

Form 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. SHL NM-092167, BHL NM-100332	
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 Pending	
3a Address 600 N. Marienfeld St., Ste. 600; Midland, TX 79701		8 Lease Name and Well No. Da Vinci 7 Federal Com No. 3H	
3b Phone No. (include area code) 432-620-1938		9. API Well No. 30-015-40203	
4 Location of Well (Report location clearly and in accordance with any State requirements. *) At Surface 10 FSL & 1650 FEL At proposed prod Zone 330 FNL & 1700 FEL		10 Field and Pool, or Exploratory HAY HOLLOW; B.S. North	
14 Distance in miles and direction from nearest town or post office* NORTHODON LOCATION		11. Sec., T. R. M or Blk and Survey or Area 7-25S-27E	
15 Distance from proposed* location to nearest property or lease line, ft (Also to nearest drig unit line if any) 10'		12. County or Parish Eddy	
16 No of acres in lease NM-092167 878.57 acres NM-100332 478.44 acres		13. State NM	
17. Spacing Unit dedicated to this well W2E2 160 acres			
18 Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. 1st this section		20. BLM/BIA Bond No. on File NM-2575	
19 Proposed Depth MD 12736, TVD 7902			
21 Elevations (Show whether DF, KDB, RT, GL, etc.) 3211' GR		22. Approximate date work will start* 04.30.12	
		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 Zeno Farris	Name (Printed/Typed) Zeno Farris	Date 01.31.12
Title Manager Operations Administration		
Approved By (Signature) Cody R. Layton	Name (Printed/Typed)	Date
Title FIELD MANAGER	Office CARLSBAD FIELD OFFICE	APR 19 2012

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

Conditions of approval, if any, are attached

APPROVAL FOR TWO YEARS

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

* (Instructions on page 2)

Carlsbad Controlled Water Basin

Approval Subject to General Requirements
& Special Stipulations AttachedSEE ATTACHED FOR
CONDITIONS OF APPROVAL

Operator Certification Statement
Da Vinci 7 Federal Com No. 3
Cimarex Energy Co. of Colorado
Unit O, Section 7
T25S-R27E, Eddy County, NM

Operator's Representative

Cimarex Energy Co. of Colorado
600 N. Marienfeld St., Ste. 600
Midland, TX 79701
Office Phone: (432) 620-1936
Terri Stathem

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 31st day of January, 2012

NAME: Zeno Farris
Zeno Farris

TITLE: Manager Operations Administration

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

TELEPHONE: (432) 620-1936

EMAIL: tstathem@cimarex.com

Field Representative: Same as above

DISTRICT I

1625 N. French Dr., Hobbs, NM 88240

DISTRICT II

1801 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 DepartmentForm C-102
Revised October 15, 2009Submit 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 30-015-40203	Pool Code 30216	Pool Name HAY HOLLOW; B.S. North
Property Code 36558	Property Name DA VINCI "7" FEDERAL COM	Well Number 3H
OGRID No. 162683	Operator Name CIMAREX ENERGY CO. OF COLORADO	Elevation 3211'

Surface Location

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
0	7	25 S	27 E		10	SOUTH	1650	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
B	7	25 S	27 E		330	NORTH	1700	EAST	EDDY

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

<p>PROPOSED BOTTOM HOLE LOCATION Lat - N 32°09'03.38" Long - W 104°13'35.21" NMSPC - N 418663.0 E 574416.4 (NAD-83)</p>	<p>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, unless 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.</p> <p><i>Zeno Farris</i> 1/31/2012 Signature Date</p> <p>Zeno Farris Printed Name</p>
<p>SURFACE LOCATION Lat - N 32°08'14.32" Long - W 104°13'34.46" NMSPC - N 413706.0 E 574486.1 (NAD-83)</p>	<p>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.</p> <p>GARY L. JONES Date Surveyed NOVEMBER 20, 2011 Signature & Seal of Professional Surveyor</p> <p>W.S. No. 20165 Certificate No. Gary L. Jones 7977 BASIN SURVYS</p>

Application to Drill
Da Vinci 7 Federal Com No. 3
Cimarex Energy Co. of Colorado
Unit O, Section 7
T25S-R27E, 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 10 FSL & 1650 FEL
BHL 330 FNL & 1700 FEL
2. Elevation above sea level: 3211' 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 12736, TVD 7902
6. Estimated Formation Tops

Rustler	Spotty, NA	Bone Spring "A" Shale	5604'
Top Salt	1197'	Bone Spring "C" Shale	5938'
Base Salt	1798'	1st Bone Spring Ss	6439'
Delaware	1997'	2nd Bone Spring Ss	7019'
Cherry Canyon	2947'	2nd BS Ss Lower	7752'
Brushy Canyon	3987'	3rd Bone Spr Carb "C"	7969'
Bone Spring	5479'		
7. Possible mineral bearing formations:

Delaware	Oil
Bone Spring	Oil

8. Proposed drilling Plan

After setting surface and intermediate casing, drill 8¾" hole to KOP @ 7615 and drill through curve to lateral TD (12736 MD, 7902 TVD). Run cemented 5½" 17# P110 production casing from 0-12736.

Application to Drill
Da Vinci 7 Federal Com No. 3
Cimarex Energy Co. of Colorado
Unit O, Section 7
T25S-R27E, Eddy County, NM

9. Mud Circulating System:

Depth			Mud Wt	Visc	Fluid Loss	Type Mud
0'	to	450'	8.4 - 8.6	30-32	NC	FW spud mud
450'	to	1977'	9.9 - 10	28-29	NC	Brine
1,977'	to	12736'	8.6 - 9.2	28-30	NC	Cut 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.

10. Casing Program:

	Hole Size	Depth		Casing OD		Weight	Collar	Grade
Surface	17½"	0'	to 450'	New	13¾"	48#	STC	H-40
Intermediate	12¾"	0'	to 1977'	New	9¾"	36#	LTC	J-55
Production	8¾"	0'	to 12736'	New	5½"	17#	LTC	P-110

11. Cementing Program:

Surface Casing	Lead: 280 SKS Halcem C + 4% Bentomite + 2% CaCl, 13.5ppg, 1.75 yield, 100% Excess Tail: 30 SKS Halcem C + 2% CaCl, 14.2ppg, 1.34 yield, 50% Excess TOC 0' Centralizers per Onshore Order 2.III.B.1.f
Intermediate	Lead: 1195 SKS EconoCem + 5% salt + 5 lbm gilsonite, 14.6ppg, 1.54 yield, 70% Excess Tail: 200 SKS HalCem + 1% CaCl, 14.8ppg, 1.34 yield, 25% Excess TOC 0'
Production See COA	Lead: 935 SKS EconoCem - H + 0.2 % HR-601 2.44, 11.9 ppg, 2.44 yield, 50% Excess Tail: 1385 SKS Versacem - H + 0.5% Halad(R)-344 + 0.4% CFR-3 + 1 lbm/sk salt + 0.1% HR-601, 14.5ppg, 1.22 yield, 25% Excess TOC 0' Centralizers every 3rd joint in lateral to provide adequate cement coverage every 100' unless lateral doglegs require greater spacing between centralizers.

According to the State Engineer, depth to ground water is approximately 19.' Fresh water zones will be protected by setting 13¾" casing at 450' and cementing to surface. Hydrocarbon zones will be protected by setting 9¾" casing at 1977' and 5½" casing at 12736' and cementing to surface.

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

Application to Drill
Da Vinci 7 Federal Com No. 3
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12. Pressure control Equipment:

Exhibit "E". A 13 5/8" 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 1893.' A kelly cock will be installed and maintained in operable condition and a drill string safety valve in the open position will be available on the rig floor. Mud gas separator will be available if drilling in H2S areas.

BOP unit will be hydraulically operated. BOP will be nipped up and operated at least once a day while drilling and the blind rams will be operated when out of hole during trips. No abnormal pressure or temperature is expected while drilling. From the base of the surface pipe through the running of production casing, the well will be equipped with a 5000 psi BOP system tested to 3000 psi.

Before drilling out of the surface pipe BOP's will be tested to 250 psi low and 3000 psi high by an independent service company. Hydril will be tested to 250 psi low and 1500 psi high.

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 / KOP to intermediate casing.
- 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 **3500 psi** Estimated BHT **115°**

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

Drilling expected to take 25-35 days

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

16. Other Facets of Operations:

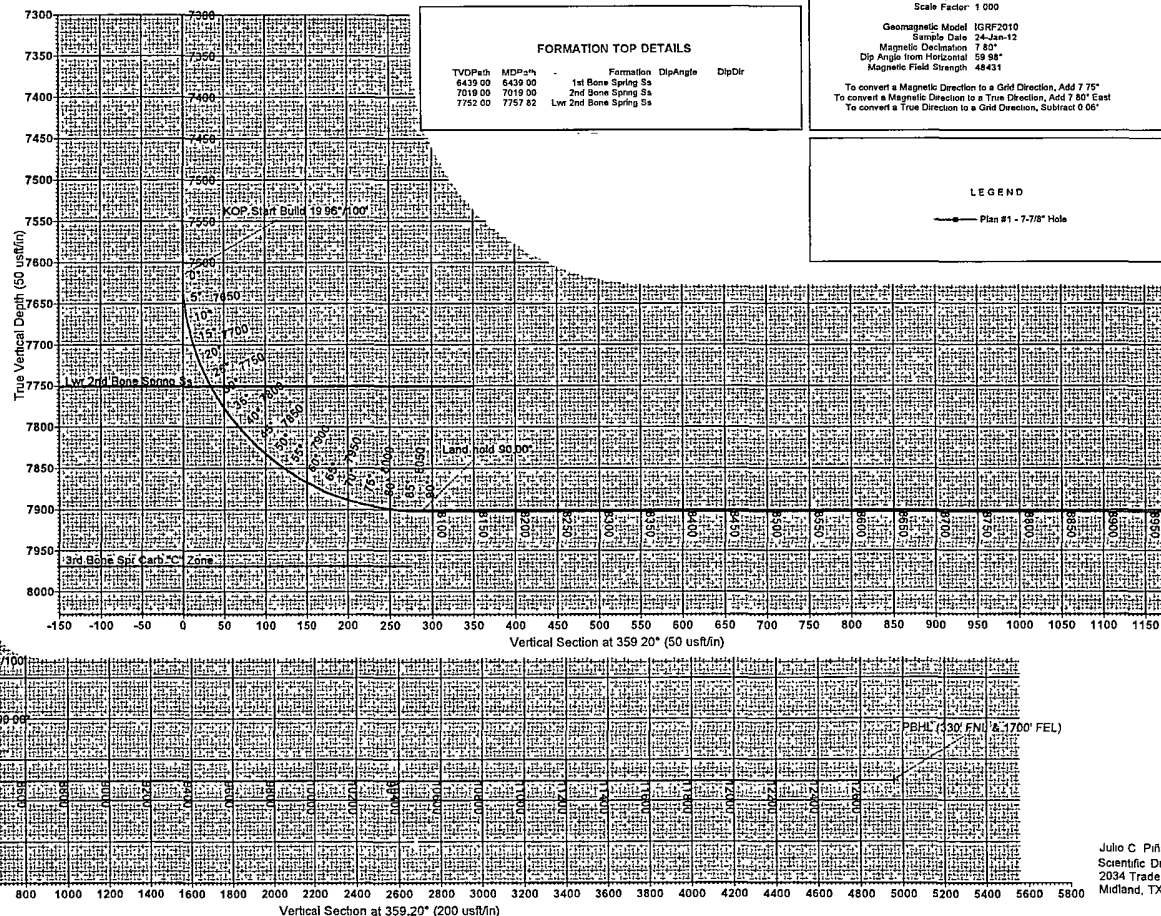
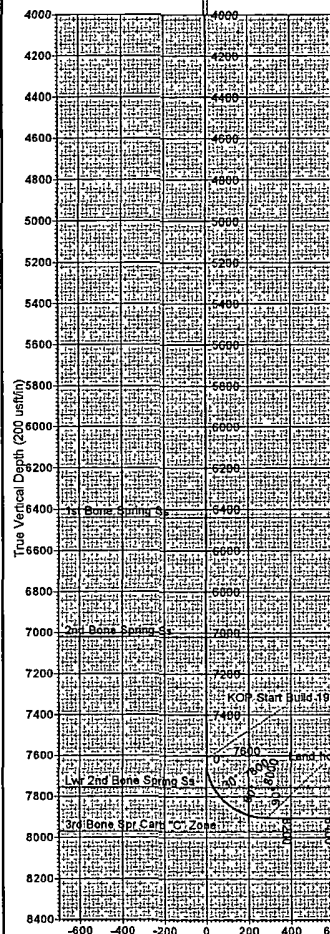
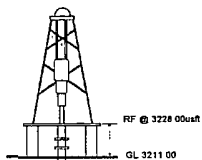
After running casing, cased hole gamma ray neutron collar logs will be run from total depth over possible pay intervals.

Bone Spring pay will be perforated and stimulated.

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



Da Vinci "7" Federal Com #3H
Eddy County, NM (NAD83 NME)
Northing (Y) 413706.00
Easting (X) 574486.01
Plan #1 - 8-3/4" Hole



WELL DETAILS: Da Vinci "7" Federal Com #3H									
+N-S	+E-W	Northing	Ground Level	3211 00	Latitude	Longitude	Slot		
0 00	0 00	413706.00	574486 01	32° 8' 14.320 N	104° 13' 34.459 W				

SECTION DETAILS									
Sec	MD	Inc	Azi	TVD	+N-S	+E-W	Dleg	TFace	VSec
1	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00
2	7615 85	0 00	0 00	7615 00	0 00	0 00	0 00	0 00	0 00
3	8065 85	90 00	359 20	7802 00	286 97	-4 03	19 56	359 20	287 00
4	12736 34	90 00	359 20	7902 00	4957 00	-69 61	0 00	0 00	4957 49

DESIGN TARGET DETAILS									
Name	TVD	+N-S	+E-W	Northing	Easting	Latitude	Longitude	Shape	
PBHL (330° FNL & 1700° FEL)	7902 00	4957 00	-69 61	418663 00	574415 40	32° 8' 3.377 N	104° 13' 35.212 W	Point	

FORMATION TOP DETAILS									
TVDPath	MDPath	1st Bone Spring Sa	Formation	DipAngle	DipDir				
6439 00	6439 00								
7019 00	7019 00								
7752 00	7757 82								

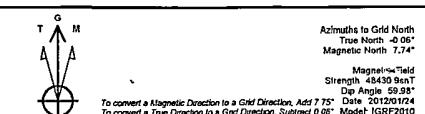
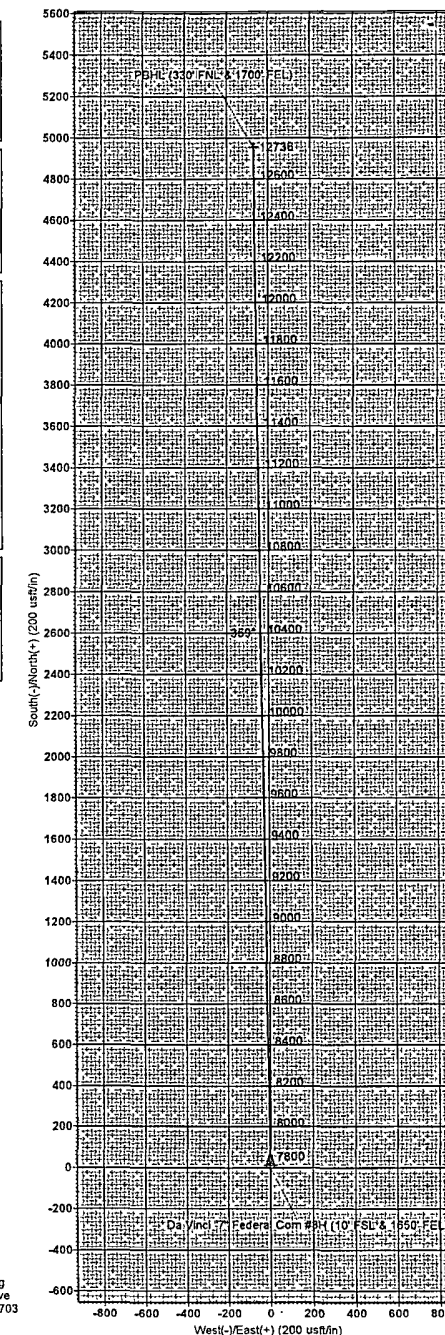
PROJECT DETAILS: Eddy County, NM (NAD83 NME)									
Geodetic System	US State Plane 1983								
Datum	North American Datum 1983								
Ellipsoid	GRS 1980								
Zone	New Mexico Eastern Zone								
System Datum	Mean Sea Level								

SITE DETAILS: Da Vinci "7" Federal Com #3H									
Site Centre Northing	413706 00								
Easting	574486 01								
Positional Uncertainty	0 00								
Convergence	0 06								
Local North	Grid								

Map System	US State Plane 1983								
Datum	North American Datum 1983								
Ellipsoid	GRS 1980								
Zone Name	New Mexico Eastern Zone								
Local Origin	Site Da Vinci "7" Federal Com #3H, Grid North								
Latitude	32° 8' 14.320 N								
Longitude	104° 13' 34.459 W								
Grid East	574486 01								
Grid North	413706 00								
Scale Factor	1 000								

Geomagnetic Model	IGRF2010								
Sample Date	24-Jan-12								
Magnetic Declination	7 80°								
Dip Angle from Horizontal	59 98°								
Magnetic Field Strength	48431								
To convert a Magnetic Direction to a Grid Direction, Add 7.75°									
To convert a Magnetic Direction to a True Direction, Add 7.80° East									
To convert a True Direction to a Grid Direction, Subtract 0.06°									

LEGEND									
Plan #1 - 7-7/8" Hole									



Julio C. Pina
Scientific Drilling
2034 Trade Drive
Midland, TX 79703



Cimarex Energy

Eddy County, NM (NAD83 NME)

Da Vinci "7" Federal Com #3H

Da Vinci "7" Federal Com #3H (10' FSL & 1650' FEL)

OH

Plan: Plan #1 - 8-3/4" Hole

Standard Planning Report

24 January, 2012





SDI
Planning Report



Database:	EDM 5000 1 Single User Db	Local Co-ordinate Reference:	Site Da Vinci "7" Federal Com #3H
Company:	Cimarex Energy	TVD Reference:	RF @ 3228.00usft
Project:	Eddy County, NM (NAD83 NME)	MD Reference:	RF @ 3228.00usft
Site:	Da Vinci "7" Federal Com #3H	North Reference:	Grid
Well:	Da Vinci "7" Federal Com #3H (10' FSL & 1650' FEL)	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1 - 8-3/4" Hole		

Project	Eddy County, NM (NAD83 NME)		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site	Da Vinci "7" Federal Com #3H		
Site Position:	Map	Northing:	413,706.00 usft
From:		Easting:	574,486.01 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 8' 14.320 N
		Longitude:	104° 13' 34.459 W
		Grid Convergence:	0.06 °

Well	Da Vinci "7" Federal Com #3H (10' FSL & 1650' FEL)		
Well Position	+N/-S	0.00 usft	Northing:
	+E/-W	0.00 usft	Easting:
Position Uncertainty	0.00 usft	Wellhead Elevation:	Ground Level:
			3,211.00 usft

Wellbore	OH		
Magnetics	Model Name	Sample Date	Declination
			(°)
	IGRF2010	2012/01/24	7.80
			Dip Angle
			(°)
			59.98
			Field Strength
			(nT)
			48,431

Design	Plan #1 - 8-3/4" Hole		
Audit Notes:			
Version:	Phase:	PLAN	Tie On Depth:
			0.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(usft)	(usft)	(usft)
	0.00	0.00	0.00
			Direction
			(°)
			359.20

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
7,615.00	0.00	0.00	7,615.00	0.00	0.00	0.00	0.00	0.00	0.00	
8,065.85	90.00	359.20	7,902.00	286.97	-4.03	19.96	19.96	0.00	359.20	
12,736.34	90.00	359.20	7,902.00	4,957.00	-69.61	0.00	0.00	0.00	0.00	PBHL (330' FNL & 17



SDI
Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Site Da Vinci "7" Federal Com #3H
Company:	Cimarex Energy	TVD Reference:	RF @ 3228.00usft
Project:	Eddy County, NM (NAD83 NME)	MD Reference:	RF @ 3228.00usft
Site:	Da Vinci "7" Federal Com #3H	North Reference:	Grid
Well:	Da Vinci "7" Federal Com #3H (10' FSL & 1650' FEL)	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1 - 8-3/4" Hole		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6,439.00	0.00	0.00	6,439.00	0.00	0.00	0.00	0.00	0.00	0.00
1st Bone Spring Ss									
7,019.00	0.00	0.00	7,019.00	0.00	0.00	0.00	0.00	0.00	0.00
2nd Bone Spring Ss									
7,615.00	0.00	0.00	7,615.00	0.00	0.00	0.00	0.00	0.00	0.00
KOP Start Build 19.96°/100'									
7,700.00	16.97	359.20	7,698.76	12.49	-0.18	12.49	19.96	19.96	0.00
7,757.82	28.51	359.20	7,752.00	34.80	-0.49	34.81	19.96	19.96	0.00
Lwr 2nd Bone Spring Ss									
7,800.00	36.93	359.20	7,787.45	57.58	-0.81	57.59	19.96	19.96	0.00
7,900.00	56.89	359.20	7,855.42	130.23	-1.83	130.25	19.96	19.96	0.00
8,000.00	76.85	359.20	7,894.50	221.72	-3.11	221.75	19.96	19.96	0.00
8,065.85	90.00	359.20	7,902.00	286.97	-4.03	287.00	19.96	19.96	0.00
Land hold 90.00°									
8,100.00	90.00	359.20	7,902.00	321.12	-4.51	321.15	0.00	0.00	0.00
8,200.00	90.00	359.20	7,902.00	421.11	-5.91	421.15	0.00	0.00	0.00
8,300.00	90.00	359.20	7,902.00	521.10	-7.32	521.15	0.00	0.00	0.00
8,400.00	90.00	359.20	7,902.00	621.09	-8.72	621.15	0.00	0.00	0.00
8,500.00	90.00	359.20	7,902.00	721.08	-10.13	721.15	0.00	0.00	0.00
8,600.00	90.00	359.20	7,902.00	821.07	-11.53	821.15	0.00	0.00	0.00
8,700.00	90.00	359.20	7,902.00	921.06	-12.93	921.15	0.00	0.00	0.00
8,800.00	90.00	359.20	7,902.00	1,021.05	-14.34	1,021.15	0.00	0.00	0.00
8,900.00	90.00	359.20	7,902.00	1,121.04	-15.74	1,121.15	0.00	0.00	0.00
9,000.00	90.00	359.20	7,902.00	1,221.03	-17.15	1,221.15	0.00	0.00	0.00
9,100.00	90.00	359.20	7,902.00	1,321.02	-18.55	1,321.15	0.00	0.00	0.00
9,200.00	90.00	359.20	7,902.00	1,421.01	-19.95	1,421.15	0.00	0.00	0.00
9,300.00	90.00	359.20	7,902.00	1,521.00	-21.36	1,521.15	0.00	0.00	0.00
9,400.00	90.00	359.20	7,902.00	1,620.99	-22.76	1,621.15	0.00	0.00	0.00
9,500.00	90.00	359.20	7,902.00	1,720.98	-24.17	1,721.15	0.00	0.00	0.00
9,600.00	90.00	359.20	7,902.00	1,820.97	-25.57	1,821.15	0.00	0.00	0.00
9,700.00	90.00	359.20	7,902.00	1,920.96	-26.98	1,921.15	0.00	0.00	0.00
9,800.00	90.00	359.20	7,902.00	2,020.95	-28.38	2,021.15	0.00	0.00	0.00
9,900.00	90.00	359.20	7,902.00	2,120.94	-29.78	2,121.15	0.00	0.00	0.00
10,000.00	90.00	359.20	7,902.00	2,220.93	-31.19	2,221.15	0.00	0.00	0.00
10,100.00	90.00	359.20	7,902.00	2,320.92	-32.59	2,321.15	0.00	0.00	0.00
10,200.00	90.00	359.20	7,902.00	2,420.91	-34.00	2,421.15	0.00	0.00	0.00
10,300.00	90.00	359.20	7,902.00	2,520.90	-35.40	2,521.15	0.00	0.00	0.00
10,400.00	90.00	359.20	7,902.00	2,620.89	-36.80	2,621.15	0.00	0.00	0.00
10,500.00	90.00	359.20	7,902.00	2,720.88	-38.21	2,721.15	0.00	0.00	0.00
10,600.00	90.00	359.20	7,902.00	2,820.87	-39.61	2,821.15	0.00	0.00	0.00
10,700.00	90.00	359.20	7,902.00	2,920.86	-41.02	2,921.15	0.00	0.00	0.00
10,800.00	90.00	359.20	7,902.00	3,020.85	-42.42	3,021.15	0.00	0.00	0.00
10,900.00	90.00	359.20	7,902.00	3,120.84	-43.83	3,121.15	0.00	0.00	0.00
11,000.00	90.00	359.20	7,902.00	3,220.83	-45.23	3,221.15	0.00	0.00	0.00
11,100.00	90.00	359.20	7,902.00	3,320.82	-46.63	3,321.15	0.00	0.00	0.00
11,200.00	90.00	359.20	7,902.00	3,420.82	-48.04	3,421.15	0.00	0.00	0.00
11,300.00	90.00	359.20	7,902.00	3,520.81	-49.44	3,521.15	0.00	0.00	0.00
11,400.00	90.00	359.20	7,902.00	3,620.80	-50.85	3,621.15	0.00	0.00	0.00
11,500.00	90.00	359.20	7,902.00	3,720.79	-52.25	3,721.15	0.00	0.00	0.00
11,600.00	90.00	359.20	7,902.00	3,820.78	-53.65	3,821.15	0.00	0.00	0.00
11,700.00	90.00	359.20	7,902.00	3,920.77	-55.06	3,921.15	0.00	0.00	0.00



SDI
Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Site Da Vinci "7" Federal Com #3H
Company:	Cimarex Energy	TVD Reference:	RF @ 3228.00usft
Project:	Eddy County, NM (NAD83 NME)	MD Reference:	RF @ 3228.00usft
Site:	Da Vinci "7" Federal Com #3H	North Reference:	Grid
Well:	Da Vinci "7" Federal Com #3H (10' FSL & 1650' FEL)	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1 - 8-3/4" Hole		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
11,800.00	90.00	359.20	7,902.00	4,020.76	-56.46	4,021.15	0.00	0.00	0.00
11,900.00	90.00	359.20	7,902.00	4,120.75	-57.87	4,121.15	0.00	0.00	0.00
12,000.00	90.00	359.20	7,902.00	4,220.74	-59.27	4,221.15	0.00	0.00	0.00
12,100.00	90.00	359.20	7,902.00	4,320.73	-60.67	4,321.15	0.00	0.00	0.00
12,200.00	90.00	359.20	7,902.00	4,420.72	-62.08	4,421.15	0.00	0.00	0.00
12,300.00	90.00	359.20	7,902.00	4,520.71	-63.48	4,521.15	0.00	0.00	0.00
12,400.00	90.00	359.20	7,902.00	4,620.70	-64.89	4,621.15	0.00	0.00	0.00
12,500.00	90.00	359.20	7,902.00	4,720.69	-66.29	4,721.15	0.00	0.00	0.00
12,600.00	90.00	359.20	7,902.00	4,820.68	-67.70	4,821.15	0.00	0.00	0.00
12,700.00	90.00	359.20	7,902.00	4,920.67	-69.10	4,921.15	0.00	0.00	0.00
12,736.34	90.00	359.20	7,902.00	4,957.00	-69.61	4,957.49	0.00	0.00	0.00
PBHL (330' FNL & 1700' FEL)									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
PBHL (330' FNL & 1700' FEL)	-90.00	179.64	7,902.00	4,957.00	-69.61	418,663.00	574,416.40	32° 9' 3.377 N	104° 13' 35.212 W
- plan hits target center									
- Point									

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
6,439.00	6,439.00	1st Bone Spring Ss				
7,019.00	7,019.00	2nd Bone Spring Ss				
7,757.82	7,752.00	Lwr 2nd Bone Spring Ss				

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Comment
7,615.00	7,615.00	0.00	0.00	KOP Start Build 19.96°/100'
8,065.85	7,902.07	286.96	-4.03	Land hold 90.00°

SR & A

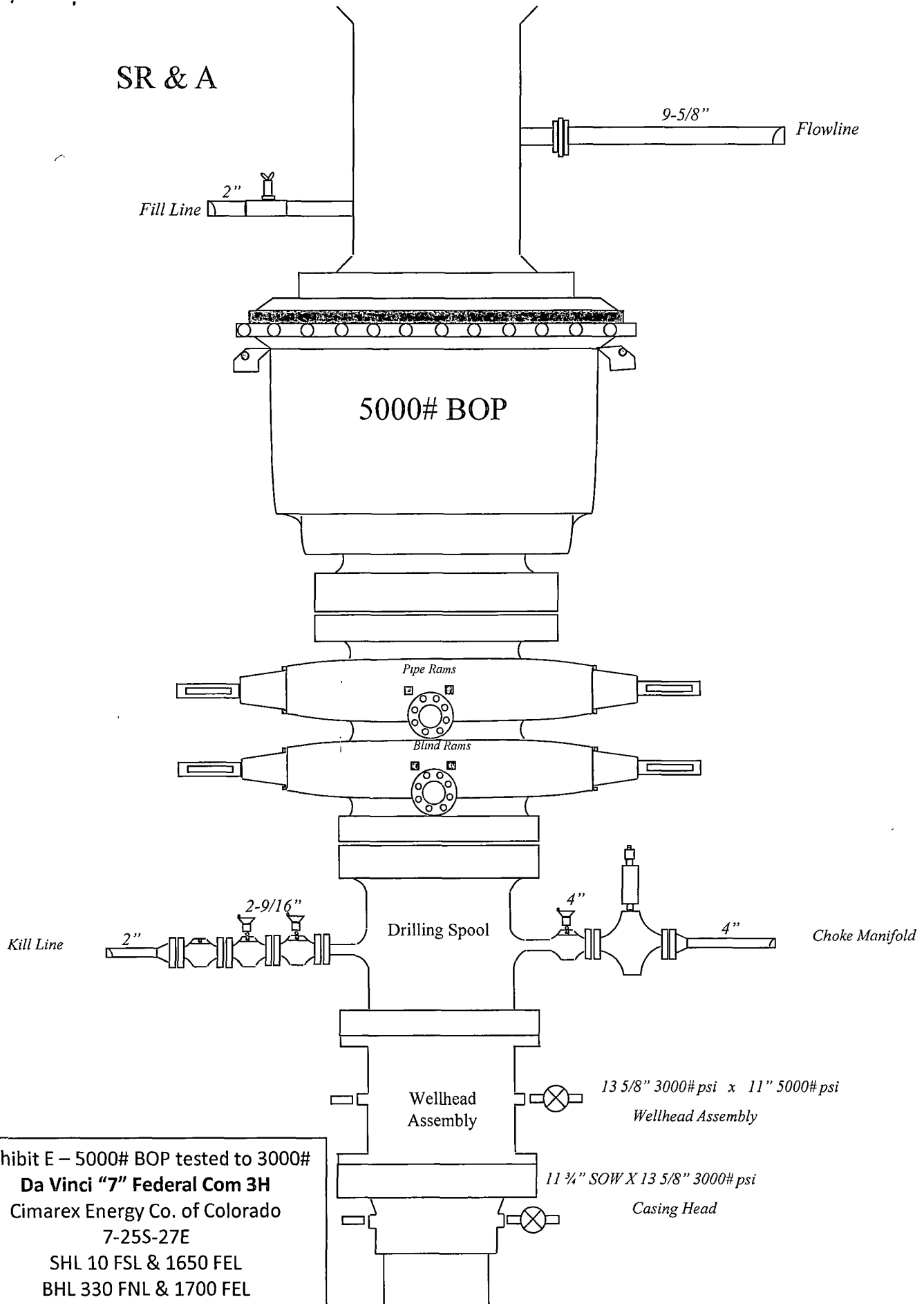
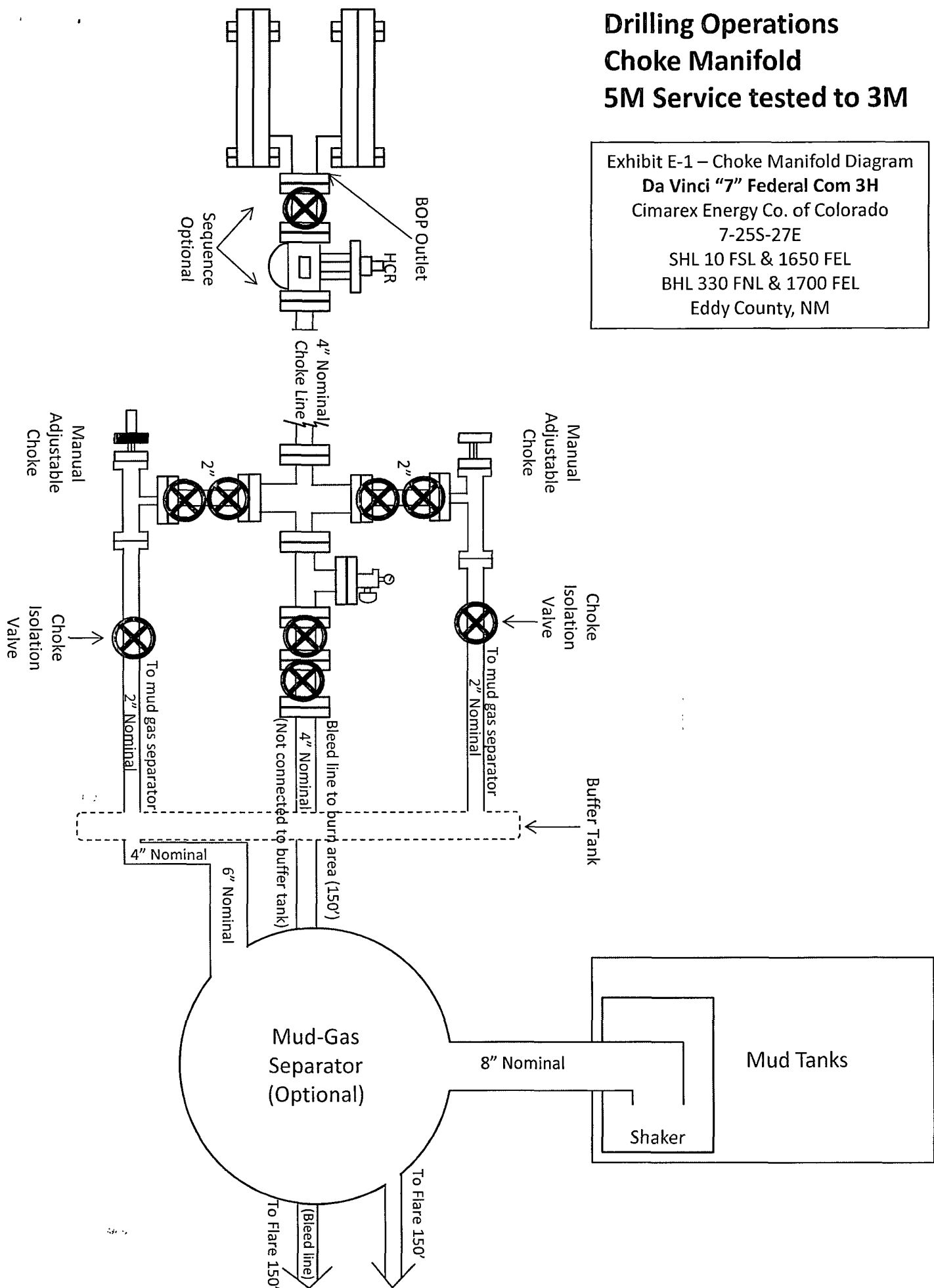


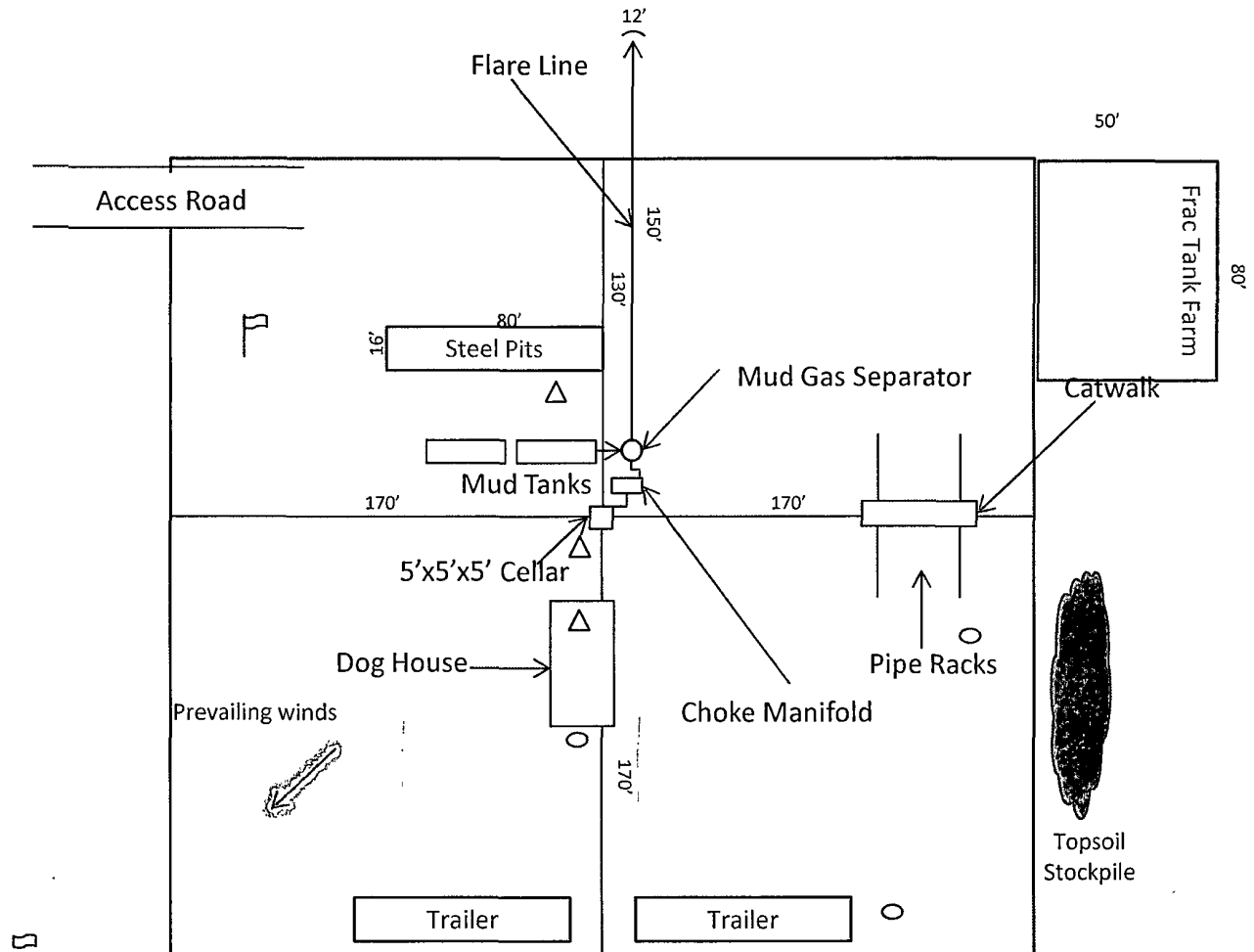
Exhibit E – 5000# BOP tested to 3000#
Da Vinci "7" Federal Com 3H
Cimarex Energy Co. of Colorado
7-25S-27E
SHL 10 FSL & 1650 FEL
BHL 330 FNL & 1700 FEL
Eddy County, NM

Drilling Operations
Choke Manifold
5M Service tested to 3M

Exhibit E-1 – Choke Manifold Diagram
Da Vinci "7" Federal Com 3H
Cimarex Energy Co. of Colorado
7-25S-27E
SHL 10 FSL & 1650 FEL
BHL 330 FNL & 1700 FEL
Eddy County, NM



Key 880



1"=50'



Wind Direction Indicators
(wind sock or streamers)



• H2S Monitors
(alarms at bell nipple and shale shaker)



Briefing Areas

Exhibit D – Rig Diagram
Da Vinci "7" Federal Com 3H
 Cimarex Energy Co. of Colorado
 7-25S-27E
 SHL 10 FSL & 1650 FEL
 BHL 330 FNL & 1700 FEL
 Eddy County, NM

Hydrogen Sulfide Drilling Operations Plan

Da Vinci 7 Federal Com No. 3

Cimarex Energy Co. of Colorado

Unit O, Section 7

T25S-R27E, 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

Da Vinci 7 Federal Com No. 3

Cimarex Energy Co. of Colorado

Unit O, Section 7

T25S-R27E, 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.

H₂S Contingency Plan
Da Vinci 7 Federal Com No. 3
Cimarex Energy Co. of Colorado
Unit O, Section 7
T25S-R27E, Eddy County, NM

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

Da Vinci 7 Federal Com No. 3

Cimarex Energy Co. of Colorado

Unit O, Section 7

T25S-R27E, Eddy County, NM

Company Office

Cimarex Energy Co. of Colorado	800-969-4789
Co. Office and After-Hours Menu	

Key Personnel

Name	Title	Office	Mobile
Doug Park	Drilling Manager	432-620-1934	972-333-1407
Jim Evans	Drilling Super	432-620-1929	972-465-0564
Roy Shirley	Field Super		432-634-2136

Artesia

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

Carlsbad

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

Santa Fe

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

National

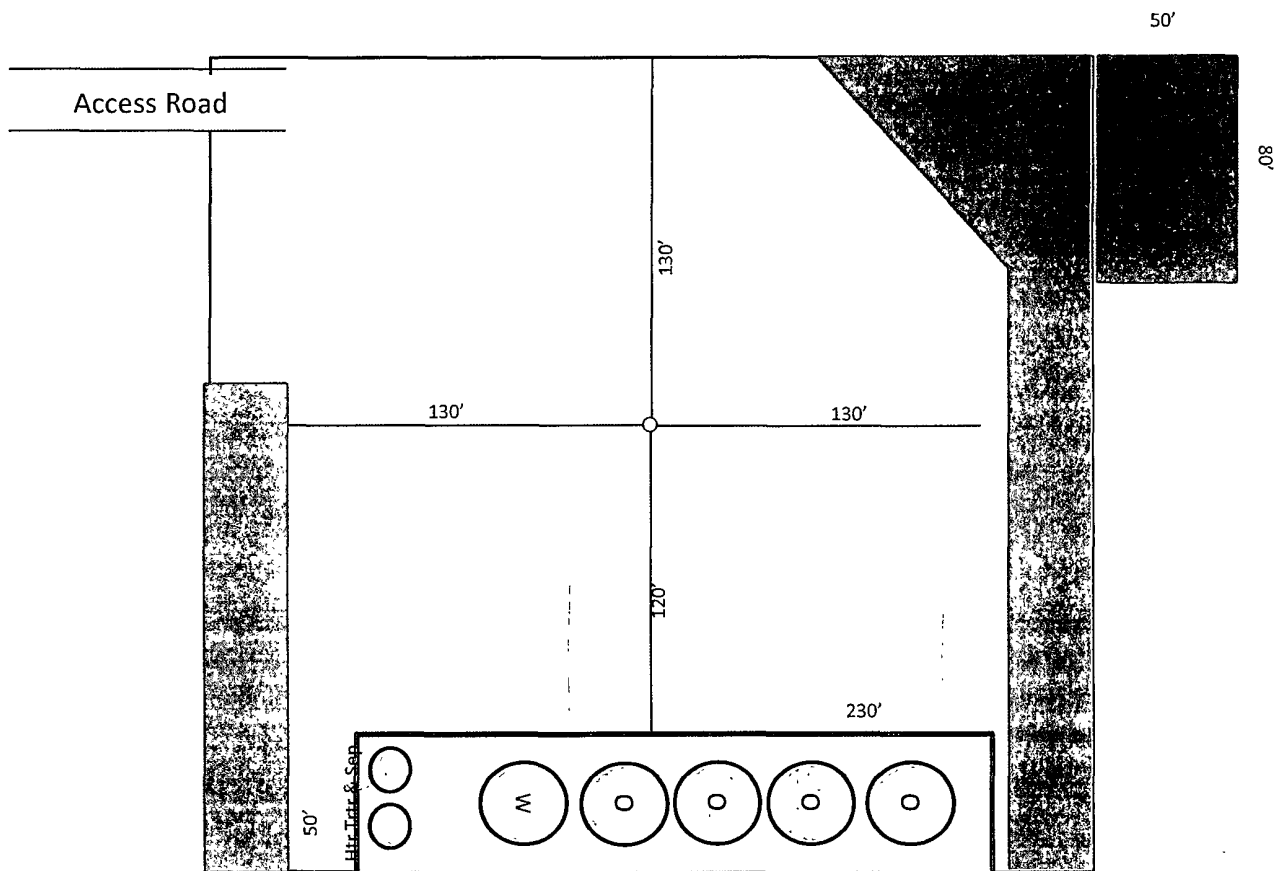
National Emergency Response Center (Washington, D.C.)	800-424-8802
-------------------------------------------------------	--------------

Medical

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

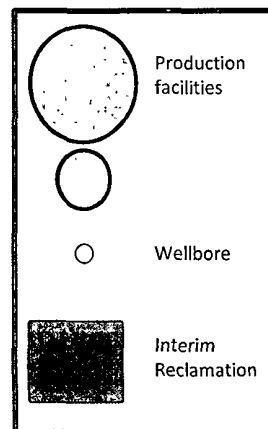
Other

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		



Place tank battery on East side of Pad JDF

Exhibit D-1
 Production Facilities Layout Diagram
Da Vinci "7" Federal Com 3H
 Cimarex Energy Co. of Colorado
 7-25S-27E
 SHL 10 FSL & 1650 FEL
 BHL 330 FNL & 1700 FEL
 Eddy County, NM



Surface Use Plan
Da Vinci 7 Federal Com No. 3
Cimarex Energy Co. of Colorado
Unit O, Section 7
T25S-R27E, Eddy 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.
 - A. The maximum width of the driving surface will be 14.' The upgraded 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 Black River Village and John D Forehand, go South 6.6 miles to lease road and southerly 0.3 miles to proposed lease road.
2. Planned Access Roads, E-Line, SWD line: 1224' of on-lease access road is proposed.
E-line and SWD line will be connected to Cimarex existing Gadwall system down existing corridors.
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. Location of Proposed Production Facilities:
If on completion this well is a producer, a tank battery will be used and the necessary production equipment will be installed at the wellsite. See production facilities layout diagram. Any changes to the facilities or off-site facilities 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.
6. 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
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 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.

PECOS DISTRICT CONDITIONS OF APPROVAL

OPERATOR'S NAME:	Cimarex Energy Co of Colorado
LEASE NO.:	NM100332
WELL NAME & NO.:	3H Da Vinci 7 Fed Com
SURFACE HOLE FOOTAGE:	10' FSL & 1650' FEL
BOTTOM HOLE FOOTAGE:	330' FNL & 1700' FEL
LOCATION:	Section 7, T.25 S., R.27 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**

Communitization Agreement

- ☐ **Construction**

Notification
Topsoil
Closed Loop System
Federal Mineral Material Pits
Well Pads
Roads

- ☐ **Road Section Diagram**

- ☒ **Drilling**

Logging Requirements
Medium Cave/Karst
Waste Material and Fluids

- ☐ **Production (Post Drilling)**

Well Structures & Facilities
Pipelines
Electric Lines

- ☐ **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)

Communitization Agreement

A Communitization Agreement covering the acreage dedicated to this well must be filed for approval with the BLM. The effective date of the agreement shall be prior to any sales.

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) 234-6235 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 3 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

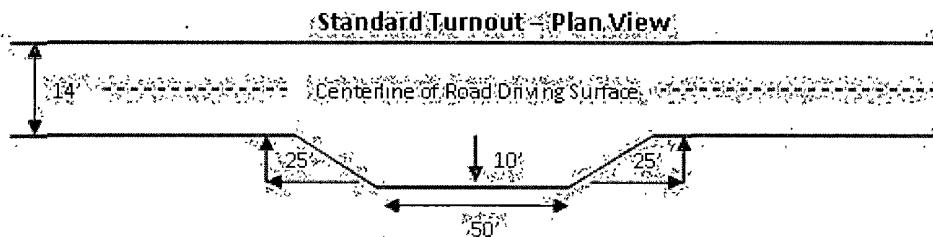
Crowning shall be done on the access road driving surface. The road crown shall have a grade of approximately 2% (i.e., a 1" crown on a 14' wide road). The road shall conform to Figure 1; cross section and plans for typical road construction.

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:

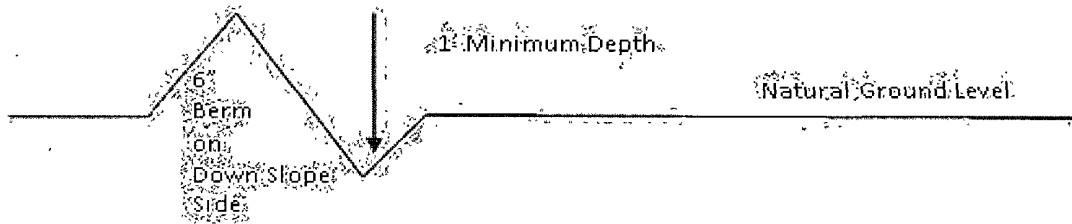


Drainage

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

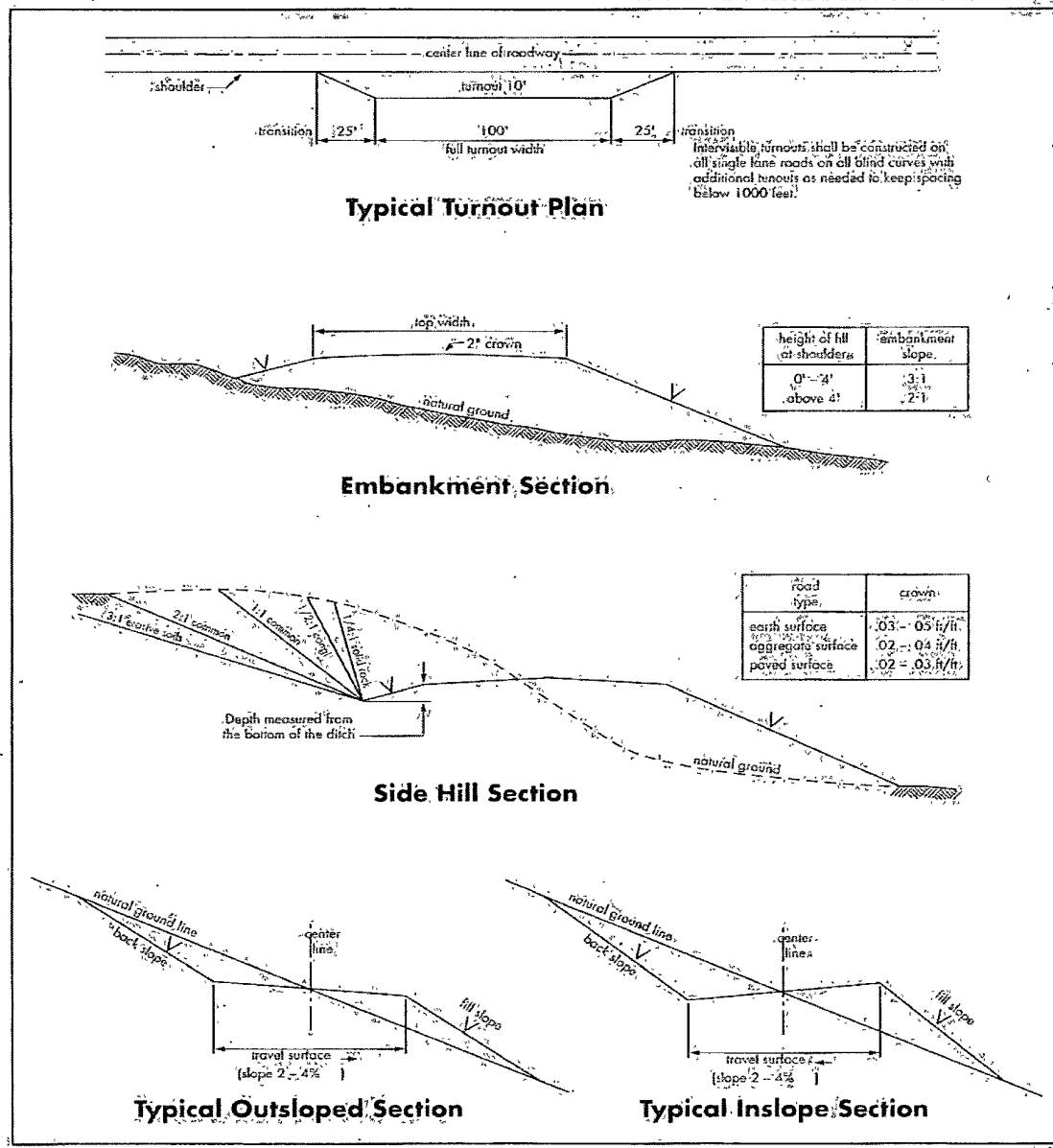
Where entry is required across a fence line, the fence shall be braced and tied off on both sides of the passageway prior to cutting.

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

☒ **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 prior to drilling out the surface shoe. 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) shall 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.**

B. CASING

Changes to the approved APD casing program need prior approval if the items substituted are of lesser grade or different casing size. The Operator can exchange the components of the proposal with that of superior strength (i.e. changing from J-55 to N-80, or from 36# to 40#).

Changes to the approved cement program need prior approval if the altered cement plan has less volume or strength or if the changes are substantial (i.e. Multistage tool, ECP, etc.).

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.

Medium cave/karst

Possible lost circulation in the Delaware.

1. The **13-3/8** inch surface casing shall be set at approximately **450** feet and cemented to the surface. **If salt is encountered, set casing 25 feet above the salt.**
 - 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.
2. The minimum required fill of cement behind the **9-5/8** inch intermediate casing is:
☒ Cement to surface. If cement does not circulate see B.1.a, c-d above.

Centralizers required on horizontal leg, must be type for horizontal service and a minimum of one every third joint unless lateral doglegs require greater spacing between centralizers.

3. 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. **Additional cement may be required – excess calculates to 22%.**
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.
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, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin after cut-off or once cement reaches 500 psi compressive strength (including lead when specified), whichever is greater. However, if the float does not hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).
 - 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) or 500 pounds compressive strength, whichever is greater, prior to initiating the test (see casing segment as lead cement may be critical item).

- 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.

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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 (not applied for in APD)

C. ELECTRIC LINES (not applied for in APD)

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).

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
Plains bristlegrass (<i>Setaria macrostachya</i>)	2.0

*Pounds of pure live seed:

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