

09-900

ATS-09-515

OCD-ARTESIA
SEP 30 2009Form 3160-3
(April 2004)FORM APPROVED
OMB No. 1004-0137
Expires March 31, 2007UNITED 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. NMNM-19423
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.
3a. Address 5215 N. O'Connor Blvd., Ste. 1500; Irving, TX 75039	3b. Phone No. (include area code) 972-401-3111	8. Lease Name and Well No. Cottonwood Draw 22 Federal No. 3
4. Location of Well (Report location clearly and in accordance with any State requirements. *) At Surface 530' 380 FNL & 360 FEL <i>changed by SN 9/16/09 CE</i> At proposed prod. Zone 2530' 380 FNL & 380 FEL <i>Horizontal Delaware Test</i>		9. API Well No. 30-015- 37311
14. Distance in miles and direction from nearest town or post office*		10. Field and Pool, or Exploratory Cottonwood Draw; Delaware, North ✓
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line if any) 2560		11. Sec., T. R. M. or Blk. and Survey or Area 22-25S-26E
16. No of acres in lease 360	17. Spacing Unit dedicated to this well E2NE 80 acres	12. County or Parish Eddy
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. N/A	19. Proposed Depth Vertical 3830' Lateral MD 4770' TVD 3023'	13. State NM
20. BLM/BIA Bond No on File NM-2575	21. Elevations (Show whether DF, KDB, RT, GL, etc.) 3331' GR	22. Approximate date work will start* 09.15.09
23. Estimated duration 20-25 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 08.13.09
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Title

Manager Operations Administration

Approved By (Signature) <i>/s/ Don Peterson</i>	Name (Printed/Typed) /s/ Don Peterson	SEP 29 2009
Title FIELD MANAGER	Office CARLSBAD FIELD OFFICE	

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

Conditions of approval, if any, are attached.

APPROVAL FOR TWO YEARS

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

* (Instructions on page 2)

well becomes unorthodox at 4721' MD

Carlsbad Controlled Water Basin

(BHL)
(Area)SEE ATTACHED FOR
CONDITIONS OF APPROVALApproval Subject to General Requirements
& Special Stipulations Attached

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

OCD-ARTESIA

FORM APPROVED
OMB No 1004-0135
Expires July 31, 1996

SUNDRY NOTICES AND REPORTS ON WELLS
**Do not use this form for proposals to drill or to re-enter an
abandoned well. Use form 3160-3 (APD) for such proposals.**

SUBMIT IN TRIPLICATE - Other instructions on reverse side

1. Type of Well <input checked="" type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other		5. Lease Serial No. NM-26105
2. Name of Operator Cimarex Energy Co. of Colorado		6. If Indian, Allottee or Tribe Name
3a. Address 600 N. Marienfeld, Ste. 400; Midland, TX 79701		7. If Unit or CA/Agreement, Name and/or No
3b. Phone No (include area code) 432-571-7800		8. Well Name and No. Cottonwood 22 Federal No. 3
4. Location of Well (Footage, Sec., T., R., M., or Survey Description) SHL 480 FNL & 360 FEL 22-25S-26E BHL 2310 FNL & 380 FEL		9. API Well No. 30-015-
		10. Field and Pool, or Exploratory Area Cottonwood Draw; Delaware, North
		11. County or Parish, State Eddy County, NM

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

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

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

Previous Location

SHL 480 FNL & 360 FEL
BHL 2310 FNL & 380 FEL
22-25S-26E

New Location

SHL 530 FNL & 360 FEL
BHL 2530 FNL & 380 FEL
22-25S-26E

The ROW application will be amended to include changes to the proposed access road. A new directional plan, plats, and revised drilling plan are all attached.

14. I hereby certify that the foregoing is true and correct
Name (Printed/Typed)

Natalie Krueger
Signature

Title

Regulatory

Date

September 15, 2009

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved by

/s/ Don Peterson

Title
FOR

FIELD MANAGER

Date

SEP 29 2009

Conditions of Approval, if any, are attached. Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

Office

CARLSBAD FIELD OFFICE

Title 18 U.S.C. Section 1001, makes 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 reverse)

DISTRICT I
1825 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
1820 E. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals and Natural Resources Department

Form C-102
Revised October 12, 2005

Submit to Appropriate District Office
State Lease - 4 Copies
Fee Lease - 3 Copies

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

WELL LOCATION AND ACREAGE DEDICATION PLAT

☐ AMENDED REPORT

API Number 30-015-37311	Pool Code 96720	Pool Name Cottonwood Draw; Delaware, North
Property Name 37856	Property Name COTTONWOOD "22" FEDERAL	Well Number 3
OGRID No. 162683	Operator Name CIMAREX ENERGY CO. OF COLORADO	Elevation 3332'

Surface Location

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
A	22	25 S	26 E		530	NORTH	360	EAST	EDDY

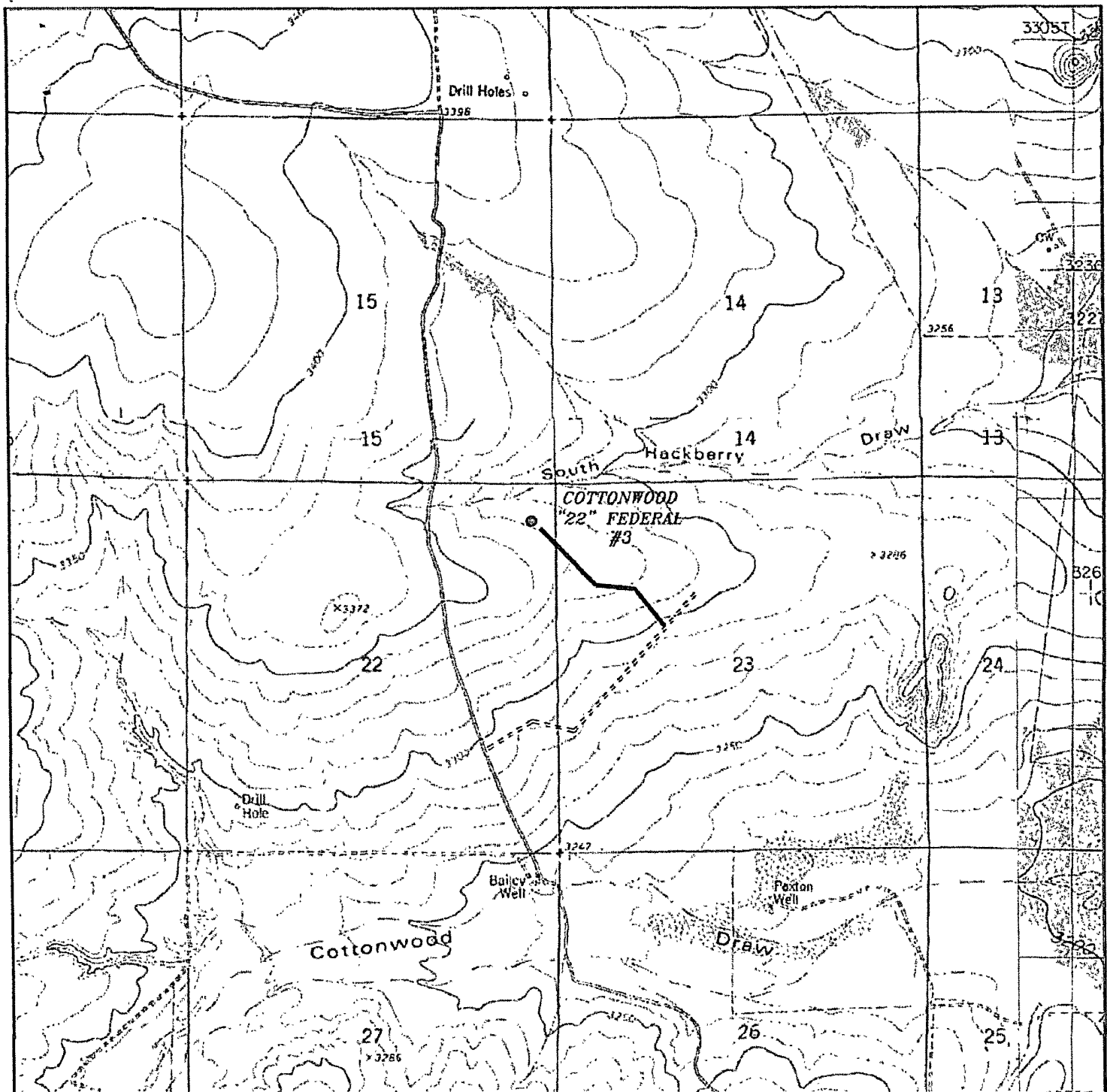
Bottom Hole Location If Different From Surface

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
H	22	25 S	26 E		2530	NORTH	380	EAST	EDDY

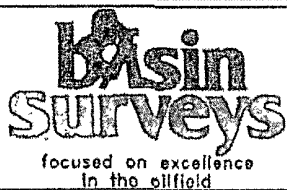
Dedicated Acres 80	Joint or Infill	Consolidation Code	Order No. NSL Pending
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NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED
OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION

<p>SURFACE LOCATION Lat - N 32°07'15.84" Long - W 104°16'23.70" NMSPCE- N 407799.000 E 559962.366 (NAD-83)</p> <p>BOTTOM HOLE LOCATION Lat - N 32°06'56.18" Long - W 104°16'23.59" NMSPCE- N 405798.966 E 559949.018 (NAD-83)</p> <p>SHL & P.P. 530 FNL & 360 FEL</p> <p>BHL 2530 FNL & 380 FEL</p>	<p>OPERATOR CERTIFICATION</p> <p>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 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.</p> <p><i>Zeno Farris</i> 9/15/2009 Signature Date</p> <p>Zeno Farris Printed Name</p>
	<p>SURVEYOR CERTIFICATION</p> <p>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.</p> <p>SEPTEMBER 15 2009 Date Surveyed</p> <p><i>Gary L. Jones</i> Signature & Seal of Professional Surveyor 7977</p> <p>W. J. Jones Certificate No. Gary L. Jones 7977</p> <p>BASIN SURVEYS</p>



COTTONWOOD "22" FEDERAL #3
 Located 530' FNL and 360' FEL
 Section 22, Township 25 South, Range 26 East,
 N.M.P.M., Eddy County, New Mexico.



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 21719

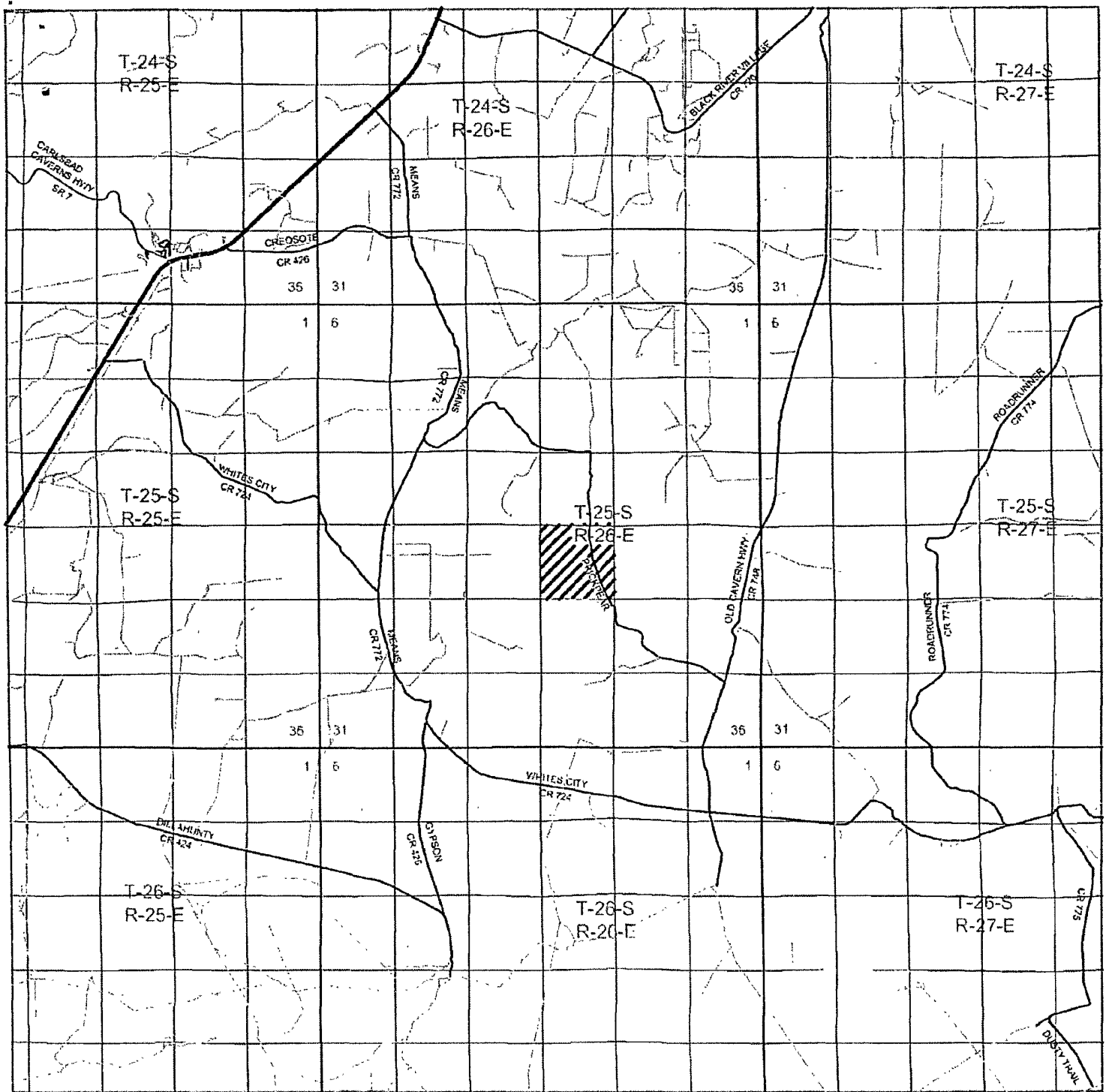
Survey Date: 09-09-2009

Scale: 1" = 2000'

Date: 09-10-2009



**CIMAREX
 ENERGY CO.
 OF COLORADO**



COTTONWOOD "22" FEDERAL #3
 Located 530' FNL and 360' FEL
 Section 22, Township 25 South, Range 26 East,
 N.M.P.M., Eddy County, New Mexico.



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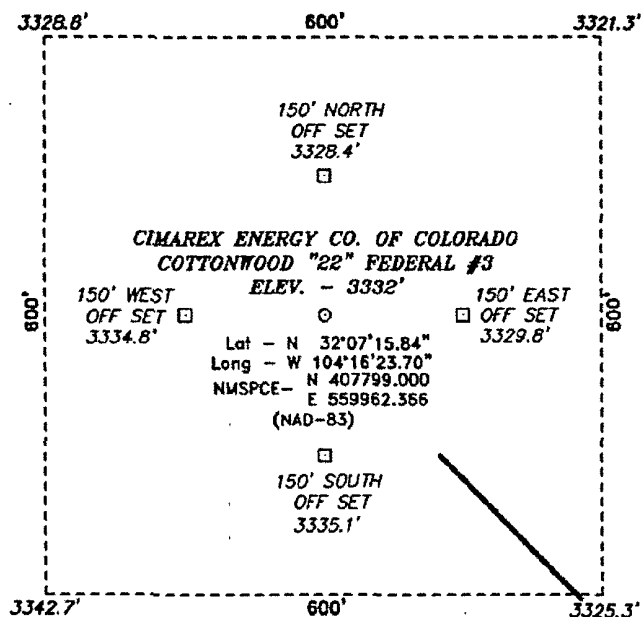
Scale: 1" = 2 Miles

Date: 09-10-2009

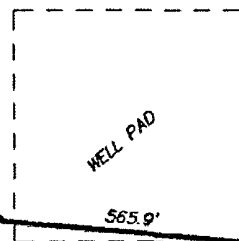


**CIMAREX
 ENERGY CO.
 OF COLORADO**

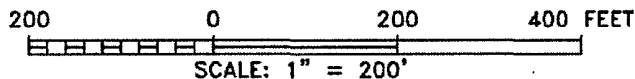
SECTION 22, TOWNSHIP 25 SOUTH, RANGE 26 EAST, N.M.P.M.,
EDDY COUNTY, NEW MEXICO.



PROPOSED LEASE ROAD 1085.0'



678.0'



Directions to Location:

FROM THE JUNCTION OF MEANS ROAD AND PRICKLY PEAR, GO EASTERLY 4.7 MILES ON PRICKLY PEAR TO LEASE ROAD, ON LEASE ROAD GO EAST 0.6 MILES TO LEASE ROAD, ON LEASE ROAD GO NORTH 0.1 MILES TO WELL PAD AND PROPOSED LEASE ROAD.

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

CIMAREX ENERGY CO. OF COLORADO

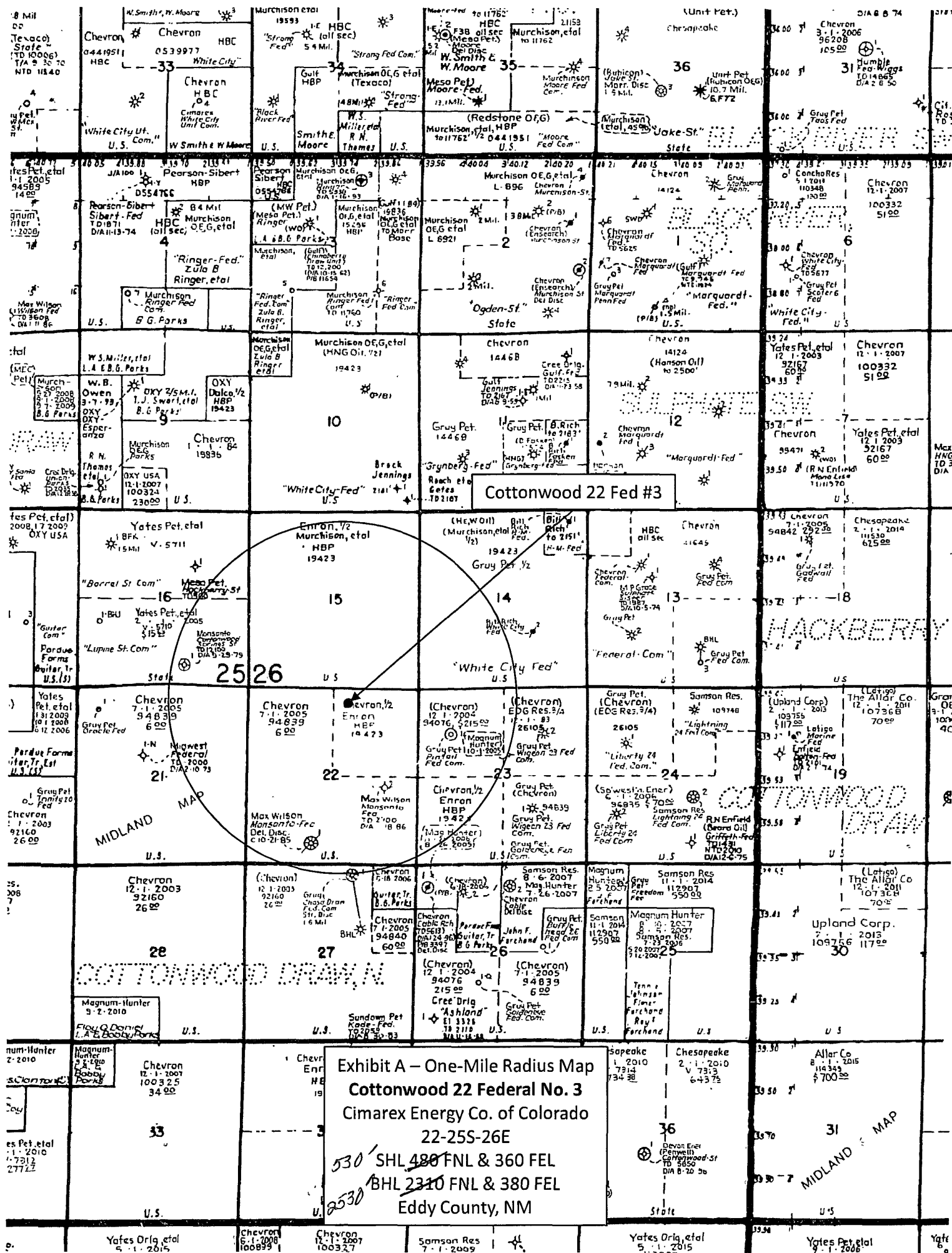
REF: COTTONWOOD "22" FEDERAL #3 / WELL PAD TOPO

THE COTTONWOOD "22" FEDERAL #3 LOCATED 530'
FROM THE NORTH LINE AND 360' FROM THE EAST LINE OF
SECTION 22, TOWNSHIP 25 SOUTH, RANGE 26 EAST,
N.M.P.M., EDDY COUNTY, NEW MEXICO.

W.O. Number: 21719 Drawn By: J. SMALL

Date: 09-10-2009 Disk: JMS 21719

Survey Date: 09-09-2009 Sheet 1 of 1 Sheets



Drilling Plan Revisions
Cottonwood 22 Federal No. 3
22-25S-26E

SHL 530 FNL & 360 FEL, BHL 2530 FNL & 380 FEL
Eddy County, NM

Revised Casing Plan:

	Hole Size	Depth	Casing OD	Weight	Collar	Grade
Surface	12¼"	0' to 440'	New 8⅝"	24#	STC	J-55
Production	7⅝"	0' to 2770'	New 5½"	17#	J-55	LTC
Fiberglass tbg	7⅝"	2770' to 3380'	New 2⅝"	2.18#	Fiberglass	IJ
Lateral	4¾"	2732' to 4941'	New 2⅝"	6.5#	EUE	L-80

See CO A

Revised Drilling Plan:

After drilling and setting surface casing, drill to vertical TD 3380' and log. Set 5½" casing to 2770' and cross over to 2⅝" 2000 psi IJ fiberglass tubing underneath and cement in place. Drill out of the bottom of the 5½" with a 4¾" bit and through cement and fiberglass tubing to KOP @ 2832' and kick off to drill the lateral. The fiberglass tubing effectively circulates cement to surface and plugs back the open hole.

Kick off 4¾" hole @ 2832.' Drill to TD 4941' MD. Run 2⅝" PEAK liner from RSB packer @ 2732' to TD @ 4941.' Frac through PEAK completion liner.

Application to Drill
Cottonwood 22 Federal No. 3
Cimarex Energy Co. of Colorado
Unit A, Section 22
T25S-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 ~~480~~⁵³⁰ FNL & 360 FEL
BHL ~~2310~~²⁵³⁰ FNL & 380 FEL
2. Elevation above sea level: 3331' 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: Vertical 3830' Lateral MD 4770' TVD 3023'
6. Estimated tops of geological markers:
- | | | | |
|-----------------|-------|------------------|-------|
| Top Salt | 1066' | Cherry Canyon M3 | 2983' |
| Base Salt | 1673' | M3 TVD Target | 3023' |
| Bell Canyon | 1872' | Cherry Canyon L | 3151' |
| Cherry Canyon | 2846' | Cherry Canyon K | 3207' |
| Cherry Canyon M | 2917' | | |
7. Possible mineral bearing formations:
- | | |
|---------------|-----|
| Bell Canyon | Oil |
| Cherry Canyon | Oil |

8. Proposed drilling Plan

After drilling and setting surface casing, drill to vertical TD 3830' and log. Set 5½" casing to 2770' and cross over to 2⅞" 2000 psi IJ fiberglass tubing underneath and cement in place. Drill out of the bottom of the 5½" with a 4¾" bit and through cement and fiberglass tubing to KOP @ 2832' and kick off to drill the lateral. The fiberglass tubing effectively circulates cement to surface and plugs back the open hole.

Kick off 4¾" hole @ 2832.' Drill to TD 5072' MD. Run 2⅞" PEAK liner from RSB packer @ 2732' to TD @ 4770.' Frac through PEAK completion liner.

9. Mud Circulating System:

Depth	Mud Wt	Visc	Fluid Loss	Type Mud
0' to 440'	8.4 - 8.6	30-32	NC	FW spud mud. Add FW to control weight & viscosity and paper to prevent seepage.
440' to 2,770'	9.9 - 10.0	28-29	NC	Saturated Brine. Sweep as needed to clean hole.
2,832' to 4,770'	9.5 - 9.8	28-30	NC	Cut brine. Sweep as needed to clean hole.

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.

10. Casing Program:

	Hole Size	Depth	Casing OD	Weight	Collar	Grade
Surface	12 1/4"	0' to 440'	New 8 1/2"	24#	STC	J-55
Production	7 7/8"	0' to 2770'	New 5 1/2"	17#	J-55	LTC
Fiberglass tbg	7 7/8"	2770' to 3830' 3830'	New 2 3/4"	2.18#	Fiberglass	IJ
Lateral	4 1/2"	2732' to 4770'	New 2 3/4"	6.5#	EUE	L-80

See CoA

11. Cementing Program:

Surface Casing	<u>Lead:</u> 150 sx 10:2 RFC (Class A) + 4 pps D24 + 0.125 pps D130, 14.20 ppg, 1.62 cuft/sx, 7.5 gps. <u>Tail:</u> 150 sx Class C + 2% S1 + 0.125 pps D130, 14.80 ppg, 1.34 cuft/sx, 6.29 gps. TOC Surface
Production casing and Fiberglass tubing	<u>Lead:</u> 550 sx 50:50 Poz:Class H + 5% D44 (bwow) + 6% D20 + 0.2% D46 + 0.125 pps D130, 11.90 ppg, 2.38 cuft/sx, 13.68 gps. <u>Tail:</u> 400 sx TXI Lightweight + 1.33% D44 (bwow) + 0.1% D167 + 0.1% D65 + 0.1% D13, 13.00 ppg, 1.40 cuft/sx, 7.24 gps. TOC Surface
Lateral	PEAK completion assembly will be used, so no cement is required.

See CoA

CRW 9/22/05

Fresh water zones will be protected by setting 8 1/2" casing at 440' and cementing to surface. Hydrocarbon zones will be protected by setting 5 1/2" casing at 2770' and 2 3/4" fiberglass tubing at 3830' and cementing to surface.

Collapse Factor
1.125

Burst Factor
1.125

Tension Factor
1.6

Application to Drill
Cottonwood 22 Federal No. 3
Cimarex Energy Co. of Colorado
Unit A, Section 22
T25S-R26E, Eddy County, NM

12. Pressure control Equipment:

Exhibit "E". A 12¼" 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 440.' 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.

We are requesting a variance for testing the 8½" surface casing 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 to test the 8½" casing to 1000 psi using rig pumps. The BOP will be tested to 3000 psi by an independent service company. *See COA*

13. Testing, Logging and Coring Program: *See COA*

- A. Mud logging program: No mud logging program.
- B. Electric logging program: CNL / LDT / CAL / GR, DLL / CAL / GR
- C. No DSTs or cores are planned at this time.

14. Potential Hazards:

No abnormal pressures or temperatures are expected. In accordance with Onshore Order 6, Cimarex has encountered H₂S in a one-time encounter in an Intra-salt Pocket and while drilling and completing wells in the Delaware Mountain Group. In this regard, attached is an H₂S Drilling Operations Plan. The ROEs encountered do not meet the BLM's minimum requirements for the submission of a "Public Protection Plan" for the drilling and completion of this well. 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 2300 psi Estimated BHT 110"

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

Drilling expected to take 10-15 days

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

16. Other Facets of Operations:

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

Delaware pay will be perforated and stimulated.

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

Cimarex Energy Co.

Eddy County (NM83E)

Sec 22 - T25S - R26

Cottonwood 22 Fed #3

Wellbore #1

Plan: 8-10-09

Standard Planning Report

15 September, 2009

Great White Directional Services

Planning Report

Database Company:	EDM 5000.1 Single User Db Cimarex Energy Co.	Local Co-ordinate Reference:	Well Cottonwood 22 Fed #3
Project:	Eddy County (NM83E)	TVD Reference:	WELL @ 3331.0usft (Original Well Elev)
Site:	Sec 22 - T25S - R26	MD Reference:	WELL @ 3331.0usft (Original Well Elev)
Well:	Cottonwood 22 Fed #3	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	8-10-09		

Project:	Eddy County (NM83E)		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site:	Sec 22 - T25S - R26		
Site Position:		Northing:	407,849.00 usft
From:	Map	Easting:	559,962.20 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 7' 16.470 N
		Longitude:	104° 16' 23.419 W
		Grid Convergence:	0.03 °

Well:	Cottonwood 22 Fed #3		
Well Position	+N/-S	-50.0 usft	Northing:
	+E/-W	0.2 usft	Easting:
Position Uncertainty	0.0 usft	Wellhead Elevation:	Ground Level:
			3,331.0 usft

Wellbore:	Wellbore #1		
Magnetics	Model Name	Sample Date	Declination
			(°)
			Dip Angle
			(°)
			Field Strength
			(nT)
	IGRF200510	2009/08/10	8.10
			60.03
			48,689

Design:	8-10-09		
Audit Notes:			
Version:	Phase:	PLAN	Tie On Depth:
			0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(usft)	(usft)	(usft)
	0.0	0.0	0.0
			Direction
			(°)
			180.38

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
2,832.0	0.00	0.00	2,832.0	0.0	0.0	0.00	0.00	0.00	0.00	
3,132.0	90.00	180.38	3,023.0	-191.0	-1.3	30.00	30.00	0.00	180.38	
4,941.1	90.00	180.39	3,023.0	-2,000.0	-13.3	0.00	0.00	0.00	90.00	Cottonwood 22 Fed

Great White Directional Services

Planning Report

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well Cottonwood 22 Fed #3
Company:	Cimarex Energy Co.	TVD Reference:	WELL @ 3331.0usft (Original Well Elev)
Project:	Eddy County (NM83E)	MD Reference:	WELL @ 3331.0usft (Original Well Elev)
Site:	Sec 22 - T25S - R26	North Reference:	Grid
Well:	Cottonwood 22 Fed #3	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	8-10-09		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
2,832.0	0.00	0.00	2,832.0	0.0	0.0	0.0	0.00	0.00	0.00
KOP - 30° DLS, 180.38° AZI									
2,840.0	2.40	180.38	2,840.0	-0.2	0.0	0.2	30.00	30.00	0.00
2,850.0	5.40	180.38	2,850.0	-0.8	0.0	0.8	30.00	30.00	0.00
2,860.0	8.40	180.38	2,859.9	-2.0	0.0	2.0	30.00	30.00	0.00
2,870.0	11.40	180.38	2,869.7	-3.8	0.0	3.8	30.00	30.00	0.00
2,880.0	14.40	180.38	2,879.5	-6.0	0.0	6.0	30.00	30.00	0.00
2,890.0	17.40	180.38	2,889.1	-8.7	-0.1	8.7	30.00	30.00	0.00
2,900.0	20.40	180.38	2,898.6	-12.0	-0.1	12.0	30.00	30.00	0.00
2,910.0	23.40	180.38	2,907.8	-15.7	-0.1	15.7	30.00	30.00	0.00
2,920.0	26.40	180.38	2,916.9	-19.9	-0.1	19.9	30.00	30.00	0.00
2,930.0	29.40	180.38	2,925.8	-24.6	-0.2	24.6	30.00	30.00	0.00
2,940.0	32.40	180.38	2,934.3	-29.7	-0.2	29.7	30.00	30.00	0.00
2,950.0	35.40	180.38	2,942.6	-35.3	-0.2	35.3	30.00	30.00	0.00
2,960.0	38.40	180.38	2,950.6	-41.3	-0.3	41.3	30.00	30.00	0.00
2,970.0	41.40	180.38	2,958.3	-47.7	-0.3	47.7	30.00	30.00	0.00
2,980.0	44.40	180.38	2,965.6	-54.5	-0.4	54.5	30.00	30.00	0.00
2,990.0	47.40	180.38	2,972.6	-61.7	-0.4	61.7	30.00	30.00	0.00
3,000.0	50.40	180.38	2,979.2	-69.2	-0.5	69.2	30.00	30.00	0.00
3,010.0	53.40	180.38	2,985.3	-77.1	-0.5	77.1	30.00	30.00	0.00
3,020.0	56.40	180.38	2,991.1	-85.3	-0.6	85.3	30.00	30.00	0.00
3,030.0	59.40	180.38	2,996.4	-93.8	-0.6	93.8	30.00	30.00	0.00
3,040.0	62.40	180.38	3,001.3	-102.5	-0.7	102.5	30.00	30.00	0.00
3,050.0	65.40	180.38	3,005.7	-111.5	-0.7	111.5	30.00	30.00	0.00
3,060.0	68.39	180.38	3,009.6	-120.7	-0.8	120.7	30.00	30.00	0.00
3,070.0	71.39	180.38	3,013.0	-130.1	-0.9	130.1	30.00	30.00	0.00
3,080.0	74.39	180.38	3,016.0	-139.6	-0.9	139.6	30.00	30.00	0.00
3,090.0	77.39	180.38	3,018.4	-149.3	-1.0	149.3	30.00	30.00	0.00
3,100.0	80.39	180.38	3,020.3	-159.1	-1.1	159.1	30.00	30.00	0.00
3,110.0	83.39	180.38	3,021.7	-169.0	-1.1	169.0	30.00	30.00	0.00
3,120.0	86.39	180.38	3,022.6	-179.0	-1.2	179.0	30.00	30.00	0.00
3,130.0	89.39	180.38	3,023.0	-189.0	-1.3	189.0	30.00	30.00	0.00
3,132.0	90.00	180.38	3,023.0	-191.0	-1.3	191.0	30.00	30.00	0.00
Hold To TD									
3,200.0	90.00	180.38	3,023.0	-259.0	-1.7	259.0	0.00	0.00	0.00
3,300.0	90.00	180.38	3,023.0	-359.0	-2.4	359.0	0.00	0.00	0.00
3,400.0	90.00	180.38	3,023.0	-459.0	-3.0	459.0	0.00	0.00	0.00
3,500.0	90.00	180.38	3,023.0	-559.0	-3.7	559.0	0.00	0.00	0.00
3,600.0	90.00	180.38	3,023.0	-659.0	-4.4	659.0	0.00	0.00	0.00
3,700.0	90.00	180.38	3,023.0	-759.0	-5.0	759.0	0.00	0.00	0.00
3,800.0	90.00	180.38	3,023.0	-859.0	-5.7	859.0	0.00	0.00	0.00
3,900.0	90.00	180.38	3,023.0	-959.0	-6.4	959.0	0.00	0.00	0.00
4,000.0	90.00	180.38	3,023.0	-1,059.0	-7.0	1,059.0	0.00	0.00	0.00
4,100.0	90.00	180.38	3,023.0	-1,159.0	-7.7	1,159.0	0.00	0.00	0.00
4,200.0	90.00	180.38	3,023.0	-1,259.0	-8.4	1,259.0	0.00	0.00	0.00
4,300.0	90.00	180.38	3,023.0	-1,358.9	-9.0	1,359.0	0.00	0.00	0.00
4,400.0	90.00	180.38	3,023.0	-1,458.9	-9.7	1,459.0	0.00	0.00	0.00
4,500.0	90.00	180.38	3,023.0	-1,558.9	-10.4	1,559.0	0.00	0.00	0.00
4,600.0	90.00	180.38	3,023.0	-1,658.9	-11.1	1,659.0	0.00	0.00	0.00
4,700.0	90.00	180.38	3,023.0	-1,758.9	-11.7	1,759.0	0.00	0.00	0.00

Great White Directional Services

Planning Report

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well Cottonwood 22 Fed #3
Company:	Cimarex Energy Co.	TVD Reference:	WELL @ 3331.0usft (Original Well Elev)
Project:	Eddy County (NM83E)	MD Reference:	WELL @ 3331.0usft (Original Well Elev)
Site:	Sec 22 - T25S - R26	North Reference:	Grid
Well:	Cottonwood 22 Fed #3	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	8-10-09		

Design Targets

Target Name

hit/miss target Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
Cottonwood 22 Fed # - plan misses target center by 241.1usft at 4700.0usft MD (3023.0 TVD, -1758.9 N, -11.7 E) - Point	0.00	0.00	3,023.0	-2,000.0	-13.3	405,798.97	559,949.02	32° 6' 56.182 N	104° 16' 23.586 W

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
2,832.0	2,832.0	0.0	0.0	KOP - 30° DLS, 180.38° AZI
3,132.0	3,023.0	-191.0	-1.3	Hold To TD
4,941.1	3,023.0	-2,000.0	-13.3	TD at 4941.1' MD

Cimarex Energy Co.

Project: Eddy County (NM83E)
Site: Sec 22 - T25S - R26
Well: Cottonwood 22 Fed #3
Wellbore: Wellbore #1
Design: 8-10-09

WELL DETAILS: Cottonwood 22 Fed #3

+N/-S	+E/-W	Northing	Easting	3331.0	Latitude	Longitude
	0.0	407799.00	559962.37	32° 7' 15.975 N	104° 16' 23.418 W	
SHL: 530' FNL / 360' FEL						
BHL: 2530' FNL / 380' FEL						



Azimuths to Grid North
True North: -0.03°
Total Correction: 8.07°

Magnetic Field
Strength: 48688.9nT
Dip Angle: 60.03°
Date: 2009/08/10
Model: IGRF200510

WELLBORE TARGET DETAILS

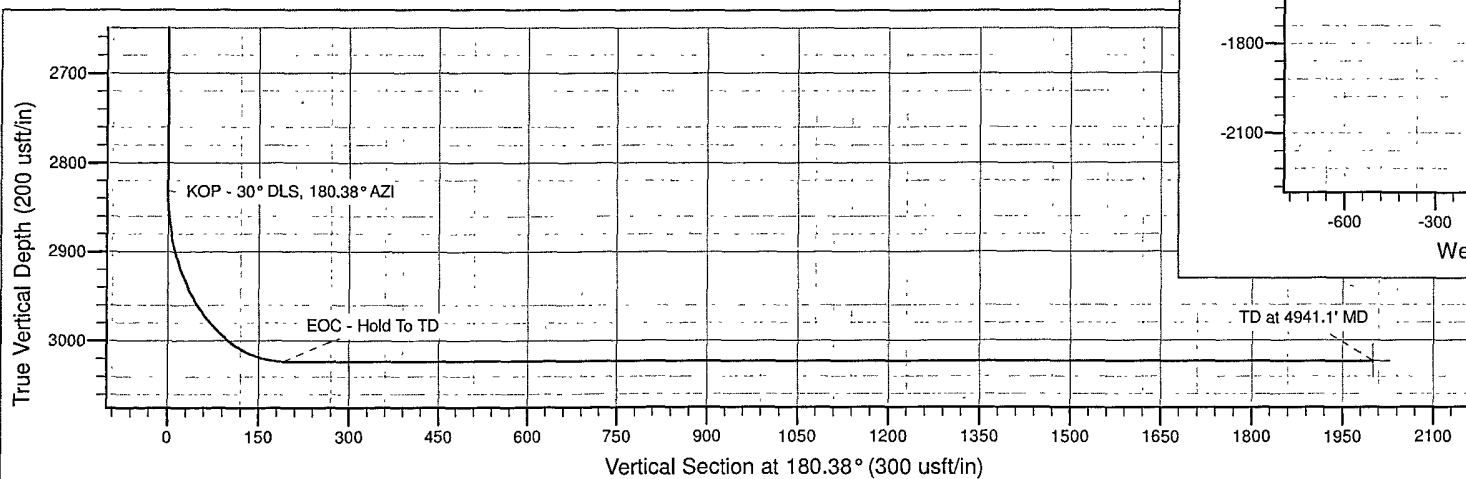
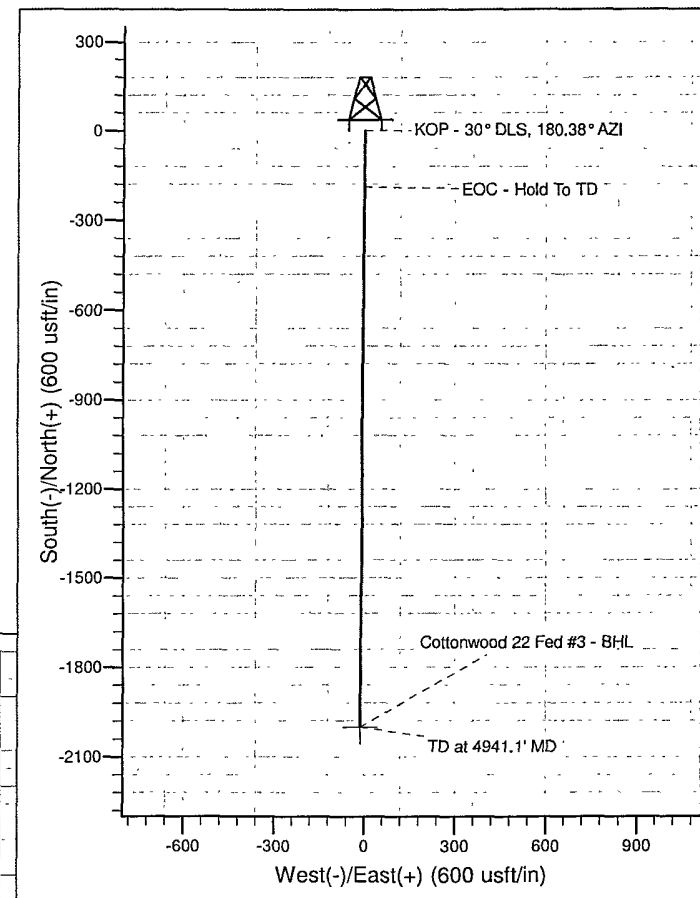
Name	TVD	+N/-S	+E/-W	Northing	Easting
Cottonwood 22 Fed #3 - BHL	3023.0	-2000.0	-13.3	405798.97	559949.02

PLAN DETAILS

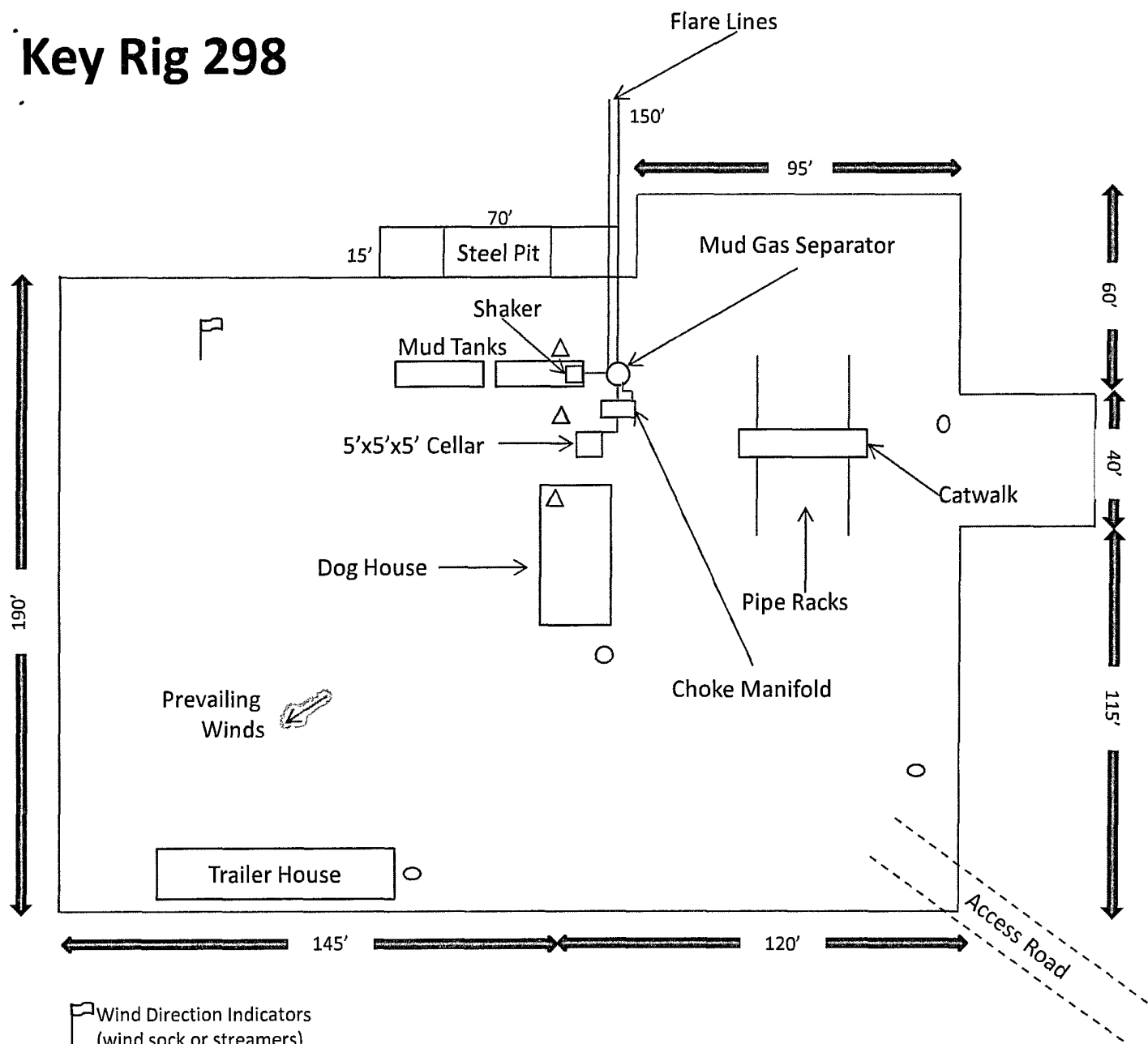
MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2832.0	0.00	0.00	2832.0	0.0	0.0	0.00	0.00	0.0	
3132.0	90.00	180.38	3023.0	-191.0	-1.3	30.00	180.38	191.0	
4941.1	90.00	180.39	3023.0	-2000.0	-13.3	0.00	90.00	2000.1	Cottonwood 22 Fed #3 - BHL

ANNOTATIONS

TVD	MD	Inc	Azi	+N/-S	+E/-W	VSect	Departure	Annotation
2832.0	2832.0	0.00	0.00	0.0	0.0	0.0	0.0	KOP - 30° DLS, 180.38° AZI
3023.0	3132.0	90.00	180.38	-191.0	-1.3	191.0	191.0	Hold To TD
3023.0	4941.1	90.00	180.39	-2000.0	-13.3	2000.1	2000.1	TD at 4941.1' MD



Key Rig 298



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

Exhibit D – Rig Diagram
Cottonwood 22 Federal No. 3
 Cimarex Energy Co. of Colorado
 22-25S-26E
 530' SHL 480' FNL & 360' FEL
 BHL 2310' FNL & 380' FEL
 2530' Eddy County, NM

SR & A

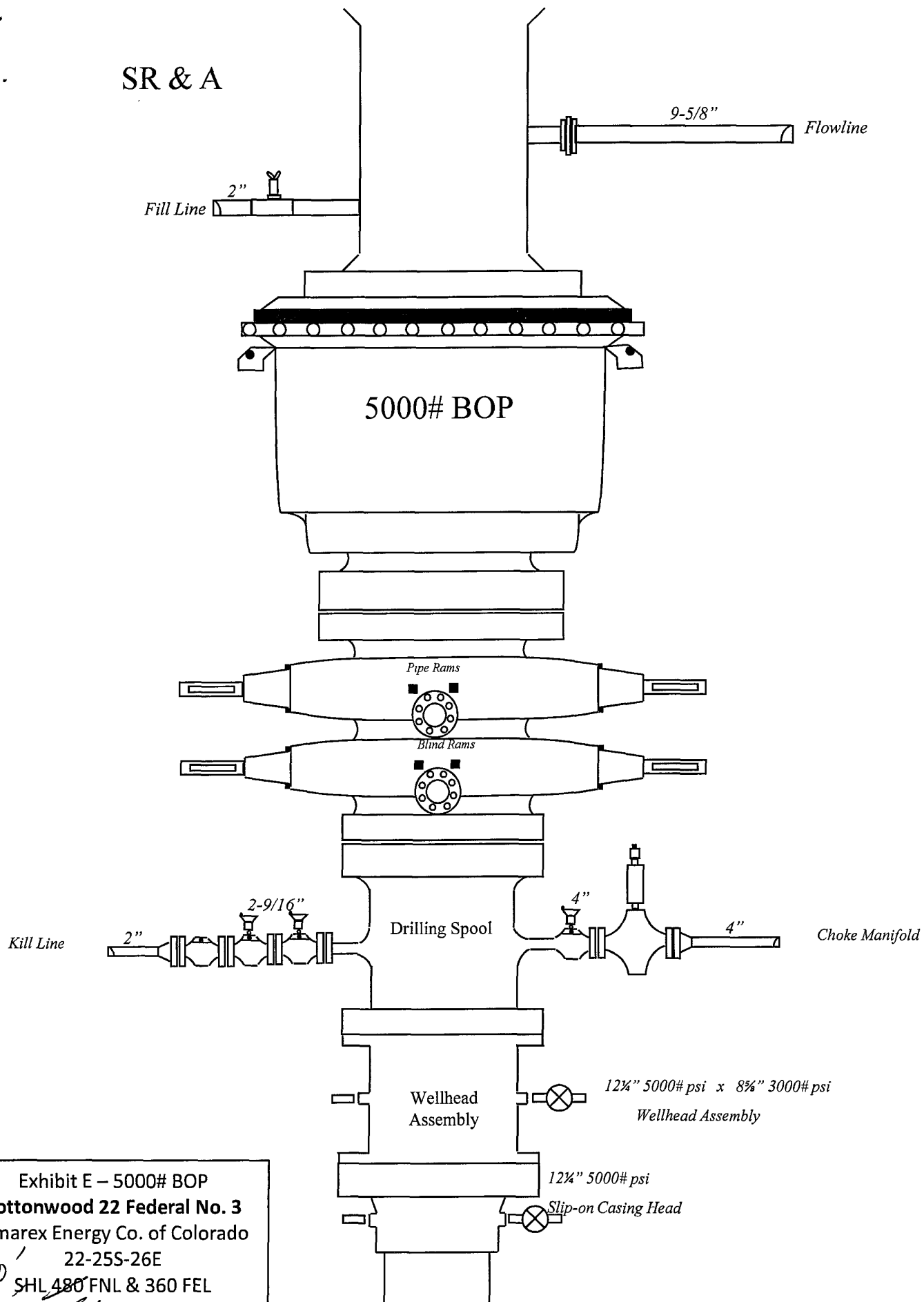


Exhibit E – 5000# BOP

Cottonwood 22 Federal No. 3

Cimarex Energy Co. of Colorado

22-25S-26E

530 SHL 480 FNL & 360 FEL

253 DBHL 2310 FNL & 380 FEL

Eddy County, NM

Drilling Operations Choke Manifold 5M Service (tested to 3M)

Exhibit E-1 – Choke Manifold Diagram

Cottonwood 22 Federal No. 3

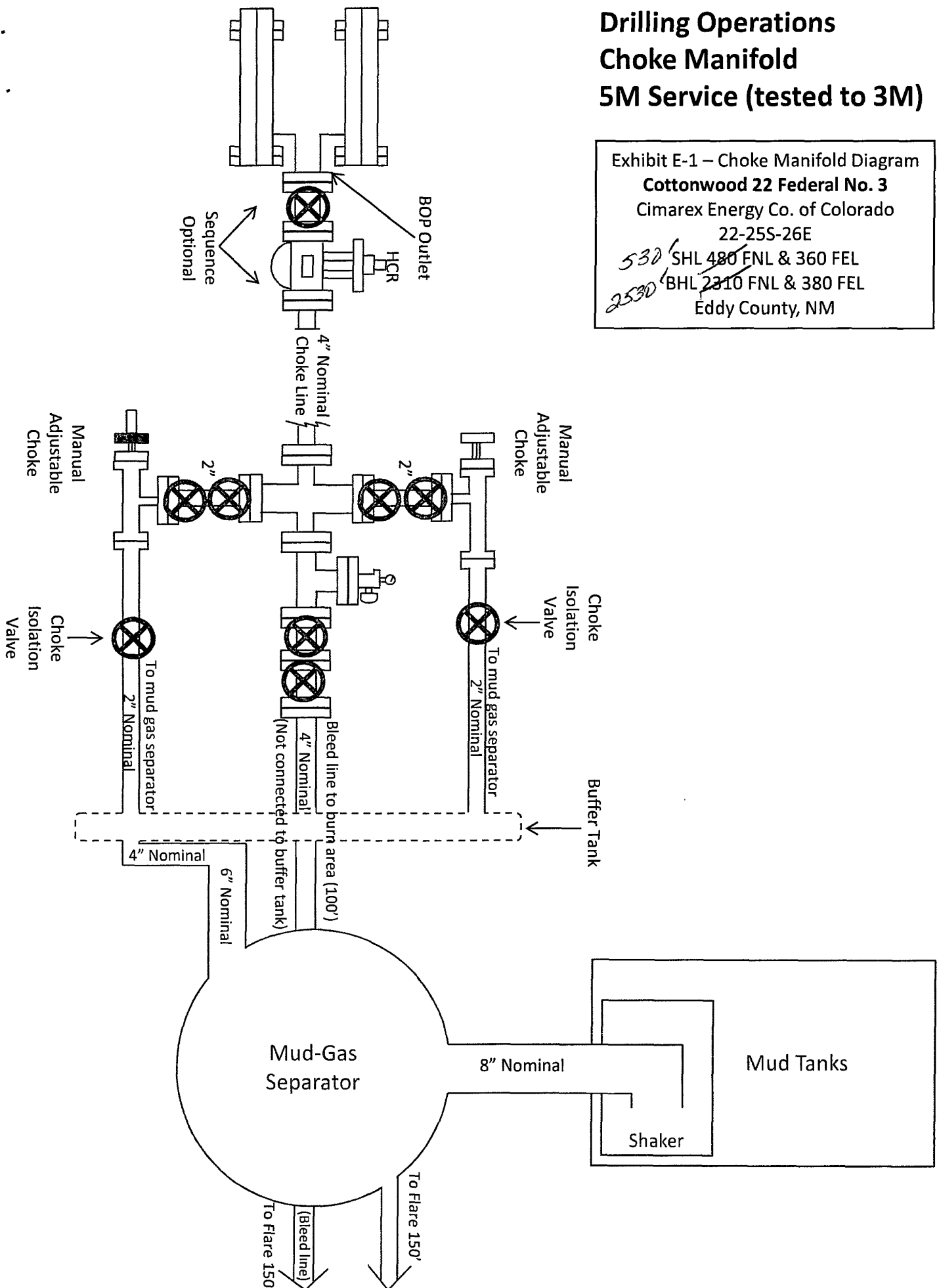
Cimarex Energy Co. of Colorado

22-25S-26E

530' SHL 480 FNL & 360 FEL

2530' BHL 2310 FNL & 380 FEL

Eddy County, NM



Hydrogen Sulfide Drilling Operations Plan
Cottonwood 22 Federal No. 3
Cimarex Energy Co. of Colorado
Unit A, Section 22
T25S-R26E, Eddy County, NM

H₂S equipment will be rigged up at Surface. The plan should be implemented before drilling out from the surface.

1. Due to a one-time encounter on a previous well, an Intra-salt Pocket was charged with H₂S and a burnable amount of hydrocarbons.

First Potential Problem Zone:

Initial suspected problem zone	Salt Zone @ 1,333'
Potential Open Flow Capacity	1 mcf
Expected H ₂ S Concentration	11,000 ppm
100' ROE	6'
500' ROE	3'

Cimarex will have 24-hour H₂S Safety Supervisors on location while drilling the first 2,000' on this well.

2. Second Potential Problem Zone:

Initial suspected problem zone	Delaware Mountain Group @ 1,800'
Potential Open Flow Capacity	100 mcf
Expected H ₂ S Concentration	1,000 ppm
100' ROE	24'
500' ROE	11'

3. 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.

4. 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.

5. 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.

6. 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.

Hydrogen Sulfide Drilling Operations Plan
Cottonwood 22 Federal No. 3
Cimarex Energy Co. of Colorado
Unit A, Section 22
T25S-R26E, Eddy County, NM

7. Well control equipment:

- A. See exhibit "E"

8. 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.

9. Drillstem Testing:

No DSTs or cores are planned at this time.

- 10. Drilling contractor supervisor will be required to be familiar with the effects H₂S has on tubular goods and other mechanical equipment.
- 11. If H₂S 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 H₂S scavengers if necessary.

Emergency Procedures

In the event of a release of gas containing H₂S, 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 H₂S 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 H₂S, 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 (SO₂). 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 H₂S and SO₂

Common Name	Chemical Formula	Specific Gravity	Threshold Limit	Hazardous Limit	Lethal Concentration
Hydrogen Sulfide	H ₂ S	1.189 Air=1	10 ppm	100 ppm/hr	600 ppm
Sulfur Dioxide	SO ₂	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).

H₂S Contingency Plan Emergency Contacts

Cottonwood 22 Federal No. 3

Cimarex Energy Co. of Colorado

Unit A, Section 22

T25S-R26E, Eddy County, NM

<u>Company Office</u>			
Cimarex Energy Co. of Colorado		800-969-4789	
Co. Office and After-Hours Menu			
<u>Key Personnel</u>			
Name	Title	Office	Mobile
Doug Park	Drilling Manager	972-443-6463	972-333-1407
Dee Smith	Drilling Super	972-443-6491	972-882-1010
Jim Evans	Drilling Super	972-443-6451	972-465-6564
Roy Shirley	Field Super		432-634-2136
<u>Artesia</u>			
Ambulance		911	
State Police		575-746-2703	
City Police		575-746-2703	
Sheriff's Office		575-746-9888	
Fire Department		575-746-2701	
Local Emergency Planning Committee		575-746-2122	
New Mexico Oil Conservation Division		575-748-1283	
<u>Carlsbad</u>			
Ambulance		911	
State Police		575-885-3137	
City Police		575-885-2111	
Sheriff's Office		575-887-7551	
Fire Department		575-887-3798	
Local Emergency Planning Committee		575-887-6544	
US Bureau of Land Management		575-887-6544	
<u>Santa Fe</u>			
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	
<u>National</u>			
National Emergency Response Center (Washington, D.C.)		800-424-8802	
<u>Medical</u>			
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	
<u>Other</u>			
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
Cottonwood 22 Federal No. 3
Cimarex Energy Co. of Colorado
Unit A, Section 22
T25S-R26E, Eddy County, NM

1. Existing Roads: Area maps, Exhibit "B" is a reproduction of Eddy 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 junction of Means Rd and Prickly Pear, go Easterly 4.7 miles on Prickly Pear to lease road. On lease road, go East 0.6 miles to lease road. On lease road, go North 0.1 miles to well pad and proposed lease road.
2. Planned Access Roads: 1138' of proposed newly constructed access road, 1267.2' of which will be off-lease. A ROW will be obtained from the BLM for the off-lease portion.
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"
4. If on completion this well is a producer, Cimarex Energy Co. of Colorado will furnish maps and/or plats showing on site facilities or off site facilities if needed. This will be accompanied by a Sundry Notice.
5. Location and Type of Water Supply:

Water will be purchased locally from a commercial source and trucked over the access roads or piped in flexible lines laid on top of the ground.
6. Source of Construction Material:

If possible, construction will be obtained from the excavation of drill site. If additional material is needed, it will be purchased from a local source and transported over the access route as shown on Exhibit "C".
7. Methods of Handling Waste Material:
 - A. Drill cuttings will be separated 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. 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
Cottonwood 22 Federal No. 3
Cimarex Energy Co. of Colorado
Unit A, Section 22
T25S-R26E, Eddy County, NM

8. Ancillary Facilities:

- A. No camps or airstrips to be constructed.

9. Well Site Layout:

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

10. 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, the previously noted procedures will apply to those areas which are not required for production facilities.

11. 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. An Archaeological survey will be conducted on the location and proposed roads, and this report will be filed with the Bureau of Land Management in the Carlsbad BLM office.
- D. There are no known dwellings within 1½ miles of this location.

Operator Certification Statement
Cottonwood 22 Federal No. 3
Cimarex Energy Co. of Colorado
Unit A, Section 22
T25S-R26E, Eddy County, NM

Operator's Representative

Cimarex Energy Co. of Colorado
5215 N. O'Connor blvd ste 1500
Irving, TX 75039
Office Phone: (972) 443-6489
Zeno Farris

CERTIFICATION: I hereby certify that the statements and plans made in this APD are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed by Cimarex Energy Co. of Colorado and/or its contractors/subcontractors and is in conformity with this plan and the terms and conditions under which it is approved. This statement is subject to the provision of U.S.C. 1001 for the filing of a false statement.

NAME: Zeno Farris
Zeno Farris
DATE: September 4, 2009
TITLE: Manager Operations Administration

PECOS DISTRICT CONDITIONS OF APPROVAL

OPERATOR'S NAME:	Cimarex Energy Co.
LEASE NO.:	NM19423
WELL NAME & NO.:	3 Cottonwood Draw 22 Fed
SURFACE HOLE FOOTAGE:	530' FNL & 360' FEL
BOTTOM HOLE FOOTAGE	2530' FNL & 380' FEL
LOCATION:	Section 22, T. 25 S., R 26 E., NMPM
COUNTY:	Eddy 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
 - Cave/Karst

- ☒ Construction
 - Notification
 - Topsoil
 - Closed Loop System
 - Material Pits
 - Well Pads
 - Roads

- ☒ Road Section Diagram

- ☒ Drilling
 - Logging Requirement
 - High Cave/Karst.
 - Onshore Order 6 – H2S requirements

- ☐ Production (Post Drilling)
 - Well Structures & Facilities
 - Pipelines
 - Electric Lines

- ☒ Closed Loop System/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)

Cave and Karst

****** Depending on location, additional Drilling, Casing, and Cementing procedures may be required by engineering to protect critical karst groundwater recharge areas.

Cave/Karst Surface Mitigation

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

Construction:

In the advent that any underground voids are opened up during construction activities, construction activities will be halted and the BLM will be notified immediately.

No Blasting:

No blasting will be utilized for pad construction. The pad will be constructed and leveled by adding the necessary fill and caliche.

Pad Berming:

The pad will be bermed to prevent oil, salt, and other chemical contaminants from leaving the pad. All sides will be bermed.

Tank Battery Liners and Berms:

Tank battery locations will be lined and bermed. A 20 mil permanent liner will be installed with a 4 oz. felt backing to prevent tears or punctures. Tank battery berms must be large enough to contain 1 ½ times the content of the largest tank.

Leak Detection System:

A method of detecting leaks is required. The method could incorporate gauges to measure loss, siting valves and lines so they can be visually inspected, or installing electronic sensors to alarm when a leak is present. Leak detection plan will be submitted to BLM for approval.

Automatic Shut-off Systems:

Automatic shut off, check valves, or similar systems will be installed for pipelines and tanks to minimize the effects of catastrophic line failures used in production or drilling.

Cave/Karst Subsurface Mitigation

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

Rotary Drilling with Fresh Water:

Fresh water will be used as a circulating medium in zones where caves or karst features are expected. SEE ALSO: Drilling COAs for this well.

Directional Drilling:

Kick off for directional drilling will occur at least 100 feet below the bottom of the cave occurrence zone. SEE ALSO: Drilling COAs for this well.

Lost Circulation:

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

Regardless of the type of drilling machinery used, if a void of four feet or more and circulation losses greater than 70 percent occur simultaneously while drilling in any cave-bearing zone, the BLM will be notified immediately by the operator. The BLM will assess the situation and work with the operator on corrective actions to resolve the problem.

Abandonment Cementing:

Upon well abandonment in high cave karst areas additional plugging conditions of approval may be required. The BLM will assess the situation and work with the operator to ensure proper plugging of the wellbore.

Pressure Testing:

Annual pressure monitoring will be performed by the operator on all casing annuli and reported in a sundry notice. If the test results indicated a casing failure has occurred, remedial action will be undertaken to correct the problem to the BLM's approval.

Fluorescent Dyes:

Nontoxic Fluorescent dyes will be added to the drilling fluid when the hole is spudded and will be circulated to the bottom of the karst layers. BLM must witness the dye being injected.

Florescene Dye (Acid Yellow 73):

Thirty-two (32) ounces dry powder Florescene (Acid Yellow 73) dye will be added to the drilling fluid before the well is spudded AND to the pre-flush fluids of the surface interval of casing.

These dyes will track the fluids if lost circulation occurs.

Arrangements will be made to have BLM witness the dye being injected prior to spudding the hole and before the pre-flush of the surface casing. Contact the BLM drilling on call phone at (575) 361-2822 to make arrangements.

VI. CONSTRUCTION

A. NOTIFICATION

The BLM shall administer compliance and monitor construction of the access road and well pad. Notify the Carlsbad Field Office at (575) 234-5972 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 of the well pad. The topsoil shall not be used to backfill the reserve pit and will be used for interim and final reclamation.

C. CLOSED LOOP SYSTEM

Closed Loop System: v-door east

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

If the operator elects to surface the access road and/or well pad, mineral materials extracted during construction of the reserve pit may be used for surfacing the well pad and access road and other facilities on the lease.

Payment shall be made to the BLM prior to removal of any additional federal mineral materials from any site other than the reserve pit. 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 thirty (30) 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

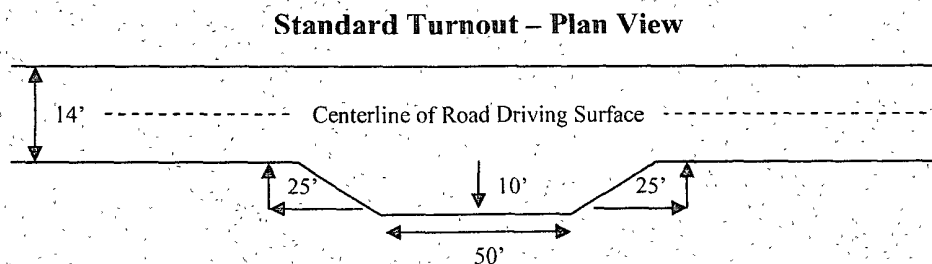
Crowning shall be done on the access road driving surface. The road crown shall have a grade of approximately 2% (i.e., a 1" crown on a 14' wide road). The road shall conform to Figure 1; cross section and plans for typical road construction.

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:

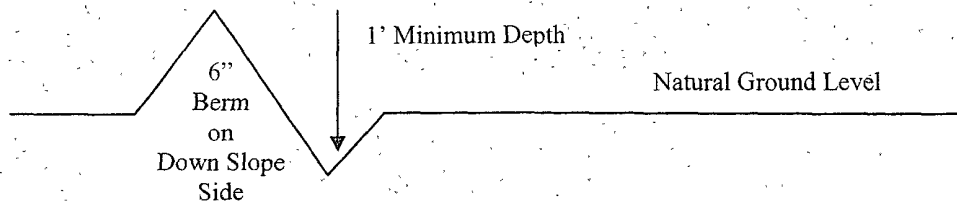


Drainage

Drainage control systems shall be constructed on the entire length of road (e.g. ditches, sidehill outslowing and inslaping, 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:

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

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

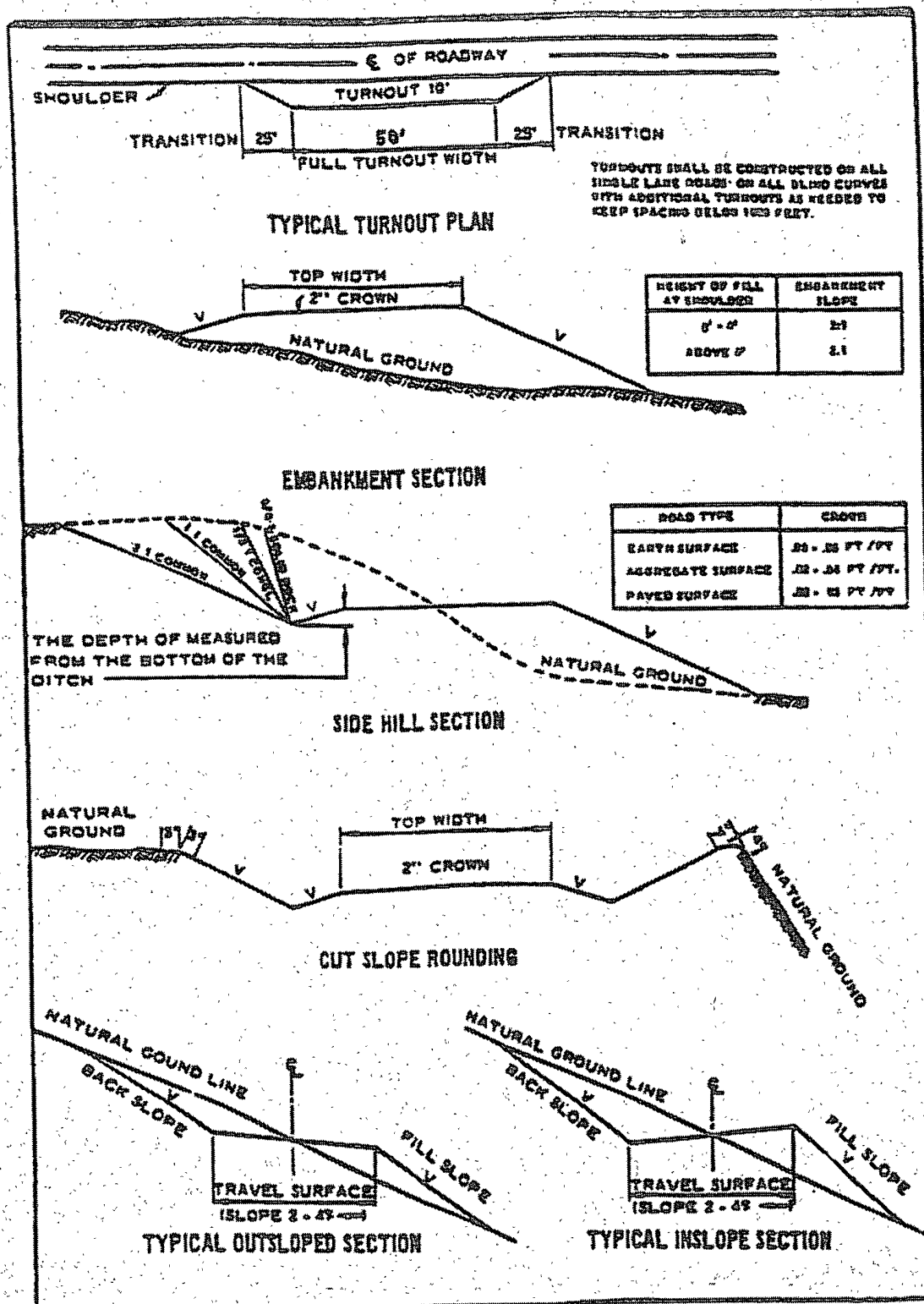
Where entry is required across a fence line, the fence shall be braced and tied off on both sides of the passageway prior to cutting.

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

☒ **Eddy County**

Call the Carlsbad Field Office, 620 East Greene St., Carlsbad, NM 88220,
(575) 361-2822

1. A Hydrogen Sulfide (H₂S) Drilling Plan should be activated 500 feet prior to drilling into the Delaware 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.
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 CAL/GR/N well log run from TD to surface will be submitted to the BLM office as well as all other logs run on the borehole 30 days from completion. 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 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. 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.

CRITICAL CAVE/KARST – CONTINGENCY CASING WILL BE REQUIRED IF LOST CIRCULATION OCCURS WHILE DRILLING THE SURFACE HOLE. THE SURFACE HOLE WILL HAVE TO BE REAMED AND A LARGER CASING INSTALLED. IF LOST CIRCULATION OCCURS WHILE DRILLING THE 7-7/8" HOLE, THE CEMENT PROGRAM FOR THE 5-1/2" CASING WILL NEED TO BE MODIFIED AND THE BLM IS TO BE CONTACTED PRIOR TO RUNNING THE CASING. A MINIMUM OF TWO CASING STRINGS CEMENTED TO SURFACE IS REQUIRED IN HIGH CAVE/KARST AREAS. THE CEMENT MUST BE IN A SOLID SHEATH THEREFORE, ONE INCH OPERATIONS WILL NOT BE PERMITTED. A DV TOOL WILL BE REQUIRED.

Possible lost circulation in the Delaware Formation.

- 1. The 8-5/8 inch surface casing shall be set at approximately 440 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 a surface log readout will be used or a cement bond log shall be run to verify the top of the cement.**
 - 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.**

2. The minimum required fill of cement behind the 5-1/2 inch production casing is:
 - ☒ Cement to surface. If cement does not circulate, contact the appropriate BLM office.
3. Cement not required on the 2-7/8" Liner. **Packer system being used. Liner must overlap 100' inside the 5-1/2" production casing.**
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. Operator installing a 5M but testing as a 3M.**
3. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.
 - a. The tests shall be done by an independent service company.
 - b. The results of the test shall be reported to the appropriate BLM office.
 - c. 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.**
 - d. 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.
 - e. **Effective November 1, 2008, no variances will be granted on reduced pressure tests on the surface casing and BOP/BOPE. Onshore Order 2 requirements will be in effect.**

D. DRILL STEM TEST

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

CRW 092309

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

B. PIPELINES

C. ELECTRIC LINES

IX. INTERIM RECLAMATION & RESERVE PIT CLOSURE

A. INTERIM RECLAMATION

If the well is a producer, interim reclamation shall be conducted on the well site in accordance with the orders of the Authorized Officer. The operator shall submit a Sundry Notices and Reports on Wells (Notice of Intent), Form 3160-5, prior to conducting 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.

The operators should work with BLM surface management specialists to devise the best strategies to reduce the size of the location. Any reductions 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 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.

Seed Mixture 1, for Loamy 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 regulator to ensure proper depth of planting where drilling is possible. The seed mixture will be evenly and uniformly planted over the disturbed area (small/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 lovegrass (<i>Eragrostis intermedia</i>)	0.5
Sand dropseed (<i>Sporobolus cryptandrus</i>)	1.0
Sideoats grama (<i>Bouteloua curtipendula</i>)	5.0

*Pounds of pure live seed:

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

X. FINAL ABANDONMENT & REHABILITATION REQUIREMENTS

Upon abandonment of the well and/or when the access road is no longer in service the Authorized Officer shall issue instructions and/or orders for surface reclamation and restoration of all disturbed areas.

On private surface/federal mineral estate land the reclamation procedures on the road and well pad shall be accomplished in accordance with the private surface land owner agreement.