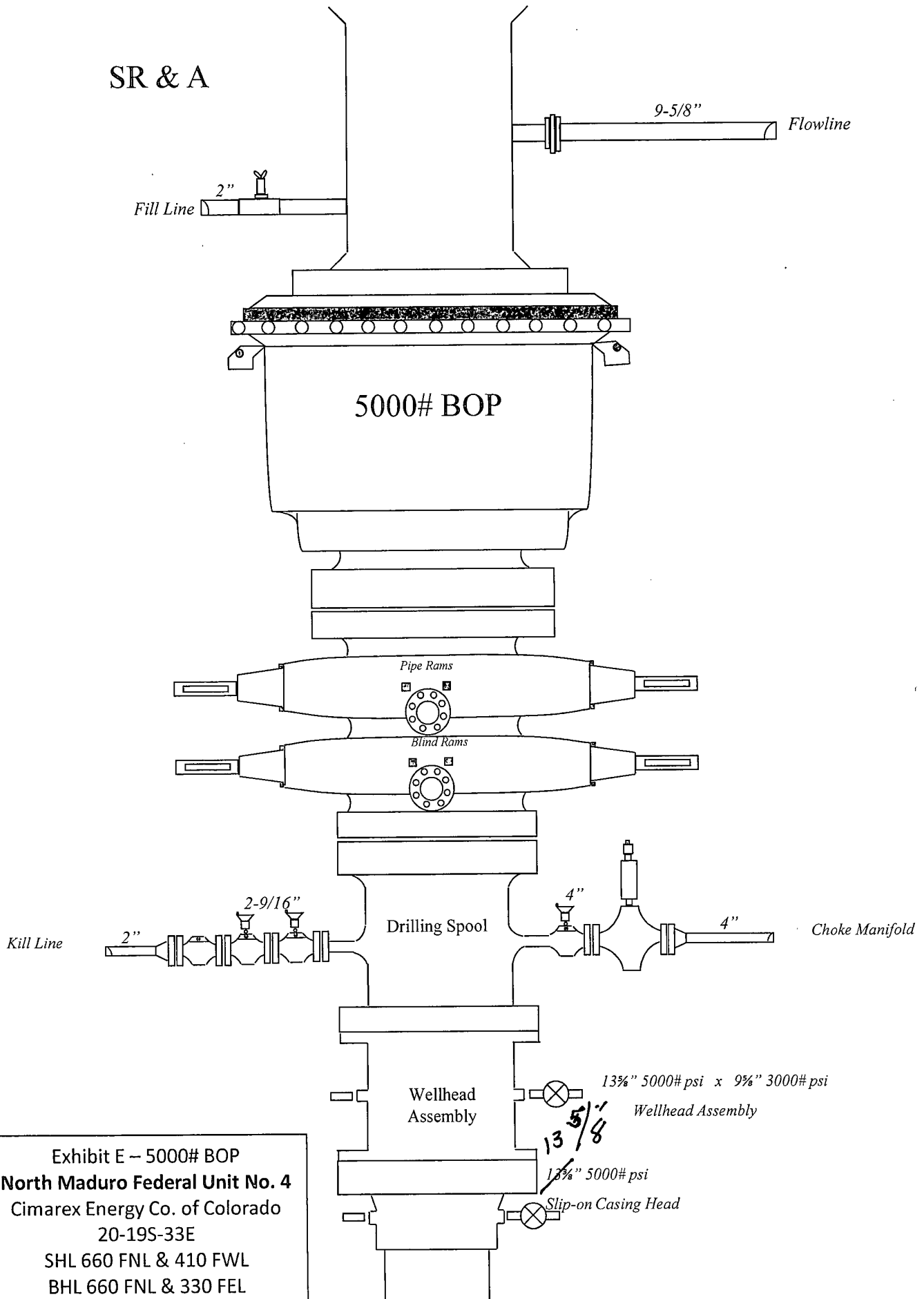


Exhibit E -- 5000# BOP  
 North Maduro Federal Unit No. 4  
 Cimarex Energy Co. of Colorado  
 20-19S-33E  
 SHL 660 FNL & 410 FWL  
 BHL 660 FNL & 330 FEL  
 Lea County, NM

# Drilling Operations Choke Manifold 5M Service tested to 3M

Exhibit E-1 – Choke Manifold Diagram

**North Maduro Federal Unit No. 4**

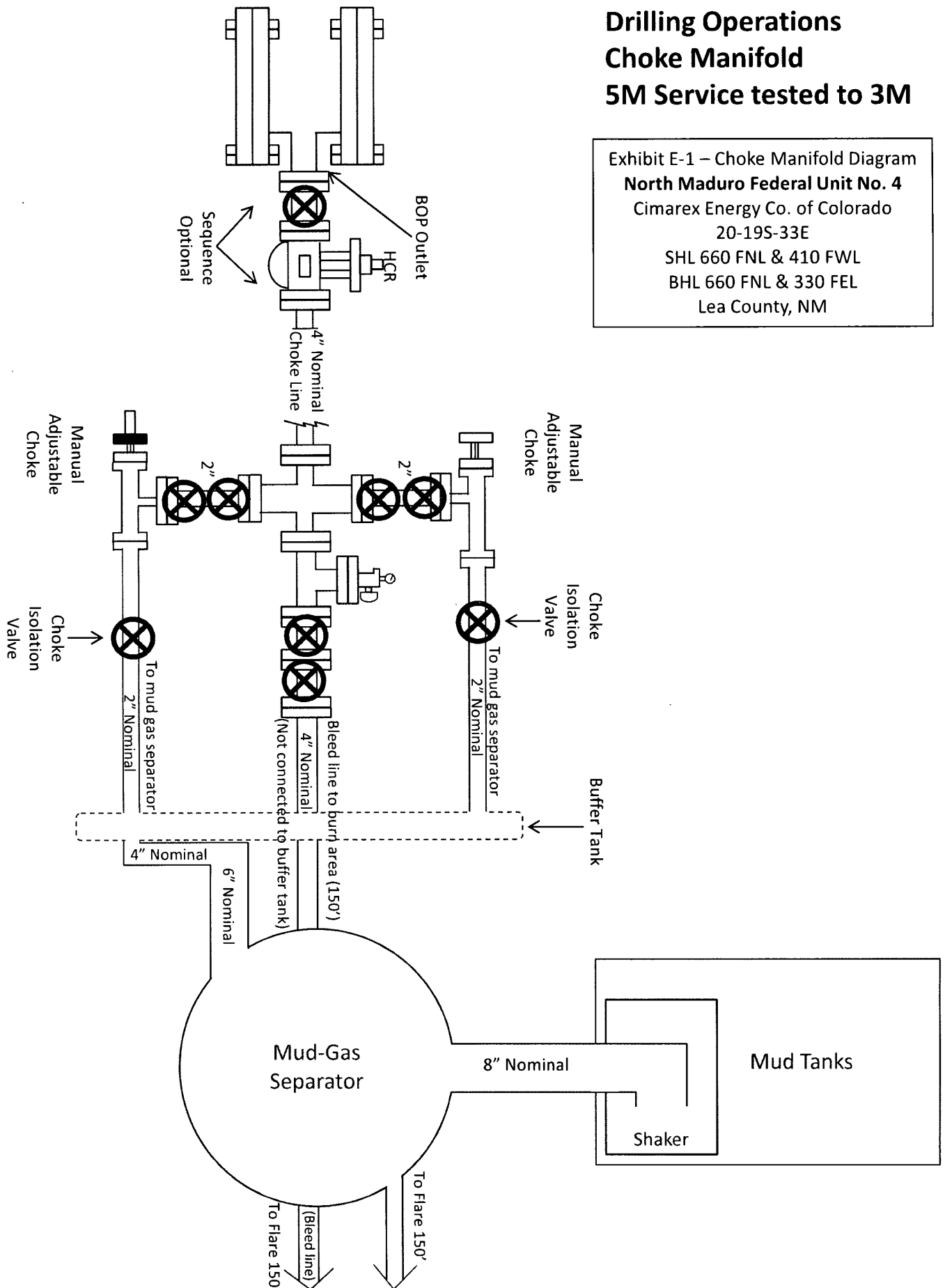
Cimarex Energy Co. of Colorado

20-19S-33E

SHL 660 FNL & 410 FWL

BHL 660 FNL & 330 FEL

Lea County, NM



Hydrogen Sulfide Drilling Operations Plan  
**North Maduro Federal Unit No. 4**  
Cimarex Energy Co. of Colorado  
Unit D, Section 20  
T19S-R33E, Lea County, NM

- 1 All Company and Contract personnel admitted on location must be trained by a qualified H<sub>2</sub>S safety instructor to the following:
  - A. Characteristics of H<sub>2</sub>S
  - B. Physical effects and hazards
  - C. Proper use of safety equipment and life support systems.
  - D. Principle and operation of H<sub>2</sub>S detectors, warning system and briefing areas.
  - E. Evacuation procedure, routes and first aid.
  - F. Proper use of 30 minute pressure demand air pack.
- 2 H<sub>2</sub>S Detection and Alarm Systems:
  - A. H<sub>2</sub>S 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 (H<sub>2</sub>S 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:

No DSTs or cores are planned at this time.
- 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.

H<sub>2</sub>S Contingency Plan  
**North Maduro Federal Unit No. 4**  
Cimarex Energy Co. of Colorado  
Unit D, Section 20  
T19S-R33E, Lea County, NM

**Emergency Procedures**

In the event of a release of gas containing H<sub>2</sub>S, the first responder(s) must:

- ★ Isolate the area and prevent entry by other persons into the 100 ppm ROE.
- ★ Evacuate any public places encompassed by the 100 ppm ROE.
- ★ Be equipped with H<sub>2</sub>S monitors and air packs in order to control the release.
- ★ Use the "buddy system" to ensure no injuries occur during the response.
- ★ Take precautions to avoid personal injury during this operation.
- ★ Contact operator and/or local officials to aid in operation. See list of phone numbers attached.
- ★ Have received training in the:
  - ◆ Detection of H<sub>2</sub>S, and
  - ◆ Measures for protection against the gas,
  - ◆ Equipment used for protection and emergency response.

**Ignition of Gas Source**

Should control of the well be considered lost and ignition considered, take care to protect against exposure to Sulfur Dioxide (SO<sub>2</sub>). Intentional ignition must be coordinated with the NMOCD and local officials. Additionally, the NM State Police may become involved. NM State Police shall be the Incident Command on scene of any major release. Take care to protect downwind whenever there is an ignition of the gas.

**Characteristics of H<sub>2</sub>S and SO<sub>2</sub>**

Common Name	Chemical Formula	Specific Gravity	Threshold Limit	Hazardous Limit	Lethal Concentration
Hydrogen Sulfide	H <sub>2</sub> S	1.189 Air=1	10 ppm	100 ppm/hr	600 ppm
Sulfur Dioxide	SO <sub>2</sub>	2.21 Air=1	2 ppm	N/A	1000 ppm

**Contacting Authorities**

Cimarex Energy Co. of Colorado's personnel must liaise with local and state agencies to ensure a proper response to a major release. Additionally, the OCD must be notified of the release as soon as possible but no later than 4 hours. Agencies will ask for information such as type and volume of release, wind direction, location of release, etc. Be prepared with all information available including directions to site. The following call list of essential and potential responders has been prepared for use during a release. Cimarex Energy Co. of Colorado's response must be in coordination with the State of New Mexico's "Hazardous Materials Emergency Response Plan" (HMER).

H<sub>2</sub>S Contingency Plan Emergency Contacts

**North Maduro Federal Unit No. 4**

Cimarex Energy Co. of Colorado

Unit D, Section 20

T19S-R33E, Lea County, NM

<b>Company Office</b>			
Cimarex Energy Co. of Colorado		800-969-4789	
Co. Office and After-Hours Menu			
<b>Key Personnel</b>			
<b>Name</b>	<b>Title</b>	<b>Office</b>	<b>Mobile</b>
Doug Park	Drilling Manager	432-620-1934	972-333-1407
Dee Smith	Drilling Super	432-620-1933	972-882-1010
Jim Evans	Drilling Super	432-620-1929	972-465-0564
Roy Shirley	Field Super		432-634-2136
<b>Artesia</b>			
Ambulance		911	
State Police		575-746-2703	
City Police		575-746-2703	
Sheriff's Office		575-746-9888	
<b>Fire Department</b>		<b>575-746-2701</b>	
Local Emergency Planning Committee		575-746-2122	
New Mexico Oil Conservation Division		575-748-1283	
<b>Carlsbad</b>			
Ambulance		911	
State Police		575-885-3137	
City Police		575-885-2111	
Sheriff's Office		575-887-7551	
<b>Fire Department</b>		<b>575-887-3798</b>	
Local Emergency Planning Committee		575-887-6544	
US Bureau of Land Management		575-887-6544	
<b>Santa Fe</b>			
New Mexico Emergency Response Commission (Santa Fe)		505-476-9600	
New Mexico Emergency Response Commission (Santa Fe) 24 Hrs		505-827-9126	
New Mexico State Emergency Operations Center		505-476-9635	
<b>National</b>			
National Emergency Response Center (Washington, D.C.)		800-424-8802	
<b>Medical</b>			
Flight for Life - 4000 24th St.; Lubbock, TX		806-743-9911	
Aerocare - R3, Box 49F; Lubbock, TX		806-747-8923	
Med Flight Air Amb - 2301 Yale Blvd S.E., #D3; Albuquerque, NM		505-842-4433	
SB Air Med Service - 2505 Clark Carr Loop S.E.; Albuquerque, NM		505-842-4949	
<b>Other</b>			
Boots & Coots IWC		800-256-9688	or 281-931-8884
Cudd Pressure Control		432-699-0139	or 432-563-3356
Halliburton		575-746-2757	
B.J. Services		575-746-3569	

Surface Use Plan  
**North Maduro Federal Unit No. 4**  
Cimarex Energy Co. of Colorado  
Unit D, Section 20  
T19S-R33E, Lea County, NM

1. Existing Roads: Area maps, Exhibit "A" shows the proposed well site as staked. Exhibit "B" is a reproduction of Eddy Co. General Highway Map. Exhibit "C" is a reproduction of a USGS Topographic Map, and Exhibit "C-1" is a well site layout map, showing proposed road to location and existing road to nearest county road.
  - A. The maximum width of the driving surface will be 15.' The road will be crowned and ditched with a 2% slope from the tip of the crown to the edge of the driving surface. The ditches will be 1' deep with 3:1 slopes. The driving surface will be made of 6" rolled and compacted caliche.
  - B. From the junction of 62-180 and Smith Road, go North on Smith Road turning into a lease road for 3.8 miles to lease road. On lease road, go Southerly 1.0 miles to well pad and proposed lease road.
2. Planned Access Roads: 1353.3' of proposed newly constructed on-lease access road. The remainder was recently built for the drilling of the North Maduro Unit No. 3 well.
3. Planned Flowlines: Lay surface oil/gas/water 4" SDR-7 poly pipe along lease road to proposed N Maduro Unit Fed #3, then to the N Maduro Unit Fed #2 tank battery as shown on attached POD topo.
4. Planned Powerlines: 5-span, 3-phase, 4-wire electric line with 40' poles to be constructed along lease road and connect to existing powerline at the N Maduro Unit Fed #3 well pad.
5. 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 Exhibits "A" and "A-1"
  - E. Abandoned wells - As shown on Exhibits "A" and "A-1"
6. Location and Type of Water Supply:

Water will be purchased locally from a commercial source and trucked over the access roads.
7. Source of Construction Material:

If possible, native caliche will be obtained from the excavation of drill site. Topsoil will be pushed back from the drill site and existing caliche will be ripped and compacted. Then topsoil will be stockpiled on location as depicted on Exhibit "D" (rig layout). If additional material is needed, it will be purchased from a BLM-approved pit as near as possible to the well
8. Methods of Handling Waste Material:
  - A. Drill cuttings will be seperated by a series of solids removal equipment and stored in steel containment pits and then hauled to a state-approved disposal facility.
  - B. All trash, junk and other waste material will be contained in trash cages or bins to prevent scattering. When the job is completed all contents will be removed and disposed of in an approved sanitary land fill.
  - C. Salts remaining after completion of well will be picked up by supplier including broken sacks.
  - D. Sewage from living quarters will drain into holding tanks and be cleaned out periodically and hauled to a waste disposal facility. A Porta-John will be provided for the rig crews. This equipment will be properly maintained during the drilling operations and removed upon completion of the well.
  - E. Drilling fluids will be contained in steel pits in a closed circulating system. Fluids will be cleaned and reused. Water produced during testing will be contained in the steel pits and disposed of at a state approved disposal facility. Any oil or condensate produced will be stored in test tanks until sold and hauled from the site.

Surface Use Plan  
North Maduro Federal Unit No. 4  
Cimarex Energy Co. of Colorado  
Unit D, Section 20  
T19S-R33E, Lea County, NM

9. Ancillary Facilities:

- A. No camps or airstrips to be constructed.

10. Well Site Layout:

- A. Exhibit "D" shows location and rig layout.
- B. Mud pits in the closed circulating system will be steel pits and the cuttings will be stored in steel containment pits.
- C. Cuttings will be stored in steel pits until they are hauled to a state-approved disposal facility.
- D. If the well is a producer, those areas of the location not essential to production facilities will be reclaimed and seeded per BLM requirements.

11. Plans for Restoration of Surface:

Rehabilitation of the location will start in a timely manner after all drilling operations cease. The type of reclamation will depend on whether the well is a producer or a dry hole.

Drainage systems, if any, will be reshaped to the original configuration with provisions made to alleviate erosion. These may need to be modified in certain circumstances to prevent inundation of the location's pad and surface facilities. After the area has been shaped and contoured, topsoil from the spoil pile will be placed over the disturbed area to the extent possible. Revegetation procedures will comply with BLM standards.

If the well is a dry hole, the pad and road area will be recountoured to match the existing terrain. Topsoil will be spread to the extent possible. Revegetation will comply with BLM standards.

Should the well be a producer, those areas of the location not essential to production facilities and operations will be reclaimed and seeded per BLM requirements. Please see Production Facilities Layout Diagram, exhibit D-1.

12. Other Information

- A. Topography consists of a sloping plane with loose tan sands. Vegetation is mainly yucca, mesquite and shin oak.
- B. The wellsite is on surface owned by Department of the Interior, Bureau of Land Management. The land is used mainly for farming, cattle ranching, recreational use, and oil and gas production.
- C. In lieu of an archaeological survey report, Cimarex will be submitting an MOA application for this well pad and access road since they are within the MOA boundary.
- D. There are no known dwellings within 1½ miles of this location.



Operator Certification Statement  
North Maduro Federal Unit No. 4  
Cimarex Energy Co. of Colorado  
Unit D, Section 20  
T19S-R33E, Lea County, NM

Operator's Representative

Cimarex Energy Co. of Colorado  
600 N. Marienfeld St., Ste. 600  
Midland, TX 79701  
Office Phone: (432) 571-7800  
Zeno Farris

**CERTIFICATION:** I hereby certify that I, or someone under my direct supervision, have inspected the drill site and access route proposed herein; that I am familiar with the conditions which currently exist; that I have full knowledge of state and Federal laws applicable to this operation; that the statements made in this APD package are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed in conformity with this APD package and the terms and conditions under which it is approved. I also certify that I, or the company I represent, am responsible for the operations conducted under this application. These statements are subject to the provisions of 18 U.S.C. 1001 for the filing of false statements.

Executed this 7th day of October, 2010

NAME: Zeno Farris  
Zeno Farris

TITLE: Manager Operations Administration

ADDRESS: 600 N. Marienfeld St., Ste. 600  
Midland, TX 79701

TELEPHONE: (432) 620-1938

EMAIL: zfarris@cimarex.com

Field Representative: Same as above

# PECOS DISTRICT CONDITIONS OF APPROVAL

OPERATOR'S NAME:	Cimarex Energy Co of Colo
LEASE NO.:	NM36916
WELL NAME & NO.:	4-North Maduro Federal Unit
SURFACE HOLE FOOTAGE:	660' FNL & 410' FWL
BOTTOM HOLE FOOTAGE:	660' FNL & 330' FEL
LOCATION:	Section 20, T. 19 S., R. 33 E., NMPM
COUNTY:	Lea County, New Mexico

## TABLE OF CONTENTS

Standard Conditions of Approval (COA) apply to this APD. If any deviations to these standards exist or special COAs are required, the section with the deviation or requirement will be checked below.

- ☐ **General Provisions**
- ☐ **Permit Expiration**
- ☐ **Archaeology, Paleontology, and Historical Sites**
- ☐ **Noxious Weeds**
- ☒ **Special Requirements**
  - Lesser Prairie-Chicken Timing Stipulations
  - Ground-level Abandoned Well Marker
  - Unit Plan of Development
- ☒ **Construction**
  - Notification
  - Topsoil
  - Closed Loop System
  - Federal Mineral Material Pits
  - Well Pads
  - Roads
- ☐ **Road Section Diagram**
- ☒ **Drilling**
  - Capitan Reef
  - H2S – Onshore Order 6 requirements
  - Logging requirements
  - Waste Material and Fluids
- ☐ **Production (Post Drilling)**
- ☐ **Interim Reclamation**
- ☐ **Final Abandonment & Reclamation**

## **I. GENERAL PROVISIONS**

The approval of the Application For Permit To Drill (APD) is in compliance with all applicable laws and regulations: 43 Code of Federal Regulations 3160, the lease terms, Onshore Oil and Gas Orders, Notices To Lessees, New Mexico Oil Conservation Division (NMOCD) Rules, National Historical Preservation Act As Amended, and instructions and orders of the Authorized Officer. Any request for a variance shall be submitted to the Authorized Officer on Form 3160-5, Sundry Notices and Report on Wells.

## **II. PERMIT EXPIRATION**

If the permit terminates prior to drilling and drilling cannot be commenced within 60 days after expiration, an operator is required to submit Form 3160-5, Sundry Notices and Reports on Wells, requesting surface reclamation requirements for any surface disturbance. However, if the operator will be able to initiate drilling within 60 days after the expiration of the permit, the operator must have set the conductor pipe in order to allow for an extension of 60 days beyond the expiration date of the APD. (Filing of a Sundry Notice is required for this 60 day extension.)

## **III. ARCHAEOLOGICAL, PALEONTOLOGY & HISTORICAL SITES**

Any cultural and/or paleontological resource discovered by the operator or by any person working on the operator's behalf shall immediately report such findings to the Authorized Officer. The operator is fully accountable for the actions of their contractors and subcontractors. The operator 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 shall be made by the Authorized Officer to determine the appropriate actions that shall be required to prevent the loss of significant cultural or scientific values of the discovery. The operator shall be held responsible for the cost of the proper mitigation measures that the Authorized Officer assesses after consultation with the operator on the evaluation and decisions of the discovery. Any unauthorized collection or disturbance of cultural or paleontological resources may result in a shutdown order by the Authorized Officer.

## **IV. NOXIOUS WEEDS**

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.

## **V. SPECIAL REQUIREMENT(S)**

Timing Limitation Stipulation / Condition of Approval for lesser prairie-chicken:  
Oil and gas activities including 3-D geophysical exploration, and drilling 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, 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. Additionally, no new drilling will be allowed within up to 200 meters of leks known at the time of permitting. 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 feet from the source of the noise.

Ground-level Abandoned Well Marker to avoid raptor perching: Upon the plugging and subsequent abandonment of the well, the well marker will be installed at ground level on a plate containing the pertinent information for the plugged well. For more installation details, contact the Carlsbad Field Office at 575-234-5972.

### **Plan of Development**

**Operator is to submit a Unit Plan of Development (UPOD) annually to the BLM. Guidelines for UPOD are available upon request at the BLM Carlsbad Field Office.**

## **VI. CONSTRUCTION**

### **A. NOTIFICATION**

The BLM shall administer compliance and monitor construction of the access road and well pad. Notify the Hobbs Field Station at (575) 393-3612 at least 3 working days prior to commencing construction of the access road and/or well pad.

When construction operations are being conducted on this well, the operator shall have the approved APD and Conditions of Approval (COA) on the well site and they shall be made available upon request by the Authorized Officer.

### **B. TOPSOIL**

The operator shall stockpile the topsoil in a low profile manner in order to prevent wind/water erosion of the topsoil. The topsoil to be stripped is approximately 6 inches in depth. The topsoil will be used for interim and final reclamation.

### **C. CLOSED LOOP SYSTEM**

Tanks are required for drilling operations: No Pits.

The operator shall properly dispose of drilling contents at an authorized disposal site.

### **D. FEDERAL MINERAL MATERIALS PIT**

Payment shall be made to the BLM prior to removal of any federal mineral materials. Call the Carlsbad Field Office at (575) 234-5972.

### **E. WELL PAD SURFACING**

Surfacing of the well pad is not required.

If the operator elects to surface the well pad, the surfacing material may be required to be removed at the time of reclamation.

The well pad shall be constructed in a manner which creates the smallest possible surface disturbance, consistent with safety and operational needs.

## **F. ON LEASE ACCESS ROADS**

### **Road Width**

The access road shall have a driving surface that creates the smallest possible surface disturbance and does not exceed fourteen (14) feet in width. The maximum width of surface disturbance, when constructing the access road, shall not exceed twenty (20) feet.

### **Surfacing**

Surfacing material is not required on the new access road driving surface. If the operator elects to surface the new access road or pad, the surfacing material may be required to be removed at the time of reclamation.

Where possible, no improvements should be made on the unsurfaced access road other than to remove vegetation as necessary, road irregularities, safety issues, or to fill low areas that may sustain standing water.

The Authorized Officer reserves the right to require surfacing of any portion of the access road at any time deemed necessary. Surfacing may be required in the event the road deteriorates, erodes, road traffic increases, or it is determined to be beneficial for future field development. The surfacing depth and type of material will be determined at the time of notification.

### **Crowning**

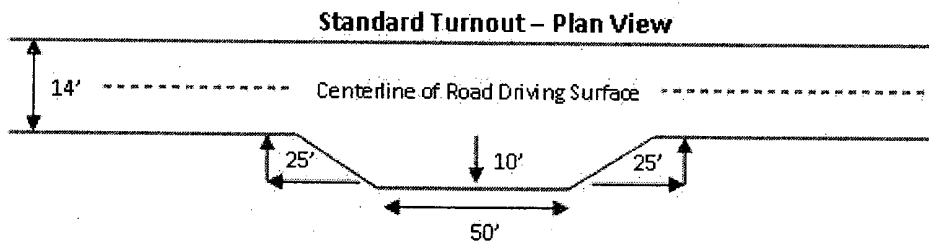
Crowning shall be done on the access road driving surface. The road crown shall have a grade of approximately 2% (i.e., a 1" crown on a 14' wide road). The road shall conform to Figure 1; cross section and plans for typical road construction.

### **Ditching**

Ditching shall be required on both sides of the road.

### **Turnouts**

Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall be constructed on all blind curves. Turnouts shall conform to the following diagram:

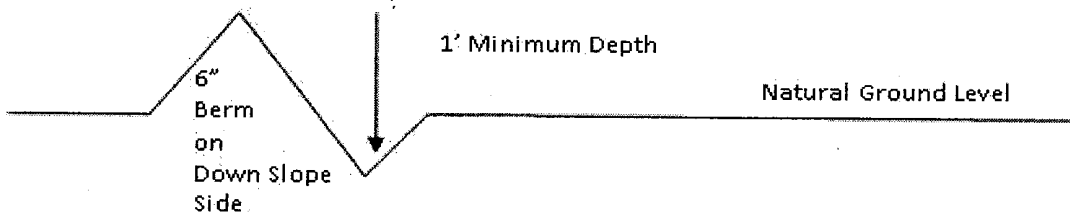


## **Drainage**

Drainage control systems shall be constructed on the entire length of road (e.g. ditches, sidehill out sloping and insloping, lead-off ditches, culvert installation, and low water crossings).

A typical lead-off ditch has a minimum depth of 1 foot below and a berm of 6 inches above natural ground level. The berm shall be on the down-slope side of the lead-off ditch.

**Cross Section of a Typical Lead-off Ditch**



All lead-off ditches shall be graded to drain water with a 1 percent minimum to 3 percent maximum ditch slope. The spacing interval are variable for lead-off ditches and shall be determined according to the formula for spacing intervals of lead-off ditches, but may be amended depending upon existing soil types and centerline road slope (in %);

### **Formula for Spacing Interval of Lead-off Ditches**

Example - On a 4% road slope that is 400 feet long, the water flow shall drain water into a lead-off ditch. Spacing interval shall be determined by the following formula:

$$400 \text{ foot road with } 4\% \text{ road slope: } \frac{400'}{4\%} + 100' = 200' \text{ lead-off ditch interval}$$

## **Culvert Installations**

Appropriately sized culvert(s) shall be installed at the deep waterway channel flow crossing.

## **Cattleguards**

An appropriately sized cattleguard(s) sufficient to carry out the project shall be installed and maintained at fence crossing(s).

Any existing cattleguard(s) on the access road shall be repaired or replaced if they are damaged or have deteriorated beyond practical use. The operator shall be responsible for the condition of the existing cattleguard(s) that are in place and are utilized during lease operations.

A gate shall be constructed and fastened securely to H-braces.

**Fence Requirement**

Where entry is required across a fence line, the fence shall be braced and tied off on both sides of the passageway prior to cutting.

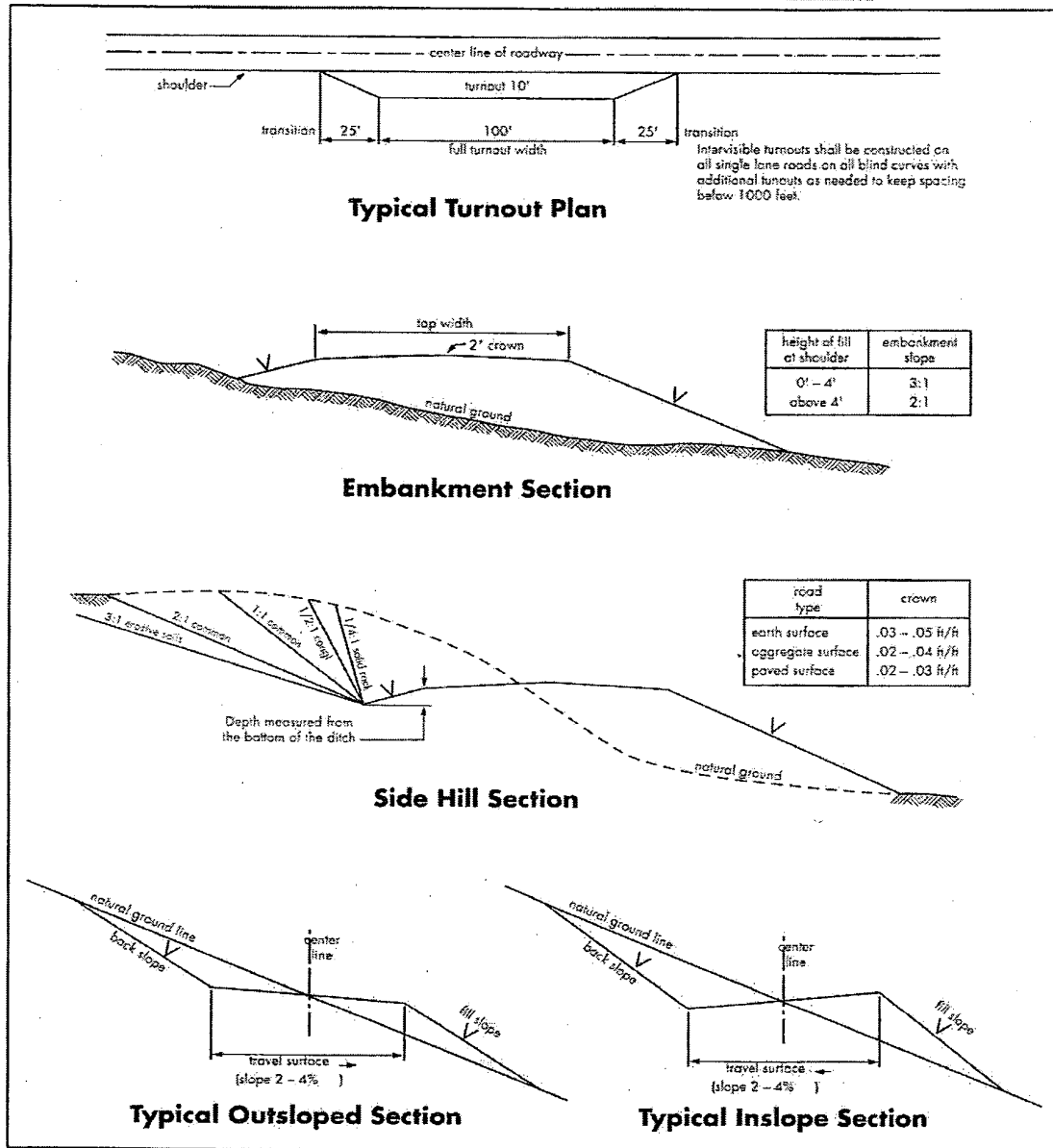
The operator shall notify the private surface landowner or the grazing allotment holder prior to crossing any fence(s).

**Public Access**

Public access on this road shall not be restricted by the operator without specific written approval granted by the Authorized Officer.



**Figure 1 – Cross Sections and Plans For Typical Road Sections**



## VII. DRILLING

### A. DRILLING OPERATIONS REQUIREMENTS

The BLM is to be notified a minimum of 4 hours in advance for a representative to witness:

- a. Spudding well
- b. Setting and/or Cementing of all casing strings
- c. BOPE tests

☒ **Lea County**

Call the Hobbs Field Station, 414 West Taylor, Hobbs NM 88240,  
(575) 393-3612

1. A Hydrogen Sulfide (H<sub>2</sub>S) Drilling Plan should be activated 500 feet prior to drilling into the **Bone Spring** formation. **As a result, the Hydrogen Sulfide area must meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, please provide measured values and formations to the BLM.**
2. 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. **If the drilling rig is removed without approval – an Incident of Non-Compliance will be written and will be a “Major” violation.**
3. Floor controls are required for 3M or Greater systems. These 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.
4. **The record of the drilling rate along with the GR/N well log run from TD to surface (horizontal well – vertical portion of hole) will be submitted to the BLM office as well as all other logs run on the borehole 30 days from completion. If available, a digital copy of the logs is to be submitted in addition to the paper copies. The Rustler top and top and bottom of Salt are to be recorded on the Completion Report.**

### B. CASING

**Changes to the approved APD casing and cement program require submitting a sundry and receiving approval prior to work. Failure to obtain approval prior to work will result in an Incident of Non-Compliance being issued.**

**Centralizers required on surface casing per Onshore Order 2.III.B.1.f.**

**Wait on cement (WOC) time prior to drilling out for a primary cement job will be a minimum 18 hours for a water basin, 24 hours in the potash area, or 500 pounds compressive strength, whichever is greater for all casing strings. DURING THIS WOC TIME, NO DRILL PIPE, ETC. SHALL BE RUN IN THE HOLE. Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. See individual casing strings for details regarding lead cement slurry requirements.**

**No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.**

**Possible water/brine flows in the Artesia and Salado Groups.**

**Possible lost circulation in the Capitan Reef and Bone Spring formations.**

1. The 13-3/8 inch surface casing shall be set at approximately 1380 feet (a minimum of 25 feet into the Rustler Anhydrite and above the salt) and cemented to the surface.
  - a. 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 surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.
  - b. **Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry.**
  - c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.
  - d. If cement falls back, remedial cementing will be done prior to drilling out that string.

**Special Capitan Reef requirements:**

**If any lost circulation occurs below the Base of the Salt, the operator is to switch to fresh water mud to protect the Capitan Reef and use fresh water mud until setting the intermediate casing. The appropriate BLM office is to be notified for a PET to witness the switch to fresh water.**

**In addition, daily drilling reports are to be submitted to the BLM CFO engineering staff via e-mail by 0800 hours each morning from the setting of the surface casing until the intermediate casing is set. Any lost circulation encountered is to be recorded on these drilling reports. The daily drilling report should show mud volume per shift/tour. Failure to submit these reports will result in an Incidence of Non-Compliance being issued for failure to comply with the Conditions of Approval. If not already planned, the operator shall run a caliper survey for the intermediate well bore and submit to the appropriate BLM office.**

2. The minimum required fill of cement behind the 9-5/8 inch intermediate casing, which is to be set at 5200 feet, is:

☒ Cement to surface. If cement does not circulate see B.1.a, c-d above.  
**Additional cement will be needed as the excess calculates to a negative 14%.**

**Centralizers required on horizontal leg, must be type for horizontal service and minimum of one every other joint.**

3. The minimum required fill of cement behind the 5-1/2 inch production casing is:

☒ Cement should tie-back at least 300 feet into previous casing string. Operator shall provide method of verification.

4. 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.

**C. PRESSURE CONTROL**

1. 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 Sec. 17.

2. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **3000 (3M)** psi.
  - a. **For surface casing only:** If the BOP/BOPE is to be tested against casing, the wait on cement (WOC) time for that casing is to be met (see WOC statement at start of casing section). Independent service company required.
3. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.
  - a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the plug. For those casing strings not using slips or where the float does not hold, the minimum wait time before cut-off is eight hours after bumping the plug or when the cement reaches 500 psi compressive strength (including lead when specified), whichever is greater. BOP/BOPE testing can begin after the above conditions are satisfied.
  - b. The tests shall be done by an independent service company utilizing a test plug **not a cup or J-packer**. The operator also has the option of utilizing an independent tester to test without a plug (i.e. against the casing) pursuant to Onshore Order 2 with the pressure not to exceed 70% of the burst rating for the casing. Any test against the casing must meet the WOC time for water basin (18 hours) or potash (24 hours) prior to initiating the test.
  - c. The results of the test shall be reported to the appropriate BLM office.
  - d. 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.**
  - e. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. 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.

#### **D. DRILL STEM TEST**

If drill stem tests are performed, Onshore Order 2.III.D shall be followed.

**E. WASTE MATERIAL AND FLUIDS**

All waste (i.e. drilling fluids, trash, salts, chemicals, sewage, gray water, etc.) created as a result of drilling operations and completion operations shall be safely contained and disposed of properly at a waste disposal facility. No waste material or fluid shall be disposed of on the well location or surrounding area.

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

**WWI 122110**

## **VIII. PRODUCTION (POST DRILLING)**

### **A. WELL STRUCTURES & FACILITIES**

#### **Placement of Production Facilities**

Production facilities should be placed on the well pad to allow for maximum interim recontouring and revegetation of the well location.

#### **Containment Structures**

The containment structure shall be constructed to hold the capacity of the entire contents of the largest tank, plus 24 hour production, unless more stringent protective requirements are deemed necessary by the Authorized Officer.

#### **Painting Requirement**

All above-ground structures including meter housing that are not subject to safety requirements shall be painted a flat non-reflective paint color  
Shale Green, Munsell Soil Color Chart # 5Y 4/2

## **IX. INTERIM RECLAMATION**

During the life of the development, all disturbed areas not needed for active support of production operations should undergo interim reclamation in order to minimize the environmental impacts of development on other resources and uses.

Within six (6) months of well completion, operators should work with BLM surface management specialists (Jim Amos: 575-234-5909) to devise the best strategies to reduce the size of the location. Interim reclamation should allow for remedial well operations, as well as safe and efficient removal of oil and gas.

During reclamation, the removal of caliche is important to increasing the success of revegetating the site. Removed caliche that is free of contaminants may be used for road repairs, fire walls or for building other roads and locations. In order to operate the well or complete workover operations, it may be necessary to drive, park and operate on restored interim vegetation within the previously disturbed area. Disturbing revegetated areas for production or workover operations will be allowed. If there is significant disturbance and loss of vegetation, the area will need to be revegetated. Communicate with the appropriate BLM office for any exceptions/exemptions if needed.

All disturbed areas after they have been satisfactorily prepared need to be reseeded with the seed mixture provided below.

Upon completion of interim reclamation, the operator shall submit a Sundry Notices and Reports on Wells, Subsequent Report of Reclamation (Form 3160-5).

## **X. FINAL ABANDONMENT & RECLAMATION**

At final abandonment, well locations, production facilities, and access roads must undergo "final" reclamation so that the character and productivity of the land are restored.

Earthwork for final reclamation must be completed within six (6) months of well plugging. All pads, pits, facility locations and roads must be reclaimed to a satisfactory revegetated, safe, and stable condition, unless an agreement is made with the landowner or BLM to keep the road and/or pad intact.

After all disturbed areas have been satisfactorily prepared, these areas need to be revegetated with the seed mixture provided below. Seeding should be accomplished by drilling on the contour whenever practical or by other approved methods. Seeding may need to be repeated until revegetation is successful, as determined by the BLM.

Operators shall contact a BLM surface protection specialist prior to surface abandonment operations for site specific objectives (Jim Amos: 575-234-5909).

Ground-level Abandoned Well Marker to avoid raptor perching: Upon the plugging and subsequent abandonment of the well, the well marker will be installed at ground level on a plate containing the pertinent information for the plugged well.



## 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:

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

\*\*Four-winged Saltbush 5lbs/A

\* This can be used around well pads and other areas where caliche cannot be removed.

\*Pounds of pure live seed:

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