April 2001)      HOBBSCOD      UNITED STATES      DEPARTMENT OF THE INTERIOR      BUREAU OF LAND MANAGEMENT      APPLICATION FOR PERMIT TO DRILL OR REENTER      APPLICATION FOR PERMIT TO DRILL OR REENTER      T If Unit or CA Agreement, Nam      North Maduro Federal Unit      Leave Name and Well No.      Avante of Operator      Cimarex Energy Co. of Colorado      A proved in the store of the intervent of t			
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UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF THE INTERIOR BUREAU OF THE INTERIOR BUREAU OF TAIE INTERIOR BUREAU OF LAND MANAGEMENT APPLICATION FOR PERMIT TO DRILL OR REENTER 1a Type of Work: D DRILL C REENTER 7 If Unit or CA Agreemen, Nam North Maduro Federal Unit 8. Lease Name and Well No. 9 API WEI PINA BAPY API WEI WHI WEI WEI WEI WEI WEI W			
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In Type of Nota:       Distance       Indextrink         North Maduro Federal Unit       8. Lease Name and Well No.         2. Name of Operator       Single Zone       Multiple Zone         2. Name of Operator       Single Zone       9. API Well No.         3. Address       Single Zone       9. API Well No.         3. Address       Single Zone       10. Field and Pool, or Explorately         600 N. Marienfeld St., Ste. 600; Mildland, TX 79701       432-571-7800       Tonto; Bone Spring, South         At proposed prod. Zone       1980 FNL & \$500 FWL       Wait feld       In Sec. T. R. M. or Bit. and Survey in Astrona State requirements.*)         At Surface       2310 FNL & \$500 FWL       Wait feld       In Sec. T. R. M. or Bit. and Survey in Astrona State requirements.*)         14       Distance in miles and direction from nearest town or post office*       12. County or Parish Lea         15       Distance from proposed*       16. No of acres in lease       17       Spacing Unit dedicated to this well poperty or lease line, f. (Alton completed, applied for, on this lease, fl       NM-2575         21.       Elevations (Show whether DF, KDB, RT, GL, etc.)       22 Approximate date work will start*       23       Estimated duration and/or plans as may be require attrona and/or plans as may be require attrona and/or plans as may be require attrona and/or plans as may be require attrorization       3612' GR       22. App	e and No.		
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Cimarex Energy Co. of Colorado       Cimarex Energy Co. of Colorado       30.025       39.62.3       9.62.3         3a Address       3b. Phone No (include area code)       10. Field and Pool, or Explorate/S         600 N. Marienfield St., Ste. 600; Midland, TX 79701       432-571-7800       Tonto; Bone Spring, South         At Location of Well (Report location clearly and in accordance with any State requirements.*)       11. See, T. R. M. or Bik. and Survey of Approximate data way state requirements.*)         At proposed prod. Zone       1980 FNL & 330 FEL Use the Horizontal Bone Spring test       20-195-33E         14       Distance from proposed*       16. No of acres in lease       17. Spacing Unit dedicated to this well         location to nearest proposed*       19. Proposed Depth       20       BLM/BIA Bond No. on File       1         15       Distance from proposed*       19. Proposed Depth       20       BLM/BIA Bond No. on File       1         16       No of acres in lease       17. Spacing Unit dedicated to this well       1       1       1       Lea       1         17       Distance from proposed location*       19. Proposed Depth       20       BLM/BIA Bond No. on File       2       2         18       Distance from proposed location*       19. Proposed Depth       20       BLM/BIA Bond No. on File       2       2       3612 GR	0.3		
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conduct operations thereon Conductions of approval, if any, are attached Tttle 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	JTEARS		
States any false, fictitious, or fraudulent statements or representations as to any matter within its jurisdiction			
	o General Re		
SEE ATTACHED FOR & Special Stip CONDITIONS OF APPROVAL	pulations Att:		

DISTRICT I 1825 N. French Dr., Hobbs, NM 88240 DISTRICT II 1301 W. Grand Amous, Arlaria, NM 88210

DISTRICT III 1000 Rio Brazos Rd., Aztec, NM 87410

DISTRICT IV 1220 S. St. Francis Dr., Santa Fo, NM 67505

#### State of New Mexico Energy, Minerals and Natural Resources Department

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Form C-102 Revised October 12, 2005

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

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

Fee Lease - 3

#### Pool Code Pool Name API Number 59476 Tonto; Bone Spring, South Property Name Well Number Property Code 300536 3 NORTH MADURO FEDERAL UNIT Elevation **Operator** Name OGRID No. 3612' CIMAREX ENERGY CO. OF COLORADO 162683 Surface Location East/West line Range Lot Idn Feet from the North/South line Feet from the County UL or lot No. Section Township 2310 NORTH 560 WEST LEA 20 19 S 33 E E Bottom Hole Location If Different From Surface North/South line East/West line UL or lot No. Section Township Range Lot Idn Feet from the Feet from the County EAST 1980 NORTH 330 20 33 E LEA 19 S Н Joint or Infill **Consolidation** Code Order No. Dedicated Acres U 160 NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION **OPERATOR CERTIFICATION BHL/End of Producing Interval** 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 ewns a working interest or unleased mineral interest in the land including the proposed boltom 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. SHL & P.P. Bone Spring 1980 FNL & 330 FEL 2310 FNL & 560 FWL EOC/Beginning of Producing Interval 980 2295 FNL & 750 FWL ŝ Zeno Fanis 10/14/2009 Signature Date Zeno Farris ĒĤ. 330 Printed Name IA 08.7 560 NM-36916 SURVEYOR CERTIFICATION and have a first state of the second s and the second PROPOSED BOTTOM I hereby certify that the well location shown SURFACE LOCATION Lot - N 32'38'48.09" Long - W 103'41'31.35" NMSPCE- N 599593.3 F 738724.4 on this plat was platted from field notes of Lot - N 32'38'51.30" Long - W 103'40'39.93" NMSPCE- N 599944.43 E 743118.11 actual surveys made by me or under my supervison and that the same is true and correct to the best of my belief. (NAD-83) (NAD-83) BBR-5.000 00 WEXIG Date Su Signat 61 Profes veyor Certificate No. 7977 Gan Jones 11 2 din. 1-17 ومررسهي BASIN SURVEYS

### WELL LOCATION AND ACREAGE DEDICATION PLAT

CI AMENDED REPORT

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# Application to Drill North Maduro Federal Unit No. 3 Cimarex Energy Co. of Colorado Unit E, Section 20 T19S-R33E, Eddy County, NM

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

- SHL 2310 FNL & 560 FWL 1 Location: BHL 1980 FNL & 330 FEL
- 2 Elevation above sea level: 3612' GR
- **Quaternery Alluvium Deposits** Geologic name of surface formation: 3

Drilling tools and associated equipment: Conventional rotary drilling rig using fluid as a 4 circulating medium for solids removal.

- TVD 9900' Proposed drilling depth: MD 14227' 5
- 6 Estimated tops of geological markers: **Cherry Canyon** 6000' **Bone Spring** 7770' 1st BSS 8920' 2nd BSS 9650'
- 7 Possible mineral bearing formation: **Bone Spring** Oil

	8	Proposed Mud Circulating System:	Zæ	(COA)
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<b>Propose</b>	<u>d Mu</u>	<u>d Circulati</u>	<u>ng System:</u>	2ee 10		
	Dept	h	Mud Wt	Visc	Fluid Loss	Type Mud
0'	to	_460'	8.4 - 8.6	28	NC	FW
460	to	4800'	10.0	30-32	NC	Brine water
4800'	to	9640'	8.4 - 9.5	30-32	NC	FW, brine
9710'	to	14227'	8.4	28-32	NC	2% KCl

Sufficient mud materials will be kept on location at all times in order to combat lost circulation or unexpected kicks. In order to run DSTs, open hole logs, and casing, the viscosity and water loss may have to be adjusted in order to meet these needs.

8a. Proposed drilling Plan

After drilling and setting surface, intermediate, and production casing, drill out of the bottom of the 7" production casing with a 6<sup>1</sup>/<sub>8</sub>" bit to KOP @ 9710' and kick off to drill the lateral. Drill to TD 14227.' Run 4<sup>1</sup>/<sub>2</sub>" PEAK completion liner from RSB packer @ 9540' to TD @ 14227.' Split the liner with LTC from TD to EOC م مصبقة ويومنكوني متب (10009') and BTC from EOC to TOL (9540'). Page 1

#### Application to Drill North Maduro Federal Unit No. 3 Cimarex Energy Co. of Colorado Unit E, Section 20 T19S-R33E, Eddy County, NM hear

9 Casing & Ce	menting Program	<u>".</u> S	e co	A					
String	Hole Size		Depth	1380	Casin	ig OD	Weight	Collar	Grade
Surface	17½"	0'	to	.460	New	13¾"	48#	STC	H-40
Intermediate	12¼"	0'	to 499	io <b>4800</b> '	New	9 <sup>5</sup> ⁄8"	40#	LTC	J/K-55
Production	8¾"	0'	to	9640'	New	7"	26#	LTC	P-110
Lateral Pt. 1	61⁄8"	9540'	to	10009'	New	4½"	11.6#	BTC	P-110
Lateral Pt. 2	61⁄8"	10009'	to	14227'	New	4½"	11.6#	LTC	P-110
10 Cementing: Surface500 sx Premium Plus + 2% CaCl2 (wt 14.8, yld 1.35) $-$ SecCOA TOC SurfaceIntermediateLead: 300 sx Econocem + 3% Salt + 2% CaCl2 + 3 lbm/sk Gilsonite (wt 11.7, yld 2.06) Tail: 650 sks Premium Plus + 1% CaCl2 (wt 14.8, yld 1.34) TOC Surface					ie COA				
Production	<u>Lead:</u> 360 s <u>Tail:</u> 365 sx <b>TOC 4600</b>	HalCem (			n/sk gilsonit	te (wt 13.0,	yld 1.71)		
Lateral	No cement	needed. I	Peak cor	mpletion as	sembly.				

Fresh water zones will be protected by setting 13%" casing at 460' and cementing to surface. Hydrocarbon zones will be protected by setting 9%" casing at 4800' and cementing to surface, and by setting 7" casing at 9640' and cementing to 4600.'

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

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#### 11 Pressure control Equipment:

Exhibit "E". A 13<sup>3</sup>/<sub>4</sub>" 5000 PSI working pressure B.O.P. consisting of one set of blind rams and one set of pipe rams and a 5000# annular type preventer. A choke manifold and 120 gallon accumulator with floor and remote operating stations and auxiliary power system. Rotating head below 6000.' A kelly cock will be installed and maintained in operable condition and a drill string safety valve in the open position will be available on the rig floor.

BOP unit will be hydraulically operated. BOP will be nippled up and operated at least once a day while drilling and the blind rams will be operated when out of hole during trips. No abnormal pressure or temperature is expected while drilling. From the base of the surface 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 13%" 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 13% casing to 1000 psi using rig pumps. The BOP will be tested to 3000 psi by an independent service company.

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# Application to Drill North Maduro Federal Unit No. 3 Cimarex Energy Co. of Colorado Unit E, Section 20 T19S-R33E, Eddy County, NM

# 12 Testing, Logging and Coring Program: See CerA

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

#### 13 Potential Hazards:

No abnormal pressures or temperatures are expected. In accordance with Onshore Order 6, Cimarex does not anticipate that there will be enough  $H_2S$  from the surface to the Bone Spring formations to meet the BLM's minimum requirements for the submission of an " $H_2S$  Drilling Operation Plan" or "Public Protection Plan" for the drilling and completion of this well. Since we have an  $H_2S$  Safety package on all wells, attached is an " $H_2S$  Drilling Operations Plan." Adequate flare lines will be installed off the mud / gas separator where gas may be flared safely. All personnel will be familiar with all aspects of safe operation of equipment being used.

Estimated BHP **3000 psi** Estimated BHT **130°** 

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

Drilling expected to take 30-35 days

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

#### 15 Other Facets of Operations:

with water to be to

Harden of Stand of Street

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

Bone Spring pay will be perforated and stimulated.

The proposed well will be tested and potentialed as **an oil well.** 

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#### Cimarex Energy Co. Slot No. 3H SHL Well No. 3H

(North Maduro) Sec 20 T19S, R33E North Maduro Fed Unit No. 3H Field Facility.



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# Planned Wellpath Report Preliminary Plan Page 1 of 3



REAR	ENCE WELLPATH IDENTIFICATION		
Operator	Cimarex Energy Co.	Slot	No. 3H SHL
Area	Lea County, NM	Well	No. 3H
Field	(North Maduro) Sec 20 T19S, R33E	Wellbore	No. 3H PWB
Facility	North Maduro Fed Unit No. 3H		

REPORTSETUP	INFORMATION		
Projection System	NAD83 / TM New Mexico State Planes, Eastern Zone (3001), US feet	Software System	WellArchitect <sup>®</sup> 2.0
North Reference	Grid	User	Gomeoscr
Scale	0.999954	Report Generated	10/13/2009 at 4:16:29 PM
Convergence at slot	0.35° East	Database/Source file	WA_Midland/No3H_PWB.xml

WINDER GRANNING TO COMPANY	Local coo	Local coordinates		oordinates	Geographic coordinates		
	North[ft]	East[ft]	Easting[USft]	Northing[USft]	Latitude	Longitude	
Slot Location	0.00	0.00	738724.40	599593.30	32°38'48.090"N	103°41'31.346"W	
Facility Reference Pt			738724.40	599593.30	32°38'48.090"N	103°41'31.346"W	
Field Reference Pt			738724.40	599593.30	32°38'48.090"N	103°41'31.346"W	

MELLIPATHE DATION		at season of the season of the season of	Martin Mession
Calculation method	Minimum curvature	Rig on No. 3H SHL (RT) to Facility Vertical Datum	0.00ft
Horizontal Reference Pt	Facility Center	Rig on No. 3H SHL (RT) to Mean Sea Level	3612.00ft
Vertical Reference Pt	Rig on No. 3H SHL (RT)	Facility Vertical Datum to Mud Line (Facility)	0.00ft
MD Reference Pt	Rig on No. 3H SHL (RT)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	85.43°

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# Planned Wellpath Report Preliminary Plan Page 2 of 3



REPER	ENCLE WELLPATHE IDENINIFICATION		
Operator	Cimarex Energy Co.	Slot	No. 3H SHL
Area	Lea County, NM	Well	No. 3H
Field	(North Maduro) Sec 20 T19S, R33E	Wellbore	No. 3H PWB
Facility	North Maduro Fed Unit No. 3H	AND	A STATE AND A STA

MD	Inclination	Azimuth	TVD	Polated statio	North	East	DLS	Comments
[ft]	[°]	[°]	[ft]	[ft]	[ft]	[ft]	[°/100ft]	
0.00	0.000	85.431	0.00	0.00	0.00	0.00		Tie On
6000.00†	0.000	85.431	6000.00	0.00	0.00	0.00		Cherry Canyon
7770.00†	0.000	85.431	7770.00	0.00	0.00	0.00		Bone Spring
8920.00†	0.000	85.431	8920.00	0.00	0.00	0.00		1st BSS
9650.00†	0.000	85.431	9650.00	0.00	0.00	0.00		2nd BSS
9710.00	0.000	85.431	9710.00	0.00	0.00	0.00	0.00	Est KOP
9810.00†	30.110	85.431	9805.46	25.68	2.05	25.60	30.11	
9910.00†	60.220	85.431	9875.16	95.78	7.63	95.47	30.11	
10008.92	90.004	85.431	9900.29	190.30	15.16	189.70	30.11	
	90.004	85.431	9900.29	191.38	15.25	190.78	0.00	
10110.00†	90.004	85.431	9900.28	291.38	23.21	290.46	0.00	
10210.00†	90.004	85.431	9900.27	391.38	31.18	390.14	0.00	
10310.00†	90.004	85.431	9900.27	491.38	39.14	489.82	0.00	
10410.00†	90.004	85.431	9900.26	591.38	47.11	589.50	0.00	
10510.00†	90.004	85.431	9900.25	691.38	55.08	689.19	0.00	
10510.001	90.004	85.431	9900.25	791.38	63.04	788.87	0.00	
10710.00†	90.004	85.431	9900.24	891.38	71.01	888.55	0.00	
10810.00†	90.004	85.431	9900.23	991.38	78.98	988.23	0.00	
10910.00†	90.004	85.431	9900.23	1091.38	86.94	1087.92	0.00	-
	90.004		9900.22	1191.38	94.91	1187.60		A REAL PROPERTY AND A REAL
11110.00†	90.004	85.431	9900.21	1291.38	102.87	1287.28	0.00	
11210.00†	90.004	85.431	9900.21	1391.38	110.84	1386.96	0.00	
11210.00†	90.004	85.431	9900.20	1491.38	118.81	1486.64	0.00	
	90.004	85.431	9900.19	1591.38	126.77	1586.33	0.00	
11410.00† 11510.00†	90.004	Contract of the second s	9900.19	: 1691.38	134.74	1686:01		A CONTRACTOR OF A CONTRACT OF
and a second party of the party of a second s	90.004	85.431	9900.18	1791.38	142.71	1785.69	0.00	In case of the state of the sta
11610.00† 11710.00†	90.004	85.431	9900.17	1891.38	150.67	1885.37	0.00	
	90.004	85.431	9900.17	1991.38	158.64	1985.06	0.00	
11810.00† 11910.00†	90.004	85.431	9900.17	2091.38	166.60	2084.74	0.00	
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12010.00	90.004	85.431	9900.14	2291.38	182.54	2284.10	0.00	
	90.004	85.431	9900.14	2391.38	190.50	2383.78	0.00	
12210.00†	90.004	85.431	9900.14	2491.38	198.47	2483.47	0.00	
12310.00†	90.004	85.431	9900.13	2591.38	206.44	2583.15	0.00	
12410.00†	90.004 90.004	**************************************	9900.12	2591.38	200.44	2682.83	0.00	10 YO
12510.00†	90.004		<u> </u>	2791.38	222.37	2782.51	0.00	
12610.00†	90.004	and the second	9900.11	2791.38	230.33	2782.31	0.00	
12710.00†			9900.10	2091.38	238.30	2981.88	0.00	
12810.00†	90.004		9900.10	3091.38	238.30	3081.56		
12910.00†	90.004				a concernation many second a risk sector fractional beauty size	The second state of the se		LING CONT
	90.004			<u>3291.38</u>		3280.92	0.00	
13110.00†	90.004	and the second se	9900.08		262.20		0.00	
13210.00†	90.004		9900.07	3391.38	270.17	3380.61		
13310.00†	90.004		9900.06	3491.38	278.13	3480.29	a hour and a second	
13410.00†	90.004		9900.06	3591.38	286.10	3579.97	PROPERTY AND ADDRESS AND DESCRIPTION	
3 13510.00†	90.004	85:431	9900.05	3691-38	294:07	3679.65		ACCES STRAT
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# Planned Wellpath Report Preliminary Plan Page 3 of 3



रिखलाहारा	ENCLE WIELLIPATHI IDENIHIFICATION		
Operator	Cimarex Energy Co.	Slot	No. 3H SHL
Area	Lea County, NM	Well	No. 3H
Field	(North Maduro) Sec 20 T19S, R33E	Wellbore	No. 3H PWB
Facility	North Maduro Fed Unit No. 3H	1.515 M FT & T & T & T & T & T & T & T & T & T	

WELLPATH DA	TA (53 stations)	) † = interj	oolated/extrap	olated station				
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	DLS [°/100ft]	Comments
13610.00†	90.004	85.431	9900.04	3791.38	302.03	3779.33	0.00	
13710.00†	90.004	85.431	9900.04	3891.38	310.00	3879.02	0.00	
13810.00†	90.004	85.431	9900.03	3991.38	317.96	3978.70	0.00	
13910.00†	90.004	85.431	9900.02	4091.38	325.93	4078.38	0.00	
14010.00†	90.004	85.431	9900.01	4191.38	333.90	4178.06	0.00	
14110.00†	90.004	85.431	9900.01	4291.38	341.86	4277.75	0.00	
14210.00†	90.004	85.431	9900.00	4391.38	349.83	4377.43	0.00	
14226.55	90.004	85.431	9900.00 <sup>1</sup>	4407.93	351.15	4393.92	0.00	No 3H BHL

HOLE & CASING SECTIONS Ref Wellbore: No. 3H PWB Ref Wellpath: Preliminary Plan										
String/Diameter	Start MD [ft]	End MD [ft]	Interval [ft]	Start TVD [ft]	End TVD [ft]	Start N/S [ft]	Start E/W [ft]	End N/S [ft]	End E/W [ft]	
9.625in Casing	0.00	4800.00	4800.00	0.00	4800.00	0.00	0.00	0.00	0.00	
7in Casing	0.00	9600.00	9600.00	0.00	9600.00	0.00	0.00	0.00	0.00	
6.125in Open Hole	9600.00	14226.55	4626.55	9600.00	NA	0.00	0.00	NA	NA	

TARGETS	2 <del>00, 2, . 0, . , 00, 20</del> , 20,				<u> </u>				
Name	MD [ft]	TVD [ft]	North [ft]	East [ft]	Grid East [srv ft]	Grid North [srv ft]	Latitude	Longitude	Shape
1) No. 3H BHL	14226.55	9900.00	351.15	4393.92	743118.11	599944.43	32°38'51.299"N		point

#### Ref Wellpath: Preliminary Plan SURVEY PROGRAM Ref Wellbore: No. 3H PWB

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ĺ	Start MD	End MD	Positional Uncertainty Model	Log Name/Comment	Wellbore
	[ft]	[ft]			
ļ	0.00	14226.55			No. 3H PWB

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			Exhibit D – Rig Diagram North Maduro Unit Federal No. 3 Cimarex Energy Co. of Colorado	
	<b>、</b>	Ŧ	20-19S-33E	
		-	SHL 2310 FNL & 560 FWL	· · · · · · · · · · · · · · · · · · ·
• • •	ъ., коди и колисти за за	En e	BHL 1980 FNL & 330 FEL	د ۲۰۰۵ و ۲۰۰۵ و ۲۰۰۹ و ۲۰۰۵ و ۲۰
- ·			Lea County, NM	

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# Hydrogen Sulfide Drilling Operations Plan North Maduro Federal Unit No. 3 Cimarex Energy Co. of Colorado Unit E, Section 20 T19S-R33E, Fddy County, NM

- 1 All Company and Contract personnel admitted on location must be trained by a qualified H<sub>2</sub>S safety instructor to the following:
  - A. Characteristics of H<sub>2</sub>S
  - B. Physical effects and hazards
  - C. Proper use of safety equipment and life support systems.
  - D. Principle and operation of H<sub>2</sub>S detectors, warning system and briefing areas.
  - E. Evacuation procedure, routes and first aid.
  - F. Proper use of 30 minute pressure demand air pack.
- 2 H<sub>2</sub>S Detection and Alarm Systems:
  - A. H<sub>2</sub>S detectors and audio alarm system to be located at bell nipple, end of flow line (mud pit) and on derrick floor or doghouse.
- 3 Windsock and/or wind streamers:
  - A. Windsock at mudpit area should be high enough to be visible.
  - B. Windsock at briefing area should be high enough to be visible.
- 4 Condition Flags and Signs:
  - A. Warning sign on access road to location.
  - B. Flags to be displayed on sign at entrance to location. Green flag indicates normal safe condition. Yellow flag indicates potential pressure and danger. Red flag indicates danger (H<sub>2</sub>S present in dangerous concentration). Only emergency personnel admitted to location.
- 5 Well control equipment:
  - A. See exhibit "E"

#### 6 Communication:

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

- The Int I was spinet of the

No DSTs or cores are planned at this time.

8 Drilling contractor supervisor will be required to be familiar with the effects H<sub>2</sub>S has on tubular goods and other mechanical equipment.

9 If H<sub>2</sub>S is encountered, mud system will be altered if necessary to maintain control of formation. A mud gas seperator will be brought into service along with H<sub>2</sub>S scavengers if necessary.

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Page 3A

H₂S Contingency Plan North Maduro Federal Unit No. 3 Cimarex Energy Co. of Colorado Unit E, Section 20 T19S-R33E, Eddy County, NM

#### **Emergency Procedures**

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

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

#### **Ignition of Gas Source**

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

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

Common	Chemical	Specific	Threshold	Hazardous	Lethal
Name	Formula	Gravity	Limit	Limit	Concentration
Hydrogen Sulfide	H₂S	1.189 Air=1	10 ppm	100 ppm/hr	600 ppm
Sulfur Dioxide	SO <sub>2</sub>	2.21 Air=1	2 ppm	N/A	1000 ppm

#### **Contacting Authorities**

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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).

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#### H<sub>2</sub>S Contingency Plan Emergency Contacts North Maduro Federal Unit No. 3 Cimarex Energy Co. of Colorado Unit E, Section 20 T19S-R33E, Eddy County, NM

<u>Company Office</u> Cimarex Energy Co. of Colorado		800-969-4789		
Co. Office and After-Hours Menu				
Key Personnel		Office		Mobile
Name	Title	Office		972-333-1407
Doug Park	Drilling Manager	432-620-1934		
Dee Smith	Drilling Super	432-620-1933		972-882-1010 972-465-0564
Jim Evans	Drilling Super	432-620-1929		432-634-2136
Roy Shirley	Field Super			452-054-2150
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				ng nganana na manana na kanana na kanana
<u>Artesia</u>		911		
Ambulance State Police		575-746-2703		
		575-746-2703		
City Police		575-746-9888		
Fire Department		575-746-2701		
Local Emergency Planning Cor	nmittee	575-746-2122		
New Mexico Oil Conservation		575-748-1283		
New Mexico On Conservation	DIVISION	575710 1200		
Carlsbad				
Ambulance		911		
State Police		575-885-3137		
City Police		575-885-2111		
Sheriff's Office	u	575-887-7551		
Fire Department		575-887-3798		
Local Emergency Planning Cor	nmittee	575-887-6544		
US Bureau of Land Manageme		575-887-6544		
Santa Fe				
New Mexico Emergency Resp	onse Commission (Santa Fe)	505-476-9600	-	
	onse Commission (Santa Fe) 24 Hrs	505-827-9126		
New Mexico State Emergency		505-476-9635		
<u>National</u>				
National Emergency Response	e Center (Washington, D.C.)	800-424-8802		
Medical	Lubback TV	806-743-9911		
Flight for Life - 4000 24th St.; Aerocare - R3, Box 49F; Lubbo		806-747-8923		
	e Blvd S.E., #D3; Albuquerque, NM	505-842-4433		
	rk Carr Loop S.E.; Albuquerque, NM	505-842-4949		
SD AIT WEU SETVICE - 2505 Cla	rk carr Loop S.c., Albuqueique, NM	JUJ-U72-4343		
<u>Other</u>				
Boots & Coots IWC		800-256-9688	or	281-931-8884
Cudd Pressure Control	البرجاد الماد المسقوحا جي خ		or	432-563-3356
	22 Contraction of the second second			
1.1.100	·	575-746-2757		

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Operator Certification Statement North Maduro Federal Unit No. 3 Cimarex Energy Co. of Colorado Unit E, Section 20 T19S-R33E, Eddy County, NM

<u>Operator's Representative</u> Cimarex Energy Co. of Colorado 600 N. Marienfeld St., Ste. 600 Midland, TX 79701 Office Phone: (432) 571-7800 Zeno Farris

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مىرىيىنى بىرىيىنى بېۋىرىيا دىرىيىسىدىد. مۇرىيىنى **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.

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NAME:	Zeno Fany
• -	Zeno Farris
DATE:	October 14, 2009
-	

TITLE: Manager Operations Administration

# PECOS DISTRICT **CONDITIONS OF APPROVAL**

	CIMAREX ENERGY CO. OF COLORADO
LEASE NO.:	
	NORTH MADURO FEDERAL UNIT # 3
SURFACE HOLE FOOTAGE:	
BOTTOM HOLE FOOTAGE	1980' FNL & 330' FEL
	Section 20, T. 19 S., R 33 E., NMPM
COUNTY:	LEA County, New Mexico

# **TABLE OF CONTENTS**

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

**General Provisions Permit Expiration** Archaeology, Paleontology, and Historical Sites Noxious Weeds Special Requirements Lesser Prairie Chicken UNIT POD Construction Notification Topsoil Reserve Pit - Closed-loop mud system Federal Mineral Material Pits Well Pads Roads **Road Section Diagram Drilling** H2S Requirements-Onshore Order #6 Logging Requirements **Casing Depth Change Daily Drilling Reports** 

- **Production (Post Drilling)**
- **Reserve Pit Closure/Interim Reclamation**
- **Final Abandonment/Reclamation**

### GENERAL PROVISIONS

Π.

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

# **II. PERMIT EXPIRATION**

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

# III. ARCHAEOLOGICAL, PALEONTOLOGY & HISTORICAL SITES

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

# IV. NOXIOUS WEEDS

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

# V. SPECIAL REQUIREMENT(S)

**Timing Limitation Stipulation/Condition of Approval for Lesser Prairie-Chicken:** Oil and gas activities including 3-D geophysical exploration, and drilling will not be allowed in lesser prairie-chicken habitat during the period from March 1st through June 15th annually. During that period, other activities that produce noise or involve human activity, such as the maintenance of oil and gas facilities, geophysical exploration other than 3-D operations, and pipeline, road, and well pad construction, will be allowed except between 3:00 am and 9:00 am. The 3:00 am to 9:00 am restriction will not apply to normal, around-the-clock operations, such as venting, flaring, or pumping, which do not require a human presence during this period. Additionally, no new drilling will be allowed within up to 200 meters of leks known at the time of permitting. Normal vehicle use on existing roads will not be restricted. Exhaust noise from pump jack engines must be muffled or otherwise controlled so as not to exceed 75 db measured at 30 ft. from the source of the noise.

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

# UNIT PLAN OF DEVELOPMENT

Operator has not submitted a current Unit Plan of Development (UPOD) as required pursuant to Section 10 of the Unit Agreement. Contact BLM 575-234-5972 for UPOD guidelines.

# VI. CONSTRUCTION

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# NOTIFICATION

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

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

# B. TOPSOIL

The operator shall stockpile the topsoil of the well pad. The topsoil shall not be used to backfill the reserve pit and will be used for interim and final reclamation.

# **RESERVE PITS**

The operator has applied for a closed-loop system. 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.

# 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.

#### ON LEASE ACCESS ROADS

#### Road Width

F.

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 outsloping 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 Typical Lead-off Ditch**

Natural Ground Level



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 foot road with 4% road slope: 400'/4% + 100' = 200' 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.





# VII. DRILLING

#### DRILLING OPERATIONS REQUIREMENTS

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

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

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

1. A Hydrogen Sulfide (H2S) Drilling Plan should be activated 500 feet prior to drilling into the Bone Spring formation. As a result, the Hydrogen Sulfide area must meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, please provide measured values and formations to the BLM.

2. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval.

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.

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. If available, a digital copy of the logs is to be submitted in addition to the paper copies. The Rustler top and top and bottom of Salt are to be recorded on the Completion Report.

#### CASING

**B**.

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.

Possible lost circulation in the Capitan Reef and Bone Spring Formations.

The 13-3/8 inch surface casing shall be set at approximately 1380 feet (a minimum of 25 feet into the Rustler Anhydrite and above the salt) and cemented to the surface. Additional cement will be required, as excess calculates to -33% due to additional length. Fresh water mud to be used to setting depth.

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.

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

In addition, daily drilling reports are to be submitted to the BLM CFO engineering staff via e-mail by 0800 hours each morning from the setting of the surface casing until the intermediate casing is set. Any lost circulation encountered is to be recorded on these drilling reports. Failure to submit these reports will result in an Incidence of Non-Compliance being issued for failure to comply with the Conditions of Approval.

- 2. The minimum required fill of cement behind the 9-5/8 inch intermediate casing is: This casing is to be set at 4950' in the base of the Capitan Reef. Additional cement may be required as the excess calculates to -11%
  - Cement to surface. If cement does not circulate see B.1.a, c-d above.
- 3. The minimum required fill of cement behind the 7 inch production casing is:
  - Cement should tie-back at least 200 feet into previous casing string. Operator shall provide method of verification.
- 4. Cement not required on the 4-1/2" liner. Packer system being used.
- 5. 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.

# PRESSURE CONTROL

C.

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 110609

# VIII. PRODUCTION (POST DRILLING)

#### 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**

Ά.

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

#### Painting Requirement

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

# IX. INTERIM RECLAMATION & RESERVE PIT CLOSURE

#### INTERIM RECLAMATION

Α.

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.

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 for LPC Sand/Shinnery Sites

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

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

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

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

\*\*Four-winged Saltbush

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

5lbs/A

\*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.

Upon the plugging and subsequent abandonment of the well, the well marker will be installed at ground level on a plate containing the pertinent information for the plugged well.

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.