NM OIL CONSERVATION
ARTESIA DISTRICT
MAY 18 2015
RECEIVED

HIGH CAVEKARST

ATS-14-480

Form 3160-3
(March 2012)

FORM APPROVED
OMB No. 1004-0137
Expires October 31, 2014

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No.
SHL\BHL: NMNM017103

6. If Indian, Allotee or Tribe Name

1a. Type of Work: [X] DRILL [ ] REENTER

7. If Unit or CA Agreement, Name and No.

1b. Type of Well: [X] Oil Well [ ] Gas Well [ ] Other [X] Single Zone [ ] Multiple Zone

8. Lease Name and Well No.
Lee Federal #21H

2. Name of Operator
Cimarex Energy Co.

9. API Well No.
30-015-43137

3a. Address	3b. Phone No. *(include area code)*	10. Field and Pool, or Exploratory
600 N. Marienfield St. Ste. 600 Midland Tx 79071	432-571-7800	Avalon; Bone Spring E

4. Location of Well *(Report location clearly and in accordance with any State requirements.*)*
At Surface: 1980 FSL & 330 FEL
At proposed prod. Zone: 1980 FSL & 330 FWL *Bone Spring*

11. Sec,. T. R. M. or Blk. and Survey and Area
25, 20S, 28E

14. Distance in miles and direction from nearest town or post office*	12. County or Parish	13. State
Carlsbad NM is located +-11 miles to the southwest of location	Eddy	NM

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line if any)	16. No of acres in lease	17. Spacing Unit dedicated to this well
330	NMNM017103=560.00 acres	160.00

18. Distance from proposed* location to nearest well, drilling, completed, applied for, on this lease, ft.	19. Proposed Depth	20. BLM/BIA Bond No. on File
1320' to the Lee Federal #22H well	Pilot Hole TD: N/A 12,237 MD 7,680 TVD	NM2575 & NMB000835

21. Elevations (Show whether DF, KDB, RT, GL, etc.)	22. Approximate date work will start*	23. Estimated duration
3232 GR	3/14/14	35 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
2. A Drilling Plan
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).
4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).
5. Operator Certification
6. Such other site specific information and/or plans as may be required by the authorized officer.

25. Signature	Name *(Printed/Typed)*	Date
Title: Regulatory Compliance	Terri Stathem	1/31/14

IS/ STEPHEN J. CAFFEY

Approved By *(Signature)*	Name (Printed/Typed)	Date
Title: FIELD MANAGER	Office: CARLSBAD FIELD OFFICE	MAY 12 2015

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.

(Continued on page 2)

APPROVAL SUBJECT TO GENERAL REQUIREMENTS AND SPECIAL STIPULATIONS ATTACHED

Capitan Controlled Water Basin
5/07/15

(Instructions on page 2)

SEE ATTACHED FOR CONDITIONS OF APPROVAL

Operator Certification Statement
Lee Federal #21H
Cimarex Energy Co.
UL: I, Sec. 25, 20S, 28E
Eddy Co., NM

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

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 31 day of January, 2014

NAME: Hope Knauls
Hope Knauls
TITLE: Regulatory Compliance
ADDRESS: 600 N. Marienfield St. Ste. 600 Midland Tx 79071
TELEPHONE: 432-571-7800
EMAIL: hknauls@cimarex.com
Field Representative: Same as above

DISTRICT I
1625 N. French Dr., Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720
DISTRICT II
1301 W. Grand Avenue, Artesia, NM 88210
Phone (575) 748-1283 Fax: (575) 748-9720
DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone (505) 334-6178 Fax: (505) 334-6170
DISTRICT IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone (505) 476-3460 Fax: (505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION

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

Form C-102
Revised August 1, 2011

Submit one copy to appropriate District Office

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number	Pool Code	Pool Name
30-015-43137	3713	Avalon; Bone Spring E

Property Code	Property Name	Well Number
314857	LEE FEDERAL	21H

OGRID No.	Operator Name	Elevation
215099	CIMAREX ENERGY CO.	3232'

Surface Location

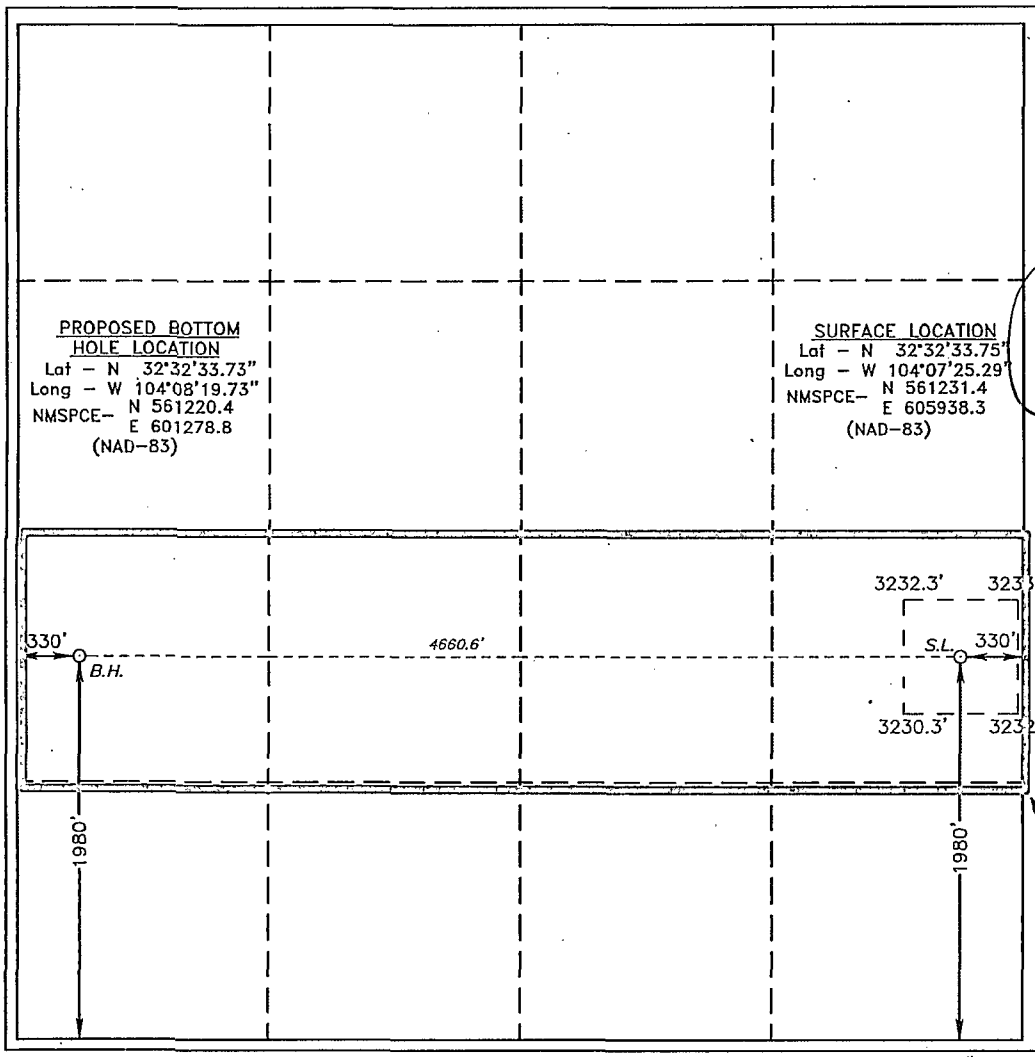
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
I	25	20 S	28 E		1980	SOUTH	330	EAST	EDDY

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
L	25	20 S	28 E		1980	SOUTH	330	WEST	EDDY

Dedicated Acres	Joint or Infill	Consolidation Code	Order No.
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

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

1/22/14
Signature Date

Terri Stathem
Printed Name

tstathem@cimarex.com
Email Address

SURVEYOR CERTIFICATION

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

JANUARY 7, 2013
Date Surveyed

Signature & Seal of Professional Surveyor

NEW MEXICO 7977 REGISTERED PROFESSIONAL ENGINEER AND LAND SURVEYOR

Certificate No. Gary L. Jones 7977

BASIN SURVEYS

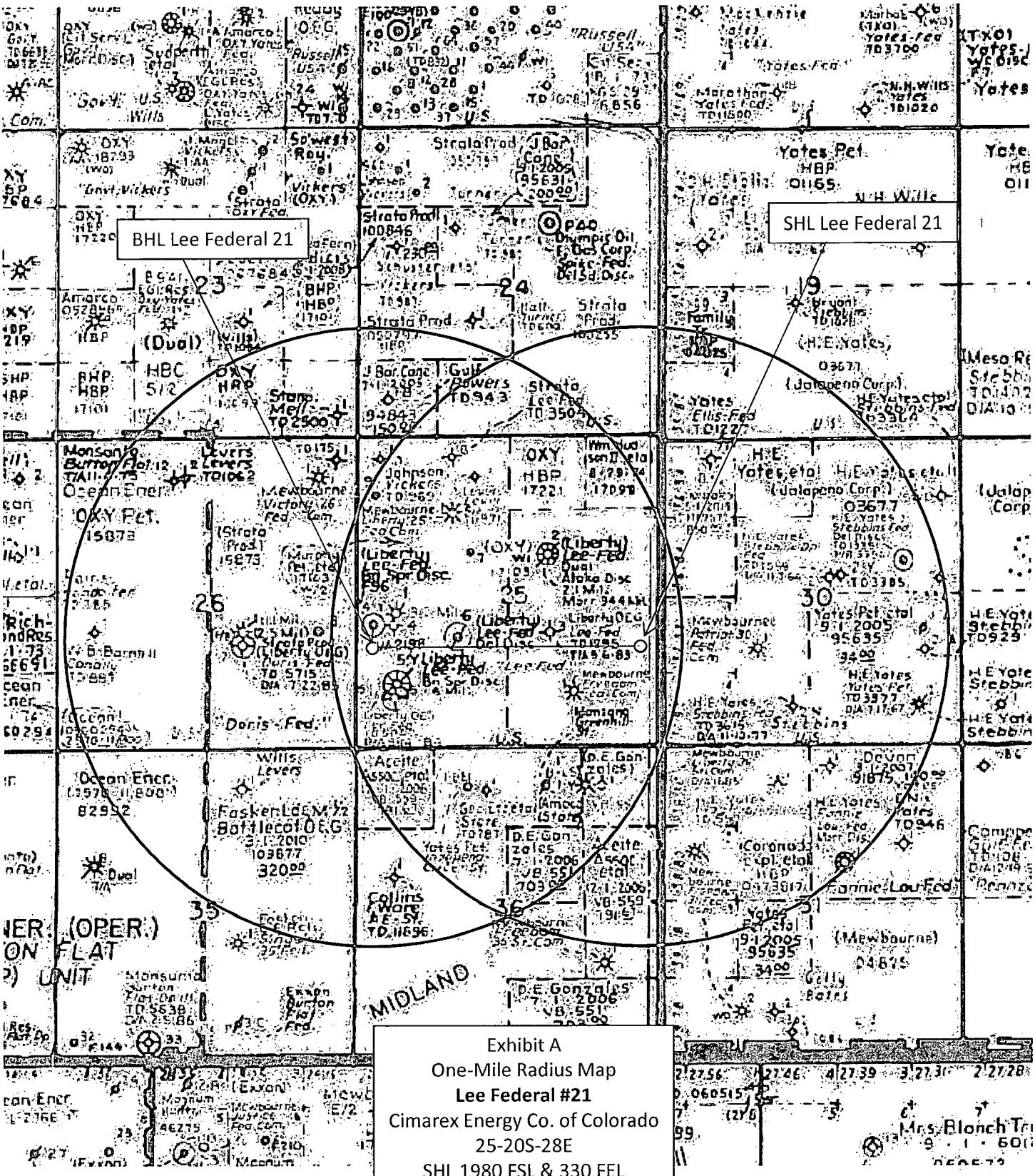
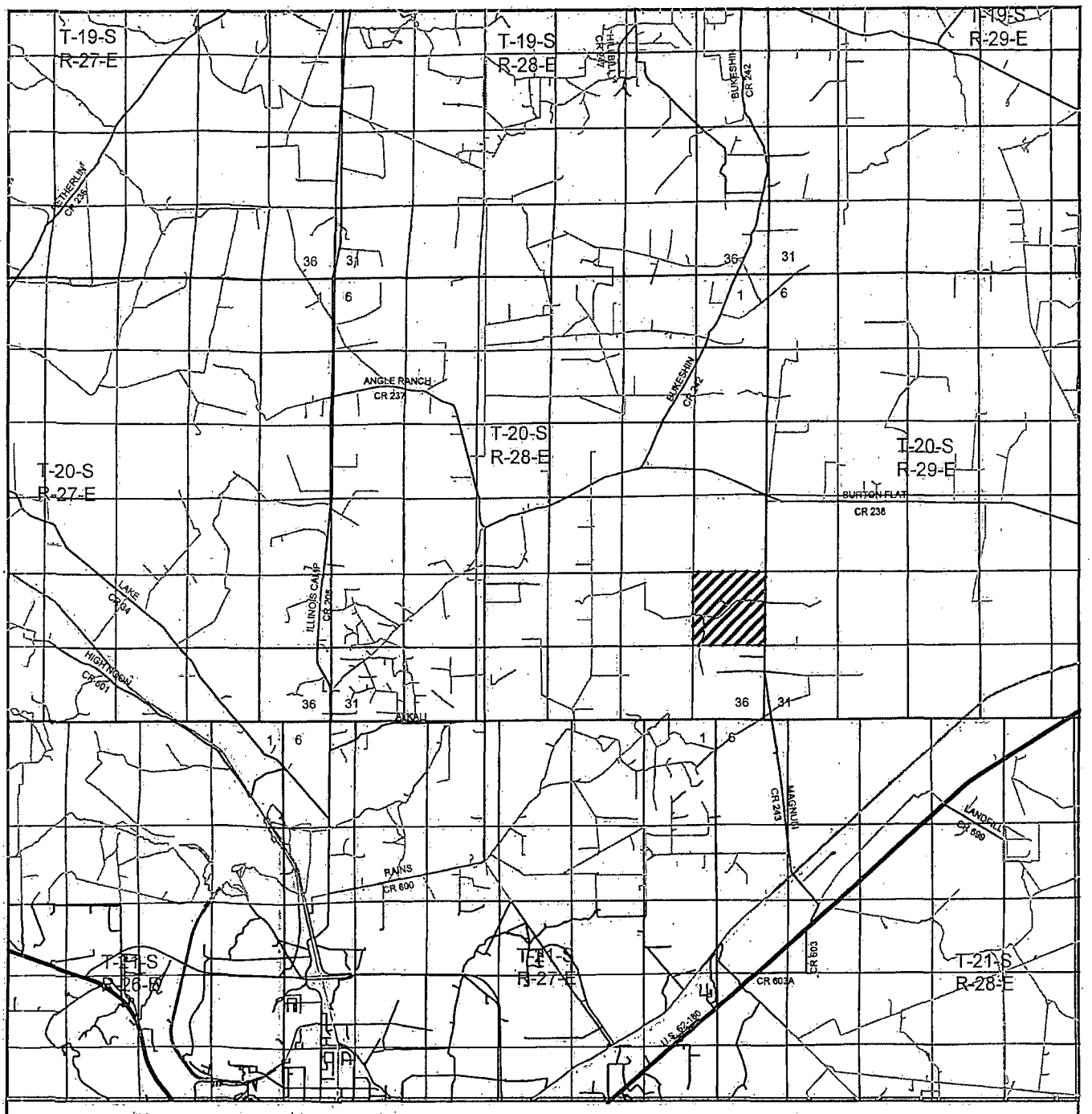


Exhibit A
One-Mile Radius Map
Lee Federal #21
Cimarex Energy Co. of Colorado
25-20S-28E
SHL 1980 FSL & 330 FEL
BHL 1980 FSL & 330 FWL
Eddy County, NM



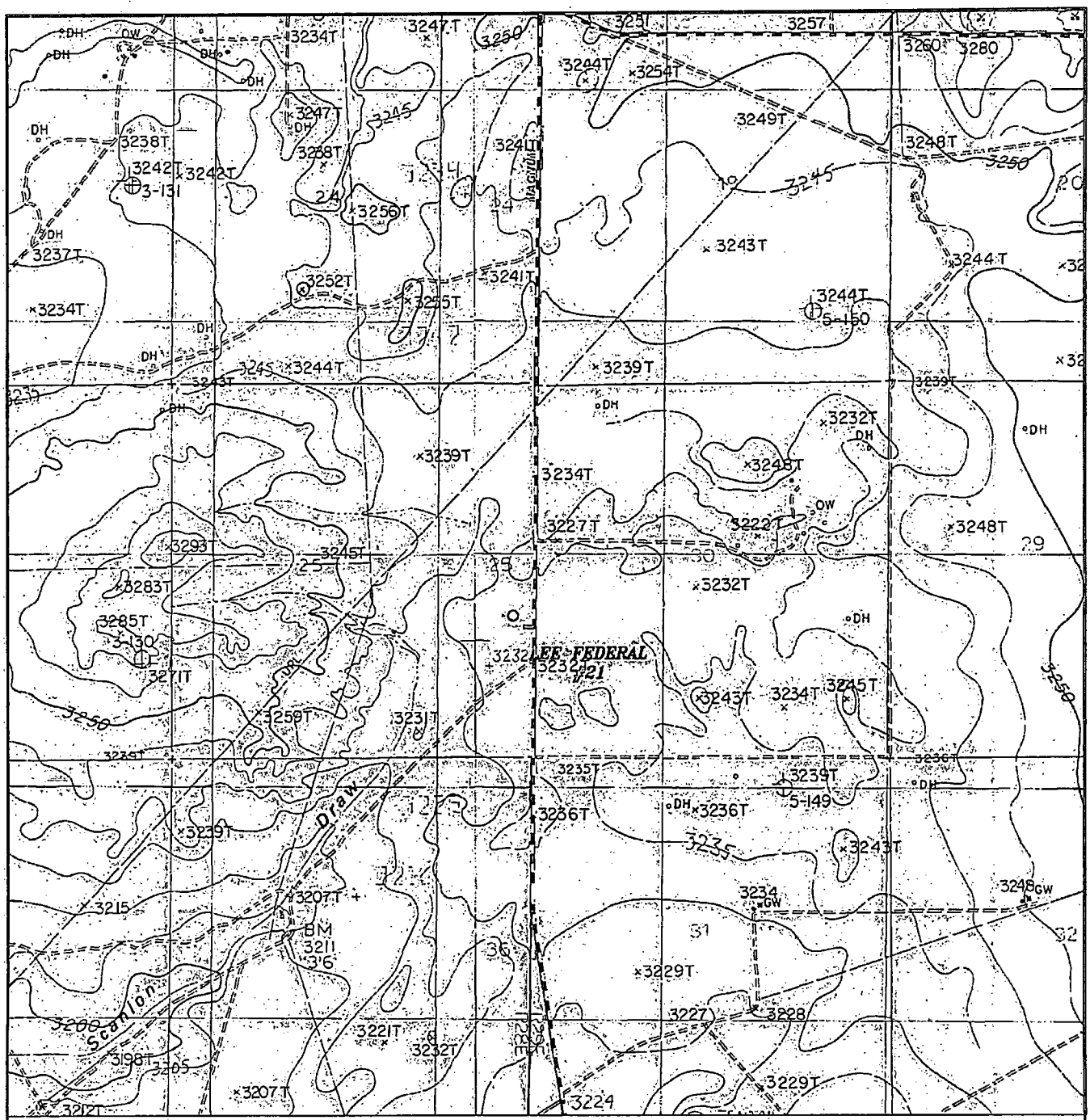
LEE FEDERAL #21
Located 1980' FSL and 330' FEL
Section 25, Township 20 South, Range 28 East,
N.M.P.M., Eddy County, New Mexico.

basin surveys
focused on excellence in the oilfield
P.O. Box 1786
1120 N. West County Rd.
Hobbs, New Mexico 88241
(575) 393-7316 – Office
(575) 392-2206 – Fax
basinsurveys.com

W.O. Number:	JMS 25880
Survey Date:	01-07-2012
Scale:	1" = 2 Miles
Date:	01-09-2012

N

CIMAREX ENERGY CO. OF COLORADO



LEE FEDERAL #21
Located 1980' FSL and 330' FEL
Section 25, Township 20 South, Range 28 East,
N.M.P.M., Eddy County, New Mexico.

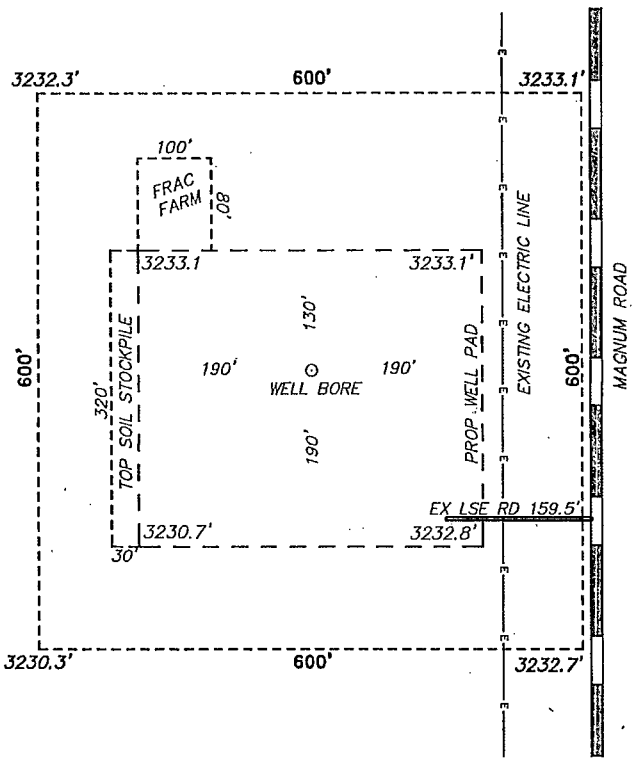
Basin Surveys
focused on excellence in the oilfield
P.O. Box 1786
1120 N. West County Rd.
Hobbs, New Mexico 88241
(575) 393-7316 – Office
(575) 392-2206 – Fax
basinsurveys.com

W.O. Number:	JMS 25880
Survey Date:	01-07-2012
Scale:	1" = 2000'
Date:	01-09-2012

CIMAREX ENERGY CO. OF COLORADO

Exhibit G

SECTION 25, TOWNSHIP 20 SOUTH, RANGE 28 EAST, N.M.P.M.,
EDDY COUNTY, **NEW MEXICO.**



CIMAREX ENERGY CO. OF COLORADO
LEE FEDERAL #21H
ELEV. – 3232'
Lat – N 32°32'33.75"
Long – W 104°07'25.29"
NMSPCE– N 561231.4
E 605938.3
(NAD–83)

CARLSBAD, NM IS ±11MILES TO THE SOUTHWEST OF LOCATION.

Directions to Location:

FROM MILE MARKER OF BURTON FLATS AND MAGNUM, GO SOUTH MAGNUM FOR 1.7 MILES TO PROPOSED LEASE ROAD.

200 0 200 400 FEET
SCALE: 1" = 200'

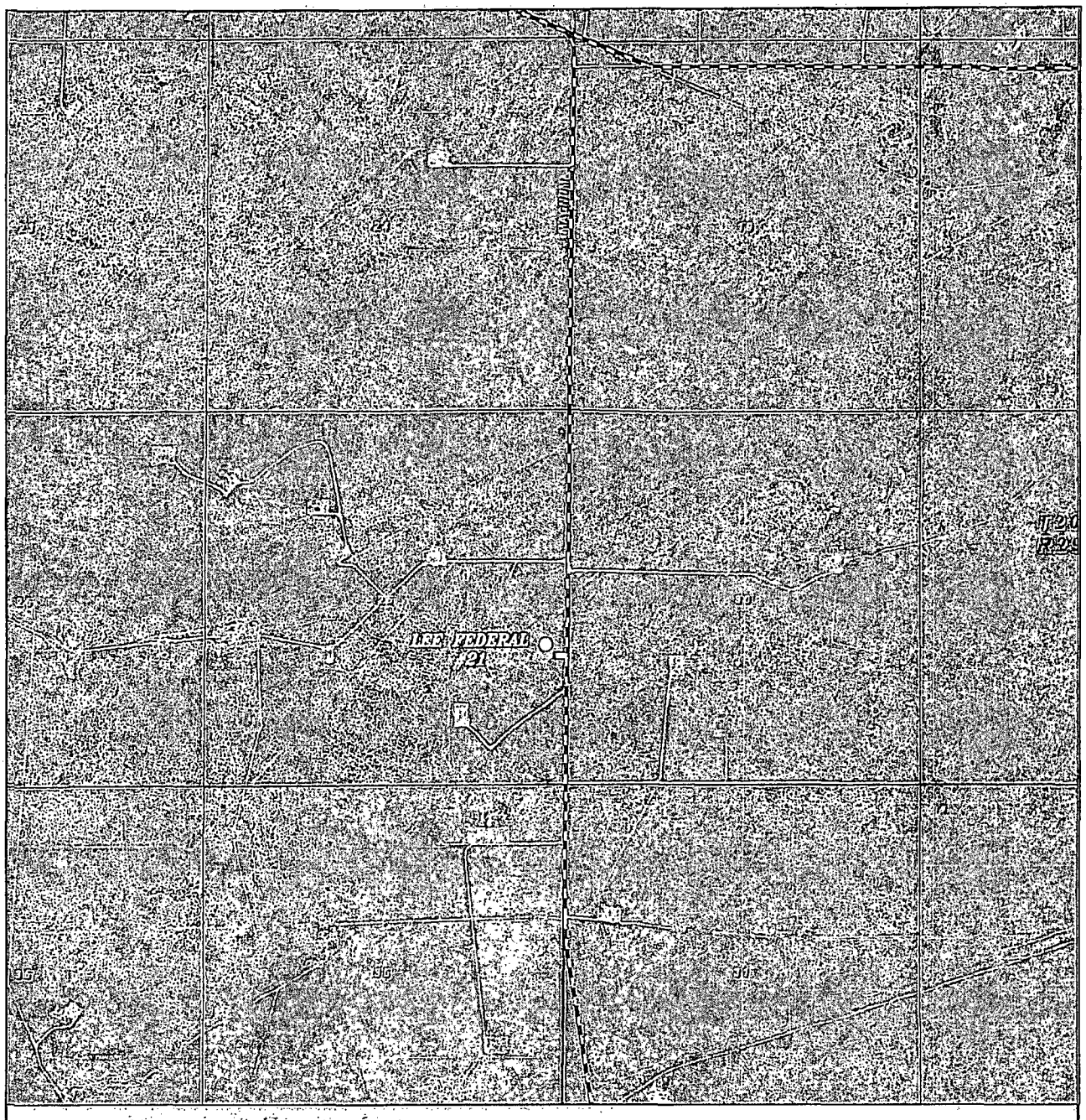
CIMAREX ENERGY CO.

REF: LEE FEDERAL #21H / WELL PAD TOPO

THE LEE FEDERAL #21H LOCATED 1980'
FROM THE SOUTH LINE AND 330' FROM THE EAST LINE OF
SECTION 25, TOWNSHIP 20 SOUTH, RANGE 28 EAST,
N.M.P.M., EDDY COUNTY, NEW MEXICO.

Basin Surveys
focused on excellence in the oilfield
P.O. Box 1786
1120 N. West County Rd.
Hobbs, New Mexico 88241
(575) 393-7316 – Office
(575) 392-2206 – Fax
basinsurveys.com

W.O. Number: 30350	Drawn By: K. NORRIS	Date: 04-26-2014	Survey Date: 04-23-2014	Sheet 1 of 1 Sheets



LEE FEDERAL #21
Located 1980' FSL and 330' FEL
Section 25, Township 20 South, Range 28 East,
N.M.P.M., Eddy County, New Mexico.

basin surveys
focused on excellence in the oilfield

P.O. Box 1786
1120 N. West County Rd.
Hobbs, New Mexico 88241
(575) 393-7316 – Office
(575) 392-2206 – Fax
basinsurveys.com

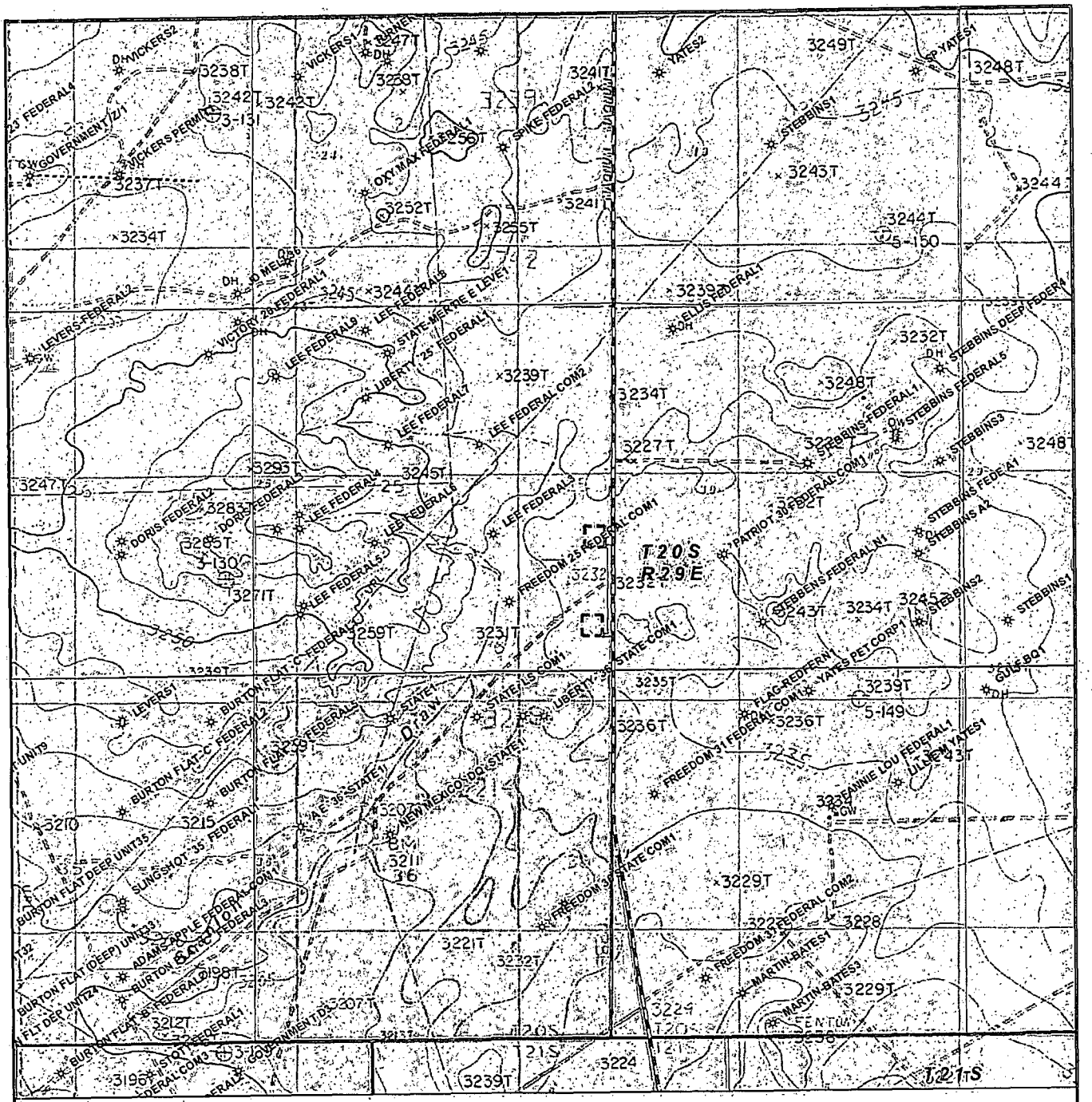
W.O. Number: JMS 25880

Scale: 1" = 2000'

YELLOW TINT – USA LAND
BLUE TINT – STATE LAND
NATURAL COLOR – FEE LAND

N

CIMAREX ENERGY CO. OF COLORADO



PROPOSED PIPELINE ROW FOR THE LEE FEDERAL #21
Section 25, Township 20 South, Range 28 East, N.M.P.M., Eddy County, New Mexico.

Basin Surveys
focused on excellence in the oilfield
P.O. Box 1786
1120 N. West County Rd.
Hobbs, New Mexico 88241
(575) 393-7316 – Office
(575) 392-2206 – Fax
basinsurveys.com

0' 1000' 2000' 3000' 4000'
SCALE: 1" = 2000'

W.O. Number: JG 29880

Survey Date: 12-14-2013

YELLOW TINT – USA LAND
BLUE TINT – STATE LAND
NATURAL COLOR – FEE LAND

N

CIMAREX ENERGY CO.

Application to Drill
Lee Federal #21H
Cimarex Energy Co.
UL: I, Sec. 25, 20S, 28E
Eddy Co., 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 1980 FSL & 330 FEL
BHL 1980 FSL & 330 FWL

2. Elevation Above Sea Level: 3,232' 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: 12,237 MD 7,680 TVD Pilot Hole TD: N/A

6. Estimated Tops of Geological Markers:

Formation	Est Top	Bearing
Rustler	160	N/A
Salt	300	N/A
Tansill	820	N/A
Capitan	1410	N/A
Delaware Sands	2950	N/A
Bone Spring	5500	N/A
Avalon Shale	5900	N/A
1st BSS	6630	N/A
2nd BSS	7480	N/A

7. Possible Mineral Bearing Formation: Shown above

7A. OSE Ground Water Estimated Depth:

Replaced 10/16/14

8. Casing Program:

Name	Casing Depth From (ft)	Casing Setting Depth (ft) MD	Casing Setting Depth (ft)TVD	Open Hole Size (inches)	Casing Size (inches)	Casing Weight (lb/ft)	Casing Grade	Thread	Conditon	BHP (psig)	Anticipated Mud Weight (ppg)	Collapse SF at Full Evacuation(1.125)	Collapse SF at 1/3 Evacuation(1.125)	Burst SF (1.125)	Cumulative Air Weight	Cumulative Bouyed Weight (lbs)	Bouyant Tension SF (1.8)
Surface	0	250	375 250	17 1/2	13-3/8"	48.00	H-40	ST&C	New	107	8.3	6.86		16.03	12,000	10,479	30.73
Intermediate	0	2920	2920	12 1/4	9-5/8"	36.00	J-55	LT&C	New	1518	10.0		1.52	2.32	105,120	89,071	5.09
Production	0	7414	7414	8 3/4	5-1/2"	17.00	L-80	LT&C	New	3469	9.0	1.81		2.23	130,560	112,620	3.00
Production	7414	12237	7680	8 3/4	5-1/2"	17.00	L-80	BT&C	New	3594	9.0	1.75		2.15	4,522	3,901	101.78

Note: Operator may drill a 8-1/2" OH from end of curve to TD of the well. This is to reduce the need to ream the conventionally drilled curve to run a RSS assembly into the lateral.

Application to Drill
Lee Federal #21H
Cimarex Energy Co.
UL: I, Sec. 25, 20S, 28E
Eddy Co., NM

8A. Casing Design and Casing Loading Assumptions:

Surface	Tension	A 1.8 design factor with effects of buoyancy: 8.30 ppg.
	Collapse	A 1.125 design factor with full internal evacuation and a collapse force equal to a 8.30 ppg mud gradient.
	Burst	A 1.125 design with a surface pressure equal to the fracture gradient at setting depth less gas gradient to surface.
Intermediate	Tension	A 1.8 design factor with effects of buoyancy: 10.00 ppg.
	Collapse	A 1.125 design factor evacuated 1/3 TVD of next casing string with a collapse force equal to a 10.00 ppg mud gradient.
	Burst	A 1.125 design with a surface pressure equal to the fracture gradient at setting depth less gas gradient to surface.
Production and\or Production Completion System	Tension	A 1.8 design factor with effects of buoyancy: 9.00 ppg.
	Collapse	A 1.125 design factor with full internal evacuation of next casing string with a collapse force equal to a 9.00 ppg mud gradient.
	Burst	A 1.125 design with a surface pressure equal to the fracture gradient at setting depth less gas gradient to surface.

9. Cementing Program:

Casing Type	Type	Sacks	Yield	Weight	Cubic Feet	Cement Blend
Surface	Tail	162	1.34	14.80	217	Class C + LCM, 6.32 gps water
	TOC: 0		**25% Excess**			**Centralizers per Onshore Order 2.III.B.1f**
Intermediate	Lead	737	1.88	12.90	1385	35:65 (poz/C) + Salt + Bentonite + LCM + retarder, 9.65 gps water
	Tail	171	1.34	14.80	228	Class C + retarder + LCM, 6.32 gps water
	TOC: 0		**84% Excess**			
Production	Lead	547	2.40	11.90	1312	35:65 (poz/H) + salt + Sodium Metasilcate + Bentonite + Fluid Loss + Dispersant + LCM + Retarder, 13.80 gps water
	Tail	1356	1.24	14.50	1681	50:50 (poz/H) + Bentonite + Salt + Fluid Loss + Dispersant + LCM + Retarder, 5.55 gps water
	TOC: 2720		**25% Excess**			**No centralizers planned in the lateral section. 1 every jt from EOC to KOP. 1 every 4th joint from KOP to 500' inside previous casing.**

Cement volumes will be adjusted depending on hole size

9a. Proposed Drilling Plan:

Pilot Hole TD: No Pilot KOP: 7,414' EOC: 7,863'

Set Surface and Intermediate casing strings. Drill production hole to KOP. Continue drillling lateral through the curve to TD. Run prod casing & cement.

10. Pressure Control Equipment:

Exhibit "E-1". A BOP consisting of two rams with blind rams and pipe rams, and one annular preventer. Below the surface casing, a 2M system will be used. Below the intermediate casing, a 3M system will be used. See attachments for BOP and choke manifold diagrams. An accumulator that meets the requirements in Onshore Order #2 for the pressure rating of the BOP stack. A Rotating head may be installed as needed. 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 and associated equipment will be installed, used, maintained, and tested in a manner necessary to assure well control and shall be in place and operational prior to drilling the surface casing shoe. The Annular Preventer shall be functioned at least weekly. The pipe and blind rams will be operated each trip. No abnormal pressure or temperature is expected while drilling.

BOPS will be tested by an independent service company. The ram preventers, choke manifold, and safety valves will be tested as follows: On the surface casing, pressure tests will be made to 250 psi low and 2000 psi high. On the intermediate casing, pressure tests will be made to 250 psi low and 3000 psi high.

The Annular Preventer will be tested to 250 psi low and 1000 psi high on the surface casing, and 250 low and 1500 high on the intermediate casing.

Cimarex Energy Co. of Colorado requests a variance to drill this well using a co-flex line between the BOP and choke manifold. Certification for proposed co-flex hose is attached (please see Exhibit F, F-1, F-2, F-3). The hose is not required by the manufacturer to be anchored. In the event the specific hose is not available, one of equal or higher rating will be used.

11. Proposed Mud Circulating System:

Application to Drill
Lee Federal #21H
Cimarex Energy Co.
UL: I, Sec. 25, 20S, 28E
Eddy Co., NM

Depth	Mud Weight	Visc	Fluid Loss	Type Mud
0' to 250'	8.30	28	NC	FW Spud Mud
250' to 2920'	10.00	30-32	NC	Brine Water
2920' to 12237'	9.00	30-32	NC	FW/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.

The Mud Monitoring System is an electronic Pason System satisfying requirements of Onshore Order 1.

12. Testing, Logging and Coring Program:

A. Mud logging program: 2 man unit from 2920 to TD
B. Electric logging program: CNL / LDT / CAL / GR, DLL /GR -- Inter. Csg to TD
CNL /GR -- Surf to Inter. Csg
C. No DSTs or cores are planned at this time
D.CBL w/ CCL from as far as gravity will let it fall to TOC

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: 3456 psi Estimated BHT: 141°

14. Construction and Drilling:

Road and location construction will begin after BLM approval of APD. Anticipated spud date as soon as approved.
Drilling expected to take: 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:

If production casing is run an additional 30 days will be required to complete and construct surface facilities.
1st BSS pay will be perforated and stimulated.
The proposed well will be tested and potentialed as **Oil**

Application to Drill
Lee Federal #21H
Cimarex Energy Co.
UL: I, Sec. 25, 20S, 28E
Eddy Co., 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 1980 FSL & 330 FEL
BHL 1980 FSL & 330 FWL

2. Elevation Above Sea Level: 3,232' 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: 12,237 MD 7,680 TVD Pilot Hole TD: N/A

6. Estimated Tops of Geological Markers:

Formation	Est Top	Bearing
Rustler	160	N/A
Salt	300	N/A
Tansill	820	N/A
Capitan	1410	N/A
Delaware Sands	2950	N/A
Bone Spring	5500	N/A
Avalon Shale	5900	N/A
1st BSS	6630	N/A
2nd BSS	7480	N/A

Replaced

7. Possible Mineral Bearing Formation: Shown above

7A. OSE Ground Water Estimated Depth:

8. Casing Program:

Name	Casing Depth From (ft)	Casing Setting Depth (ft) MD	Casing Setting Depth (ft)TVD	Open Hole Size (inches)	Casing Size (inches)	Casing Weight (lb/ft)	Casing Grade	Thread	Conditon	BHP (psig)	Anticipated Mud Weight (ppg)	Collapse SF at Full Evacuation(1.125)	Collapse SF at 1/3 Evacuation(1.125)	Burst SF (1.125)	Cumulative Air Weight	Cumulative Bouyed Weight (lbs)	Bouyant Tension SF (1.8)
Surface	0	250	250	26	20"	94.00	J-55	BT&C	New	114	8.8	4.55		18.44	23,500	20,343	68.92
Intermediate	0	1400	1400	17 1/2	13-3/8"	54.50	J-55	ST&C	New	742	10.2		2.13	3.69	76,300	64,418	7.98
Intermediate 2	0	3000	3000	12 1/4	9-5/8"	36.00	J-55	LT&C	New	1372	8.8		1.72	2.56	108,000	93,490	4.85
Production	0	7414	7414	8 3/4	5-1/2"	17.00	L-80	LT&C	New	3546	9.2	1.77		2.18	130,560	112,222	3.01
Production	7414	12237	7680	8 3/4	5-1/2"	17.00	L-80	BT&C	New	3674	9.2	1.71		2.11	4,522	3,887	102.14

Note: Intermediate Casing has a DV Tool/ACP set @ 1550 ft +/- 100'.
Will select suitable seat for ACP based on drilling recorder rate of penetration, above the lost circulation zone.

Application to Drill
Lee Federal #21H
Cimarex Energy Co.
UL: I, Sec. 25, 20S, 28E
Eddy Co., NM

8A. Casing Design and Casing Loading Assumptions:

Surface	Tension	A 1.8 design factor with effects of buoyancy: 8.80 ppg.
	Collapse	A 1.125 design factor with full internal evacuation and a collapse force equal to a 8.80 ppg mud gradient.
	Burst	A 1.125 design with a surface pressure equal to the fracture gradient at setting depth less gas gradient to surface.
Intermediate	Tension	A 1.8 design factor with effects of buoyancy: 10.20 ppg.
	Collapse	A 1.125 design factor evacuated 1/3 TVD of next casing string with a collapse force equal to a 10.20 ppg mud gradient. During the running of the casing, the operator will stop and fill the casing as need to ensure it does not collapse.
	Burst	A 1.125 design with a surface pressure equal to the fracture gradient at setting depth less gas gradient to surface.
Intermediate 2	Tension	A 1.8 design factor with effects of buoyancy: 8.80 ppg.
	Collapse	A 1.125 design factor evacuated 1/3 TVD of next casing string with a collapse force equal to a 8.80 ppg mud gradient. During the running of the casing, the operator will stop and fill the casing as need to ensure it does not collapse.
	Burst	A 1.125 design with a surface pressure equal to the fracture gradient at setting depth less gas gradient to surface.
Production and\or Production Completion System	Tension	A 1.8 design factor with effects of buoyancy: 9.20 ppg.
	Collapse	A 1.125 design factor with full internal evacuation of next casing string with a collapse force equal to a 9.20 ppg mud gradient.
	Burst	A 1.125 design with a surface pressure equal to the fracture gradient at setting depth less gas gradient to surface.

9. Cementing Program:

Casing Type	Type	Sacks	Yield	Weight	Cubic Feet		Cement Blend
Surface	Tail	355	1.33	14.80		471	Class C Neat, 6.570 gps water
	TOC: 0		**25% Excess**				**Centralizers per Onshore Order 2.III.B.1f**
Intermediate	Lead	619	1.88	12.90		1162	35:65 (Poz:C) + Salt + Bentonite, 9.650 gps water
	Tail	183	1.34	14.80		244	Class C + LCM, 6.320 gps water
	TOC: 0		**44% Excess**				
Intermediate 2 - Stage #2		339	1.88	12.90		637	35:65 (Poz:C) + Salt + Bentonite, 9.650 gps water
	TOC: 0		**0% Excess**				
Intermediate 2 - Stage #1	Lead	213	1.88	12.90		400	35:65 (Poz:C) + Salt + Bentonite, 9.650 gps water
	Tail	176	1.34	14.80		235	Class C + LCM, 6.320 gps water
	TOC: 1550		**39% Excess**				
Production	Lead	704	2.33	11.90		1640	35:65(Poz:H) + Salt + Bentonite + Retarder + Dispersant, 13.400 gps water
	Tail	1204	1.23	14.50		1480	50:50 (Poz:H) + Salt + Bentonite + Fluid Loss + Dispersant + Retarder + LCM + Antisettling Agent + Antifoam, 5.330 gps water
	TOC: 1500		**14% Excess**				**No centralizers planned in the lateral section. 1 every jt from EOC to KOP. 1 every 4th joint from KOP to 500' inside previous casing.**

Cement volumes will be adjusted depending on hole size

9a. Proposed Drilling Plan:

Pilot Hole TD: No Pilot KOP: 7,414' EOC: 7,863'

Set Surface and Intermediate casing strings. Drill production hole to KOP. Continue drillling lateral through the curve to TD. Run prod casing & cement.

Application to Drill
Lee Federal #21H
Cimarex Energy Co.
UL: I, Sec. 25, 20S, 28E
Eddy Co., NM

10. Pressure Control Equipment:
Exhibit "E-1". A BOP consisting of two rams with blind rams and pipe rams, and one annular preventer. Below the surface casing, a 2M system will be used. Below the intermediate casing, a 2M system will be used. See attachments for BOP and choke manifold diagrams. An accumulator that meets the requirements in Onshore Order #2 for the pressure rating of the BOP stack. A Rotating head may be installed as needed. 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 and associated equipment will be installed, used, maintained, and tested in a manner necessary to assure well control and shall be in place and operational prior to drilling the surface casing shoe. The Annular Preventer shall be functioned at least weekly. The pipe and blind rams will be operated each trip. No abnormal pressure or temperature is expected while drilling.

BOPS will be tested by an independent service company. The ram preventers, choke manifold, and safety valves will be tested as follows: On the surface casing, pressure tests will be made to 250 psi low and 2000 psi high. On the intermediate casing, pressure tests will be made to 250 psi low and ~~2000~~ 3000 psi high.

The Annular Preventer will be tested to 250 psi low and 1000 psi high on the surface casing, and 250 low and ~~1000~~ 1500 high on the intermediate casing.

Cimarex Energy Co. of Colorado requests a variance to drill this well using a co-flex line between the BOP and choke manifold. Certification for proposed co-flex hose is attached (please see Exhibit F, F-1, F-2, F-3). The hose is not required by the manufacturer to be anchored. In the event the specific hose is not available, one of equal or higher rating will be used.

11. Proposed Mud Circulating System:

Depth	Mud Weight	Visc	Fluid Loss	Type Mud
0' to 250' 375	8.30 - 8.80	28	NC	FW Spud Mud
250' to 1400' 1250	9.70 - 10.20	30-32	NC	Brine Water
1400' to 12237' 2920	8.70 - 9.20	30-32	NC	FW/Cut Brine

1250 - 2920 - FW

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.

The Mud Monitoring System is an electronic Pason System satisfying requirements of Onshore Order 1.

12. Testing, Logging and Coring Program:

A. Mud logging program: 2 man unit from 1400 to TD
B. Electric logging program: CNL / LDT / CAL / GR, DLL /GR -- Inter. Csg to TD
CNL /GR -- Surf to Inter. Csg
C. No DSTs or cores are planned at this time
D.CBL w/ CCL from as far as gravity will let it fall to TOC

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: 3456 psi Estimated BHT: 141°

14. Construction and Drilling:
Road and location construction will begin after BLM approval of APD. Anticipated spud date as soon as approved.
Drilling expected to take: 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:
If production casing is run an additional 30 days will be required to complete and construct surface facilities.
1st BSS pay will be perforated and stimulated.
The proposed well will be tested and potentialed as **Oil**

1. Geological Formations

TVD of target 7,680 Pilot Hole TD N/A
MD at TD 12,237 Deepest expected fresh water

Formation	Depth (TVD) from KB	Water/Mineral Bearing/Target Zone	Hazards
Rustler	160	N/A	
Salt	300	N/A	
Tansill	820	N/A	
Capitan	1410	N/A	
Delaware Sands	2950	N/A	
Bone Spring	5500	N/A	
Avalon Shale	5900	N/A	
1st BSS	6630	N/A	
2nd BSS	7480	N/A	

2. Casing Program

See COA

Hole Size	Casing Depth From	Casing Depth To	Casing Size	Weight (lb/ft)	Grade	Conn.	SF Collapse	SF Burst	SF Tension
26	0	315 ~~280~~	20"	94.00	J-55	BT&C	4.55	18.44	59.66
17 1/2	0	1250 ~~1400~~	13-3/8"	54.50	J-55	ST&C	1.52	3.69	6.74
12 1/4	0	2920 ~~3000~~	9-5/8"	36.00	J-55	LT&C	1.47	2.56	4.19
8 3/4	0	7414	5-1/2"	17.00	L-80	LT&C	1.77	2.18	2.59
8 3/4	7414	12237	5-1/2"	17.00	L-80	BT&C	1.71	2.11	87.79
				BLM Minimum Safety Factor			1.125	1	1.6 Dry 1.8 Wet

All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.h

	Y or N
Is casing new? If used, attach certification as required in Onshore Order #1	Y
Does casing meet API specifications? If no, attach casing specification sheet.	Y
Is premium or uncommon casing planned? If yes attach casing specification sheet.	N
Does the above casing design meet or exceed BLM's minimum standards? If not provide justification (loading assumptions, casing design criteria).	Y
Will the intermediate pipe be kept at a minimum 1/3 fluid filled to avoid approaching the collapse pressure rating of the casing?	Y
Is well located within Capitan Reef?	Y
If yes, does production casing cement tie back a minimum of 50' above the Reef?	Y
Is well within the designated 4 string boundary.	Y
Is well located in SOPA but not in R-111-P?	N
If yes, are the first 2 strings cemented to surface and 3rd string cement tied back 500' into previous casing?	N
Is well located in R-111-P and SOPA?	N
If yes, are the first three strings cemented to surface?	N
Is 2nd string set 100' to 600' below the base of salt?	N
Is well located in high Cave/Karst?	N
If yes, are there two strings cemented to surface?	N
(For 2 string wells) If yes, is there a contingency casing if lost circulation occurs?	N
Is well located in critical Cave/Karst?	Y
If yes, are there three strings cemented to surface?	N

3. Cementing Program

Casing	# Sks	Wt. lb/gal	Yld ft3/sack	H2O gal/sk	500# Comp. Strength (hours)	Slurry Description
Surface	352	14.80	1.34	6.32	9.5	Tail: Class C + LCM
Intermediate	619	12.90	1.88	9.65	30	Lead: 35:65 (Poz:C) + Salt + Bentonite
	183	14.80	1.34	6.32	9.5	Tail: Class C + LCM
Intermediate 2 - Stage #2	339	12.90	1.88	9.65	30	Lead: 35:65 (Poz:C) + Salt + Bentonite
	DV/ECP Tool 1550'					
Intermediate 2 - Stage #1	213	12.90	1.88	9.65	30	Lead: 35:65 (Poz:C) + Salt + Bentonite
	176	14.80	1.34	6.32	9.5	Tail: Class C + LCM
	~~DV/ECP Tool 3100'~~					
Production	766	11.90	2.40	13.80	30	Lead: 35:65 (poz/H) + Salt + Sodium Metasilcate + Bentonite + Fluid Loss + Dispersant + LCM + Retarder
	1032	14.50	1.30	5.79	20	Tail: 50:50 (Poz:H) + Salt + Bentonite + Fluid Loss + Dispersant + Expanding Agent + Retarder + Antifoam

See COA

DV tool depth(s) will be adjusted based on hole conditions and cement volumes will be adjusted proportionally. DV tool will be set a minimum of 50 feet below previous casing and a minimum of 200 feet above current shoe. Lab reports with the 500 psi compressive strength time for the cement will be onsite for review.

Casing String	TOC	% Excess
Surface	0	25
Intermediate	0	44
Intermediate 2 ~~Stage#1~~	0 ~~1550~~	39
Production	1350	15

See COA

4. Pressure Control Equipment

	A variance is requested for the use of a diverter on the surface casing. See attached for schematic.

BOP installed and tested before drilling which hole?	Size	Min Required WP	Type		Tested To
~~12-1/4~~ 17.5	13 5/8	2M	Annular	X	50% of working pressure
			Blind Ram	X	2M
			Pipe Ram	X	
			Double Ram		
			Other		
~~8-3/4~~ 12.25	13 5/8	3M	Annular	X	50% of working pressure
			Blind Ram	X	3M
			Pipe Ram	X	
			Double Ram		
			Other		

BOP/BOPE will be tested by an independent service company to 250 psi low and the high pressure indicated above per Onshore Order 2 requirements. The System may be upgraded to a higher pressure but still tested to the working pressure listed in the table above. If the system is upgraded all the components installed will be functional and tested.

Pipe rams will be operationally checked each 24 hour period. Blind rams will be operationally checked on each trip out of the hole. These checks will be noted on the daily tour sheets. Other accessories to the BOP equipment will include a Kelly cock and floor safety valve (inside BOP) and choke lines and choke manifold. See attached schematics.

	Formation integrity test will be performed per Onshore Order #2. On Exploratory wells or on that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.i.	
√	A variance is requested for the use of a flexible choke line from the BOP to Choke Manifold. See attached for specs and hydrostatic test chart.	
	N	Are anchors required by manufacturer?

5. Mud Program

Depth	Type	Weight (ppg)	Viscosity	Water Loss
0' to 375'	FW Spud Mud	8.30 - 8.80	28	N/C
375' to 1250'	Brine Water	9.70 - 10.20	30-32	N/C
1250' to 2920'	Fresh Water	8.30 - 8.80	28	N/C
2920' to 12237'	FW/Cut Brine	8.70 - 9.20	30-32	N/C

Sufficient mud materials to maintain mud properties and meet minimum lost circulation and weight increase requirements will be kept on location at all times.

What will be used to monitor the loss or gain of fluid?	PVT/Pason/Visual Monitoring

6. Logging and Testing Procedures

Logging, Coring and Testing	
	Will run GR/CNL fromTD to surface (horizontal well – vertical portion of hole). Stated logs run will be in the Completion Report and submitted to the BLM.
	No logs are planned based on well control or offset log information.
	Drill stem test?
	Coring?

Additional Logs Planned	Interval

7. Drilling Conditions

Condition	
BH Pressure at deepest TVD	3674 psi
Abnormal Temperature	No

Hydrogen Sulfide (H2S) monitors will be installed prior to drilling out the surface shoe. If H2S is detected in concentrations greater than 100 ppm, the operator will comply with the provisions of Onshore Oil and Gas Order #6. If Hydrogen Sulfide is encountered, measured values and formations will be provided to the BLM.	
X	H2S is present
X	H2S plan is attached

8. Other Facets of Operation

Cimarex Energy Co. of Colorado

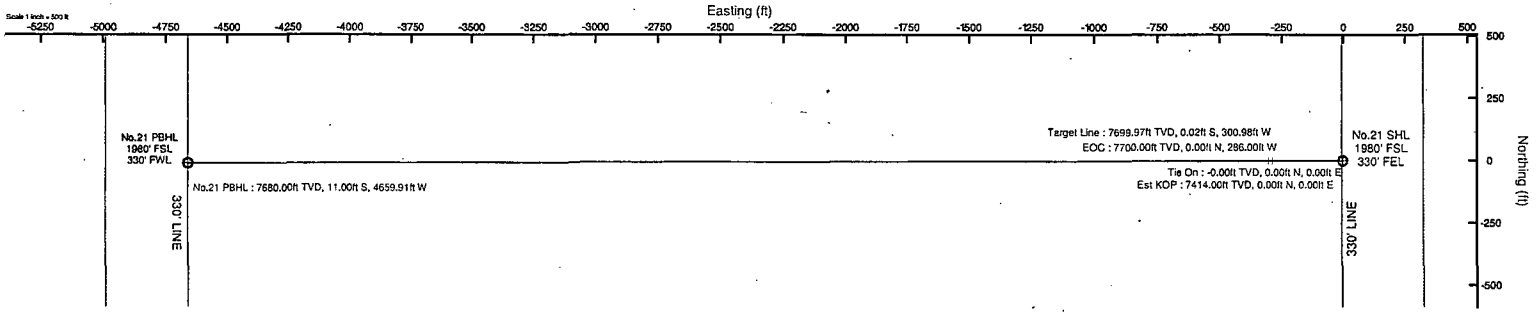
Location: Eddy County, NM
Field: (Lee) Sec 25, T20S, R28E
Facility: Lee Federal No.21

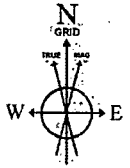
Slot: No.21 SHL
Well: No.21
Wellbore: No.21 PWB

Well Profile Data

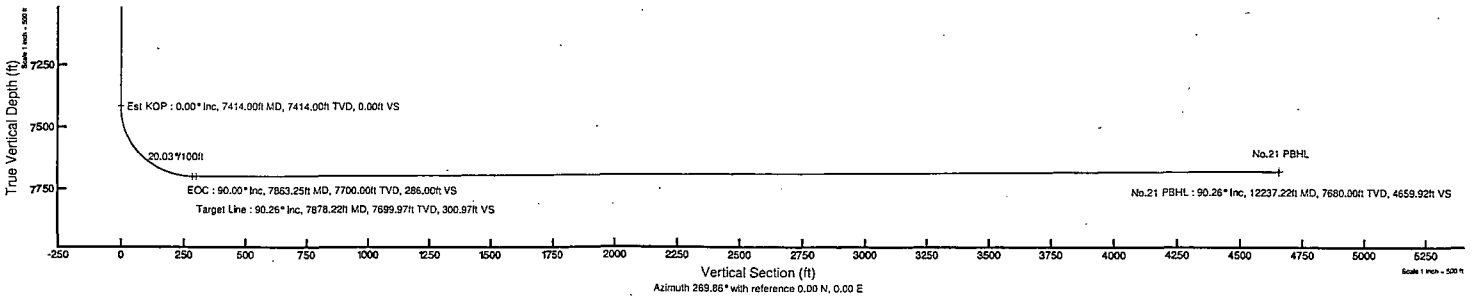
Design Comment	MD (ft)	Inc (°)	Az (°)	TVD (ft)	Local N (ft)	Local E (ft)	DLS (°/100ft)	VS (ft)
Tie On	0.00	0.000	270.000	0.00	0.00	0.00	0.00	0.00
Est KOP	7414.00	0.000	270.000	7414.00	0.00	0.00	0.00	0.00
EOC	7863.25	90.000	270.000	7700.00	0.00	-286.00	20.03	286.00
Target Line	7878.22	90.262	269.856	7699.97	-0.02	-300.98	2.00	300.97
No.21 PBHL	12237.22	90.262	269.856	7680.00	-11.00	-4659.91	0.00	4659.92

Plot reference wellpath is Prelim_1	
True vertical depths are referenced to Rig on No.21 SHL (RT)	Grid System: NAD83 / TM New Mexico SP, Eastern Zone (3001), US feet
Measured depths are referenced to Rig on No.21 SHL (RT)	North Reference: Grid north
Rig on No.21 SHL (RT) to Mean Sea Level: 3232 feet	Scale: True distance
Mean Sea Level to Mud line (At Slot: No.21 SHL): -3232 feet	Depths are in feet
Coordinates are in feet referenced to Slot	Created by: gentbry on 2/3/2012





BGGM (1945.0 to 2013.0) Dip: 60.34° Field: 48687.6 nT
Magnetic North is 7.87 degrees East of True North (at 2/3/2012)
Grid North is 0.11 degrees East of True North
To correct azimuth from True to Grid subtract 0.11 degrees
To correct azimuth from Magnetic to Grid add 7.76 degrees
For example: if the Magnetic North Azimuth = 90 degs, then the Grid North Azimuth = 90 + 7.76 = 97.76



Azimuth 269.86° with reference 0.00 N, 0.00 E

Planned Wellpath Report

Prelim_1

REFERENCE WELLPATH IDENTIFICATION			
Operator	**Cimarex Energy Co. of Colorado**	Slot	**No.21 SHL**
Area	**Eddy County, NM**	Well	**No.21**
Field	**(Lee) Sec 25, T20S, R28E**	Wellbore	**No.21 PWB**
Facility	**Lee Federal No.21**		

REPORT SETUP INFORMATION			
Projection System	**NAD83 / TM New Mexico SP, Eastern Zone (3001), US feet**	Software System	**WellArchitect® 3.0.0**
North Reference	**Grid**	User	**Gentbry**
Scale	**0.999914**	Report Generated	**2/3/2012** at **2:14:05 PM**
Convergence at slot	**0.11° East**	Database/Source file	**WA Midland/No.21_PWB.xml**

WELLPATH LOCATION	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	**East[ft]**	**Easting[US ft]**	**Northing[US ft]**	**Latitude**	**Longitude**
Slot Location	**0.00**	**0.00**	605938.30	561231.40	32°32'33.749"N	104°07'25.290"W
Facility Reference Pt			**605938.30**	**561231.40**	32°32'33.749"N	104°07'25.290"W
Field Reference Pt			**605924.90**	**559911.80**	32°32'20.691"N	104°07'25.477"W

WELLPATH DATUM			
Calculation method	**Minimum curvature**	Rig on No.21 SHL (RT) to Facility Vertical Datum	**0.00ft**
Horizontal Reference Pt	**Slot**	Rig on No.21 SHL (RT) to Mean Sea Level	**3232.00ft**
Vertical Reference Pt	**Rig on No.21 SHL (RT)**	Rig on No.21 SHL (RT) to Mud Line at Slot (No.21 SHL)	**0.00ft**
MD Reference Pt	**Rig on No.21 SHL (RT)**	Section Origin	**N 0.00, E 0.00 ft**
Field Vertical Reference	**Mean Sea Level**	Section Azimuth	**269.86°**

Planned Wellpath Report

Prelim_1

REFERENCE WELLPATH IDENTIFICATION			
Operator	Cimarex Energy Co. of Colorado	Slot	No.21 SHL
Area	Eddy County, NM	Well	No.21
Field	(Lee) Sec 25, T20S, R28E	Wellbore	No.21 PWB
Facility	Lee Federal No.21		

WELLPATH DATA (133 stations) † = interpolated/extrapolated station

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	DLS [°/100ft]	Comments
0.00	0.000	270.000	0.00	0.00	0.00	0.00	605938.30	561231.40	32°32'33.749"N	104°07'25.290"W	0.00	Tie On
100.00†	0.000	270.000	100.00	0.00	0.00	0.00	605938.30	561231.40	32°32'33.749"N	104°07'25.290"W	0.00	
160.00†	0.000	270.000	160.00	0.00	0.00	0.00	605938.30	561231.40	32°32'33.749"N	104°07'25.290"W	0.00	Rustler
200.00†	0.000	270.000	200.00	0.00	0.00	0.00	605938.30	561231.40	32°32'33.749"N	104°07'25.290"W	0.00	
300.00†	0.000	270.000	300.00	0.00	0.00	0.00	605938.30	561231.40	32°32'33.749"N	104°07'25.290"W	0.00	Salt
400.00†	0.000	270.000	400.00	0.00	0.00	0.00	605938.30	561231.40	32°32'33.749"N	104°07'25.290"W	0.00	
500.00†	0.000	270.000	500.00	0.00	0.00	0.00	605938.30	561231.40	32°32'33.749"N	104°07'25.290"W	0.00	
600.00†	0.000	270.000	600.00	0.00	0.00	0.00	605938.30	561231.40	32°32'33.749"N	104°07'25.290"W	0.00	
700.00†	0.000	270.000	700.00	0.00	0.00	0.00	605938.30	561231.40	32°32'33.749"N	104°07'25.290"W	0.00	
800.00†	0.000	270.000	800.00	0.00	0.00	0.00	605938.30	561231.40	32°32'33.749"N	104°07'25.290"W	0.00	
820.00†	0.000	270.000	820.00	0.00	0.00	0.00	605938.30	561231.40	32°32'33.749"N	104°07'25.290"W	0.00	Tansill
900.00†	0.000	270.000	900.00	0.00	0.00	0.00	605938.30	561231.40	32°32'33.749"N	104°07'25.290"W	0.00	
1000.00†	0.000	270.000	1000.00	0.00	0.00	0.00	605938.30	561231.40	32°32'33.749"N	104°07'25.290"W	0.00	
1100.00†	0.000	270.000	1100.00	0.00	0.00	0.00	605938.30	561231.40	32°32'33.749"N	104°07'25.290"W	0.00	
1200.00†	0.000	270.000	1200.00	0.00	0.00	0.00	605938.30	561231.40	32°32'33.749"N	104°07'25.290"W	0.00	
1300.00†	0.000	270.000	1300.00	0.00	0.00	0.00	605938.30	561231.40	32°32'33.749"N	104°07'25.290"W	0.00	
1400.00†	0.000	270.000	1400.00	0.00	0.00	0.00	605938.30	561231.40	32°32'33.749"N	104°07'25.290"W	0.00	
1410.00†	0.000	270.000	1410.00	0.00	0.00	0.00	605938.30	561231.40	32°32'33.749"N	104°07'25.290"W	0.00	Capitan
1500.00†	0.000	270.000	1500.00	0.00	0.00	0.00	605938.30	561231.40	32°32'33.749"N	104°07'25.290"W	0.00	
1600.00†	0.000	270.000	1600.00	0.00	0.00	0.00	605938.30	561231.40	32°32'33.749"N	104°07'25.290"W	0.00	
1700.00†	0.000	270.000	1700.00	0.00	0.00	0.00	605938.30	561231.40	32°32'33.749"N	104°07'25.290"W	0.00	
1800.00†	0.000	270.000	1800.00	0.00	0.00	0.00	605938.30	561231.40	32°32'33.749"N	104°07'25.290"W	0.00	
1900.00†	0.000	270.000	1900.00	0.00	0.00	0.00	605938.30	561231.40	32°32'33.749"N	104°07'25.290"W	0.00	
2000.00†	0.000	270.000	2000.00	0.00	0.00	0.00	605938.30	561231.40	32°32'33.749"N	104°07'25.290"W	0.00	
2100.00†	0.000	270.000	2100.00	0.00	0.00	0.00	605938.30	561231.40	32°32'33.749"N	104°07'25.290"W	0.00	
2200.00†	0.000	270.000	2200.00	0.00	0.00	0.00	605938.30	561231.40	32°32'33.749"N	104°07'25.290"W	0.00	
2300.00†	0.000	270.000	2300.00	0.00	0.00	0.00	605938.30	561231.40	32°32'33.749"N	104°07'25.290"W	0.00	
2400.00†	0.000	270.000	2400.00	0.00	0.00	0.00	605938.30	561231.40	32°32'33.749"N	104°07'25.290"W	0.00	
2500.00†	0.000	270.000	2500.00	0.00	0.00	0.00	605938.30	561231.40	32°32'33.749"N	104°07'25.290"W	0.00	
2600.00†	0.000	270.000	2600.00	0.00	0.00	0.00	605938.30	561231.40	32°32'33.749"N	104°07'25.290"W	0.00	
2700.00†	0.000	270.000	2700.00	0.00	0.00	0.00	605938.30	561231.40	32°32'33.749"N	104°07'25.290"W	0.00	
2800.00†	0.000	270.000	2800.00	0.00	0.00	0.00	605938.30	561231.40	32°32'33.749"N	104°07'25.290"W	0.00	
2900.00†	0.000	270.000	2900.00	0.00	0.00	0.00	605938.30	561231.40	32°32'33.749"N	104°07'25.290"W	0.00	
2950.00†	0.000	270.000	2950.00	0.00	0.00	0.00	605938.30	561231.40	32°32'33.749"N	104°07'25.290"W	0.00	Delaware Sands
3000.00†	0.000	270.000	3000.00	0.00	0.00	0.00	605938.30	561231.40	32°32'33.749"N	104°07'25.290"W	0.00	
3100.00†	0.000	270.000	3100.00	0.00	0.00	0.00	605938.30	561231.40	32°32'33.749"N	104°07'25.290"W	0.00	
3200.00†	0.000	270.000	3200.00	0.00	0.00	0.00	605938.30	561231.40	32°32'33.749"N	104°07'25.290"W	0.00	
3300.00†	0.000	270.000	3300.00	0.00	0.00	0.00	605938.30	561231.40	32°32'33.749"N	104°07'25.290"W	0.00	
3400.00†	0.000	270.000	3400.00	0.00	0.00	0.00	605938.30	561231.40	32°32'33.749"N	104°07'25.290"W	0.00	
3500.00†	0.000	270.000	3500.00	0.00	0.00	0.00	605938.30	561231.40	32°32'33.749"N	104°07'25.290"W	0.00	
3600.00†	0.000	270.000	3600.00	0.00	0.00	0.00	605938.30	561231.40	32°32'33.749"N	104°07'25.290"W	0.00	
3700.00†	0.000	270.000	3700.00	0.00	0.00	0.00	605938.30	561231.40	32°32'33.749"N	104°07'25.290"W	0.00	
3800.00†	0.000	270.000	3800.00	0.00	0.00	0.00	605938.30	561231.40	32°32'33.749"N	104°07'25.290"W	0.00	
3900.00†	0.000	270.000	3900.00	0.00	0.00	0.00	605938.30	561231.40	32°32'33.749"N	104°07'25.290"W	0.00	
4000.00†	0.000	270.000	4000.00	0.00	0.00	0.00	605938.30	561231.40	32°32'33.749"N	104°07'25.290"W	0.00	

Planned Wellpath Report

Prelim_1

REFERENCE WELLPATH IDENTIFICATION			
Operator	**Cimarex Energy Co. of Colorado**	Slot	**No.21 SHL**
Area	**Eddy County, NM**	Well	**No.21**
Field	**(Lee) Sec 25, T20S, R28E**	Wellbore	**No.21 PWB**
Facility	**Lee Federal No.21**		

WELLPATH DATA (133 stations) † = interpolated/extrapolated station

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	DLS [°/100ft]	Comments
4100.00†	0.000	270.000	4100.00	0.00	0.00	0.00	605938.30	561231.40	32°32'33.749"N	104°07'25.290"W	0.00	
4200.00†	0.000	270.000	4200.00	0.00	0.00	0.00	605938.30	561231.40	32°32'33.749"N	104°07'25.290"W	0.00	
4300.00†	0.000	270.000	4300.00	0.00	0.00	0.00	605938.30	561231.40	32°32'33.749"N	104°07'25.290"W	0.00	
4400.00†	0.000	270.000	4400.00	0.00	0.00	0.00	605938.30	561231.40	32°32'33.749"N	104°07'25.290"W	0.00	
4500.00†	0.000	270.000	4500.00	0.00	0.00	0.00	605938.30	561231.40	32°32'33.749"N	104°07'25.290"W	0.00	
4600.00†	0.000	270.000	4600.00	0.00	0.00	0.00	605938.30	561231.40	32°32'33.749"N	104°07'25.290"W	0.00	
4700.00†	0.000	270.000	4700.00	0.00	0.00	0.00	605938.30	561231.40	32°32'33.749"N	104°07'25.290"W	0.00	
4800.00†	0.000	270.000	4800.00	0.00	0.00	0.00	605938.30	561231.40	32°32'33.749"N	104°07'25.290"W	0.00	
4900.00†	0.000	270.000	4900.00	0.00	0.00	0.00	605938.30	561231.40	32°32'33.749"N	104°07'25.290"W	0.00	
5000.00†	0.000	270.000	5000.00	0.00	0.00	0.00	605938.30	561231.40	32°32'33.749"N	104°07'25.290"W	0.00	
5100.00†	0.000	270.000	5100.00	0.00	0.00	0.00	605938.30	561231.40	32°32'33.749"N	104°07'25.290"W	0.00	
5200.00†	0.000	270.000	5200.00	0.00	0.00	0.00	605938.30	561231.40	32°32'33.749"N	104°07'25.290"W	0.00	
5300.00†	0.000	270.000	5300.00	0.00	0.00	0.00	605938.30	561231.40	32°32'33.749"N	104°07'25.290"W	0.00	
5400.00†	0.000	270.000	5400.00	0.00	0.00	0.00	605938.30	561231.40	32°32'33.749"N	104°07'25.290"W	0.00	
5500.00†	0.000	270.000	5500.00	0.00	0.00	0.00	605938.30	561231.40	32°32'33.749"N	104°07'25.290"W	0.00	Bone Spring
5600.00†	0.000	270.000	5600.00	0.00	0.00	0.00	605938.30	561231.40	32°32'33.749"N	104°07'25.290"W	0.00	
5700.00†	0.000	270.000	5700.00	0.00	0.00	0.00	605938.30	561231.40	32°32'33.749"N	104°07'25.290"W	0.00	
5800.00†	0.000	270.000	5800.00	0.00	0.00	0.00	605938.30	561231.40	32°32'33.749"N	104°07'25.290"W	0.00	
5900.00†	0.000	270.000	5900.00	0.00	0.00	0.00	605938.30	561231.40	32°32'33.749"N	104°07'25.290"W	0.00	Avalon Shale
6000.00†	0.000	270.000	6000.00	0.00	0.00	0.00	605938.30	561231.40	32°32'33.749"N	104°07'25.290"W	0.00	
6100.00†	0.000	270.000	6100.00	0.00	0.00	0.00	605938.30	561231.40	32°32'33.749"N	104°07'25.290"W	0.00	
6200.00†	0.000	270.000	6200.00	0.00	0.00	0.00	605938.30	561231.40	32°32'33.749"N	104°07'25.290"W	0.00	
6300.00†	0.000	270.000	6300.00	0.00	0.00	0.00	605938.30	561231.40	32°32'33.749"N	104°07'25.290"W	0.00	
6400.00†	0.000	270.000	6400.00	0.00	0.00	0.00	605938.30	561231.40	32°32'33.749"N	104°07'25.290"W	0.00	
6500.00†	0.000	270.000	6500.00	0.00	0.00	0.00	605938.30	561231.40	32°32'33.749"N	104°07'25.290"W	0.00	
6600.00†	0.000	270.000	6600.00	0.00	0.00	0.00	605938.30	561231.40	32°32'33.749"N	104°07'25.290"W	0.00	
6630.00†	0.000	270.000	6630.00	0.00	0.00	0.00	605938.30	561231.40	32°32'33.749"N	104°07'25.290"W	0.00	1st BSS
6700.00†	0.000	270.000	6700.00	0.00	0.00	0.00	605938.30	561231.40	32°32'33.749"N	104°07'25.290"W	0.00	
6800.00†	0.000	270.000	6800.00	0.00	0.00	0.00	605938.30	561231.40	32°32'33.749"N	104°07'25.290"W	0.00	
6900.00†	0.000	270.000	6900.00	0.00	0.00	0.00	605938.30	561231.40	32°32'33.749"N	104°07'25.290"W	0.00	
7000.00†	0.000	270.000	7000.00	0.00	0.00	0.00	605938.30	561231.40	32°32'33.749"N	104°07'25.290"W	0.00	
7100.00†	0.000	270.000	7100.00	0.00	0.00	0.00	605938.30	561231.40	32°32'33.749"N	104°07'25.290"W	0.00	
7200.00†	0.000	270.000	7200.00	0.00	0.00	0.00	605938.30	561231.40	32°32'33.749"N	104°07'25.290"W	0.00	
7300.00†	0.000	270.000	7300.00	0.00	0.00	0.00	605938.30	561231.40	32°32'33.749"N	104°07'25.290"W	0.00	
7400.00†	0.000	270.000	7400.00	0.00	0.00	0.00	605938.30	561231.40	32°32'33.749"N	104°07'25.290"W	0.00	
7414.00	0.000	270.000	7414.00	0.00	0.00	0.00	605938.30	561231.40	32°32'33.749"N	104°07'25.290"W	0.00	Est KOP
7480.60†	13.342	270.000	7480.00	7.72	0.00	-7.72	605930.58	561231.40	32°32'33.749"N	104°07'25.380"W	20.03	2nd BSS
7500.00†	17.229	270.000	7498.71	12.83	0.00	-12.83	605925.47	561231.40	32°32'33.749"N	104°07'25.440"W	20.03	
7600.00†	37.262	270.000	7587.16	58.38	0.00	-58.38	605879.92	561231.40	32°32'33.750"N	104°07'25.972"W	20.03	
7700.00†	57.296	270.000	7654.66	131.47	0.00	-131.47	605806.84	561231.40	32°32'33.751"N	104°07'26.826"W	20.03	
7800.00†	77.329	270.000	7693.03	223.27	0.00	-223.27	605715.05	561231.40	32°32'33.753"N	104°07'27.898"W	20.03	
7863.25	90.000	270.000	7700.00	286.00	0.00	-286.00	605652.33	561231.40	32°32'33.754"N	104°07'28.631"W	20.03	EOC
7878.22	90.262	269.856	7699.97	300.97	-0.02	-300.98	605637.35	561231.38	32°32'33.754"N	104°07'28.806"W	2.00	Target Line
7900.00†	90.262	269.856	7699.87	322.75	-0.07	-322.75	605615.58	561231.33	32°32'33.754"N	104°07'29.060"W	0.00	
8000.00†	90.262	269.856	7699.41	422.75	-0.33	-422.75	605515.59	561231.07	32°32'33.754"N	104°07'30.228"W	0.00	

REFERENCE WELLPATH IDENTIFICATION			
Operator	**Cimarex Energy Co. of Colorado**	Slot	**No.21 SHL**
Area	**Eddy County, NM**	Well	**No.21**
Field	**(Lee) Sec 25, T20S, R28E**	Wellbore	**No.21 PWB**
Facility	**Lee Federal No.21**		

WELLPATH DATA (133 stations) † = interpolated/extrapolated station

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	DLS [°/100ft]	Comments
8100.00†	90.262	269.856	7698.95	522.75	-0.58	-522.75	605415.60	561230.82	32°32'33.753"N	104°07'31.396"W	0.00	
8200.00†	90.262	269.856	7698.49	622.75	-0.83	-622.75	605315.61	561230.57	32°32'33.752"N	104°07'32.564"W	0.00	
8300.00†	90.262	269.856	7698.03	722.75	-1.08	-722.75	605215.62	561230.32	32°32'33.752"N	104°07'33.733"W	0.00	
8400.00†	90.262	269.856	7697.58	822.75	-1.33	-822.75	605115.63	561230.07	32°32'33.751"N	104°07'34.901"W	0.00	
8500.00†	90.262	269.856	7697.12	922.74	-1.59	-922.74	605015.64	561229.81	32°32'33.751"N	104°07'36.069"W	0.00	
8600.00†	90.262	269.856	7696.66	1022.74	-1.84	-1022.74	604915.65	561229.56	32°32'33.750"N	104°07'37.237"W	0.00	
8700.00†	90.262	269.856	7696.20	1122.74	-2.09	-1122.74	604815.66	561229.31	32°32'33.750"N	104°07'38.405"W	0.00	
8800.00†	90.262	269.856	7695.74	1222.74	-2.34	-1222.74	604715.67	561229.06	32°32'33.749"N	104°07'39.573"W	0.00	
8900.00†	90.262	269.856	7695.29	1322.74	-2.59	-1322.74	604615.68	561228.81	32°32'33.748"N	104°07'40.741"W	0.00	
9000.00†	90.262	269.856	7694.83	1422.74	-2.85	-1422.74	604515.69	561228.56	32°32'33.748"N	104°07'41.910"W	0.00	
9100.00†	90.262	269.856	7694.37	1522.74	-3.10	-1522.74	604415.70	561228.30	32°32'33.747"N	104°07'43.078"W	0.00	
9200.00†	90.262	269.856	7693.91	1622.74	-3.35	-1622.73	604315.71	561228.05	32°32'33.747"N	104°07'44.246"W	0.00	
9300.00†	90.262	269.856	7693.45	1722.74	-3.60	-1722.73	604215.72	561227.80	32°32'33.746"N	104°07'45.414"W	0.00	
9400.00†	90.262	269.856	7693.00	1822.74	-3.85	-1822.73	604115.73	561227.55	32°32'33.745"N	104°07'46.582"W	0.00	
9500.00†	90.262	269.856	7692.54	1922.73	-4.10	-1922.73	604015.74	561227.30	32°32'33.745"N	104°07'47.750"W	0.00	
9600.00†	90.262	269.856	7692.08	2022.73	-4.36	-2022.73	603915.75	561227.04	32°32'33.744"N	104°07'48.919"W	0.00	
9700.00†	90.262	269.856	7691.62	2122.73	-4.61	-2122.73	603815.76	561226.79	32°32'33.744"N	104°07'50.087"W	0.00	
9800.00†	90.262	269.856	7691.16	2222.73	-4.86	-2222.73	603715.77	561226.54	32°32'33.743"N	104°07'51.255"W	0.00	
9900.00†	90.262	269.856	7690.71	2322.73	-5.11	-2322.72	603615.78	561226.29	32°32'33.742"N	104°07'52.423"W	0.00	
10000.00†	90.262	269.856	7690.25	2422.73	-5.36	-2422.72	603515.79	561226.04	32°32'33.742"N	104°07'53.591"W	0.00	
10100.00†	90.262	269.856	7689.79	2522.73	-5.62	-2522.72	603415.80	561225.78	32°32'33.741"N	104°07'54.759"W	0.00	
10200.00†	90.262	269.856	7689.33	2622.73	-5.87	-2622.72	603315.81	561225.53	32°32'33.741"N	104°07'55.927"W	0.00	
10300.00†	90.262	269.856	7688.87	2722.73	-6.12	-2722.72	603215.82	561225.28	32°32'33.740"N	104°07'57.096"W	0.00	
10400.00†	90.262	269.856	7688.42	2822.72	-6.37	-2822.72	603115.83	561225.03	32°32'33.739"N	104°07'58.264"W	0.00	
10500.00†	90.262	269.856	7687.96	2922.72	-6.62	-2922.72	603015.84	561224.78	32°32'33.739"N	104°07'59.432"W	0.00	
10600.00†	90.262	269.856	7687.50	3022.72	-6.88	-3022.71	602915.85	561224.52	32°32'33.738"N	104°08'00.600"W	0.00	
10700.00†	90.262	269.856	7687.04	3122.72	-7.13	-3122.71	602815.86	561224.27	32°32'33.737"N	104°08'01.768"W	0.00	
10800.00†	90.262	269.856	7686.58	3222.72	-7.38	-3222.71	602715.87	561224.02	32°32'33.737"N	104°08'02.936"W	0.00	
10900.00†	90.262	269.856	7686.12	3322.72	-7.63	-3322.71	602615.88	561223.77	32°32'33.736"N	104°08'04.104"W	0.00	
11000.00†	90.262	269.856	7685.67	3422.72	-7.88	-3422.71	602515.89	561223.52	32°32'33.735"N	104°08'05.273"W	0.00	
11100.00†	90.262	269.856	7685.21	3522.72	-8.14	-3522.71	602415.90	561223.26	32°32'33.735"N	104°08'06.441"W	0.00	
11200.00†	90.262	269.856	7684.75	3622.72	-8.39	-3622.71	602315.91	561223.01	32°32'33.734"N	104°08'07.609"W	0.00	
11300.00†	90.262	269.856	7684.29	3722.72	-8.64	-3722.71	602215.92	561222.76	32°32'33.733"N	104°08'08.777"W	0.00	
11400.00†	90.262	269.856	7683.83	3822.71	-8.89	-3822.70	602115.93	561222.51	32°32'33.733"N	104°08'09.945"W	0.00	
11500.00†	90.262	269.856	7683.38	3922.71	-9.14	-3922.70	602015.94	561222.26	32°32'33.732"N	104°08'11.113"W	0.00	
11600.00†	90.262	269.856	7682.92	4022.71	-9.40	-4022.70	601915.95	561222.01	32°32'33.731"N	104°08'12.281"W	0.00	
11700.00†	90.262	269.856	7682.46	4122.71	-9.65	-4122.70	601815.96	561221.75	32°32'33.731"N	104°08'13.450"W	0.00	
11800.00†	90.262	269.856	7682.00	4222.71	-9.90	-4222.70	601715.97	561221.50	32°32'33.730"N	104°08'14.618"W	0.00	
11900.00†	90.262	269.856	7681.54	4322.71	-10.15	-4322.70	601615.98	561221.25	32°32'33.729"N	104°08'15.786"W	0.00	
12000.00†	90.262	269.856	7681.09	4422.71	-10.40	-4422.70	601515.99	561221.00	32°32'33.729"N	104°08'16.954"W	0.00	
12100.00†	90.262	269.856	7680.63	4522.71	-10.66	-4522.69	601416.00	561220.75	32°32'33.728"N	104°08'18.122"W	0.00	
12200.00†	90.262	269.856	7680.17	4622.71	-10.91	-4622.69	601316.01	561220.49	32°32'33.727"N	104°08'19.290"W	0.00	
12237.22	90.262	269.856	7680.00[1]	4659.92	-11.00	-4659.91	601278.80	561220.40	32°32'33.727"N	104°08'19.725"W	0.00	No.21 PBHL

Planned Wellpath Report

Prelim_1

REFERENCE WELLPATH IDENTIFICATION			
Operator	**Cimarex Energy Co. of Colorado**	Slot	**No.21 SHL**
Area	**Eddy County, NM**	Well	**No.21**
Field	**(Lee) Sec 25, T20S, R28E**	Wellbore	**No.21 PWB**
Facility	**Lee Federal No.21**		

HOLE & CASING SECTIONS - Ref Wellbore: No.21 PWB Ref Wellpath: Prelim_1

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]
12.25in Open Hole	0.00	4900.00	4900.00	0.00	4900.00	0.00	0.00	0.00	0.00
9.625in Casing	0.00	4900.00	4900.00	0.00	4900.00	0.00	0.00	0.00	0.00
8.75in Open Hole	0.00	12238.00	12238.00	0.00	NA	0.00	0.00	NA	NA

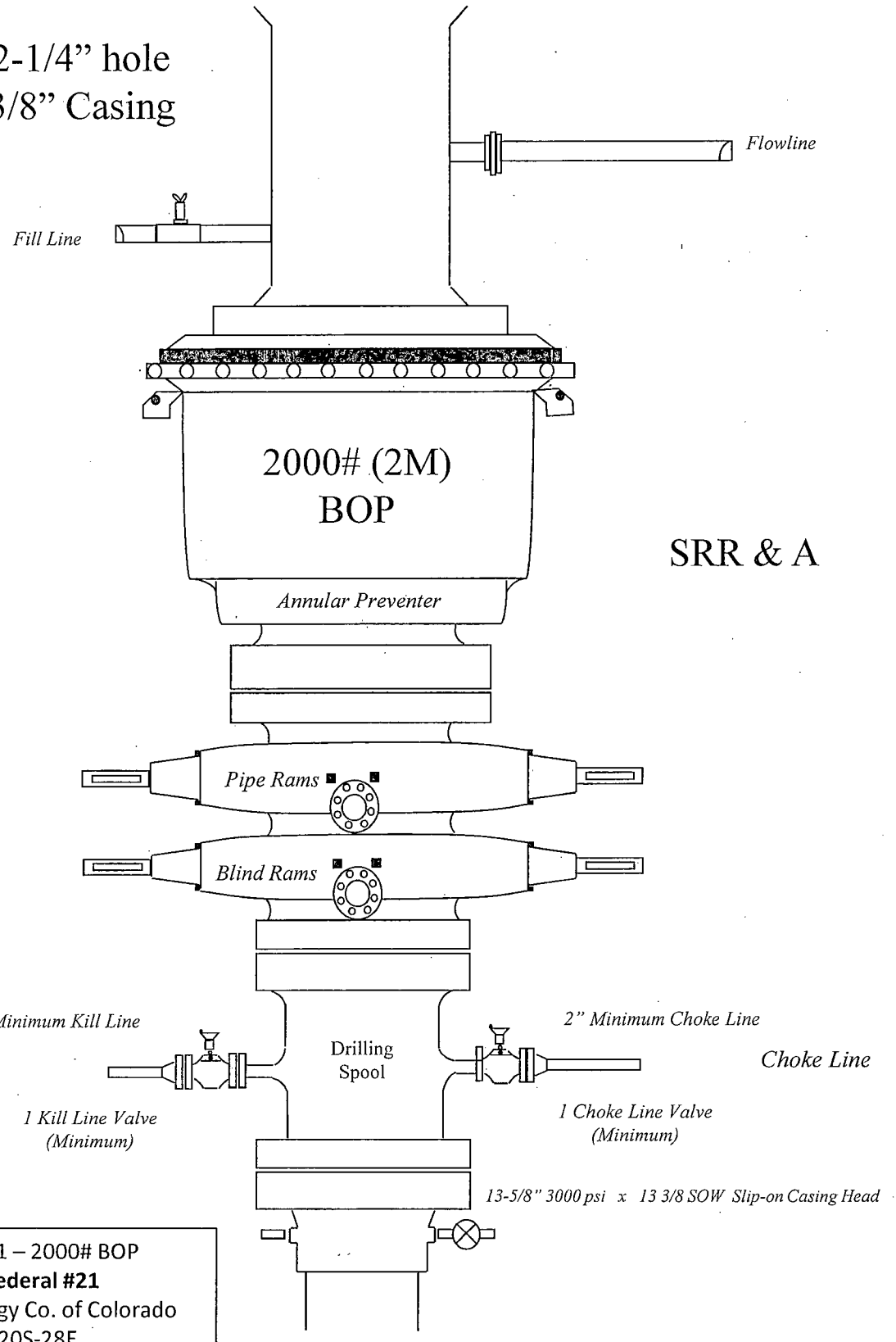
TARGETS

Name	MD [ft]	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
1) No.21 PBHL	12237.22	7680.00	-11.00	-4659.91	**601278.80**	**561220.40**	32°32'33.727"N	104°08'19.725"W	point

SURVEY PROGRAM - Ref Wellbore: No.21 PWB Ref Wellpath: Prelim_1

Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
0.00	12237.22	NaviTrak (Standard)		No.21 PWB

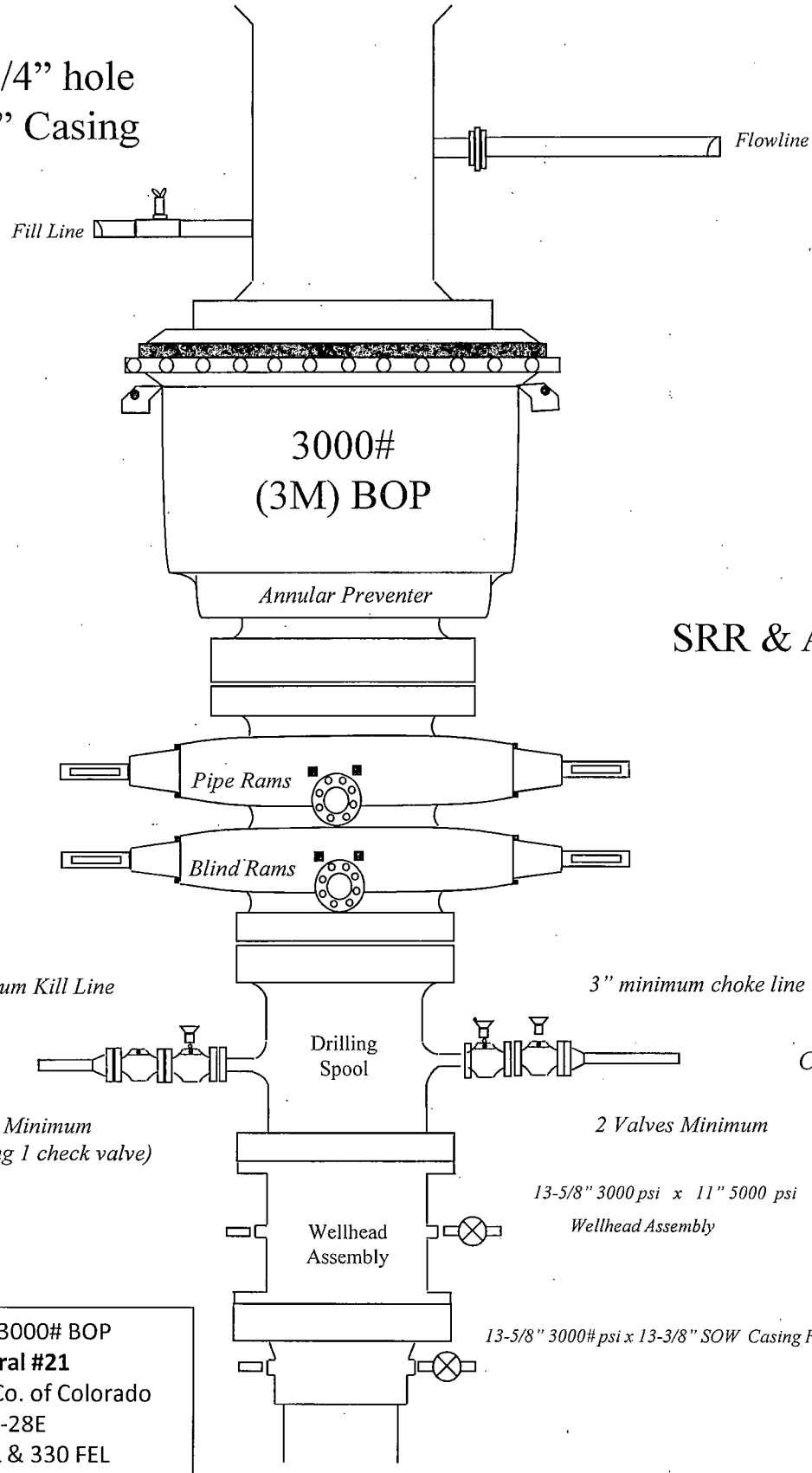
Drilling 12-1/4" hole
below 13 3/8" Casing



SRR & A

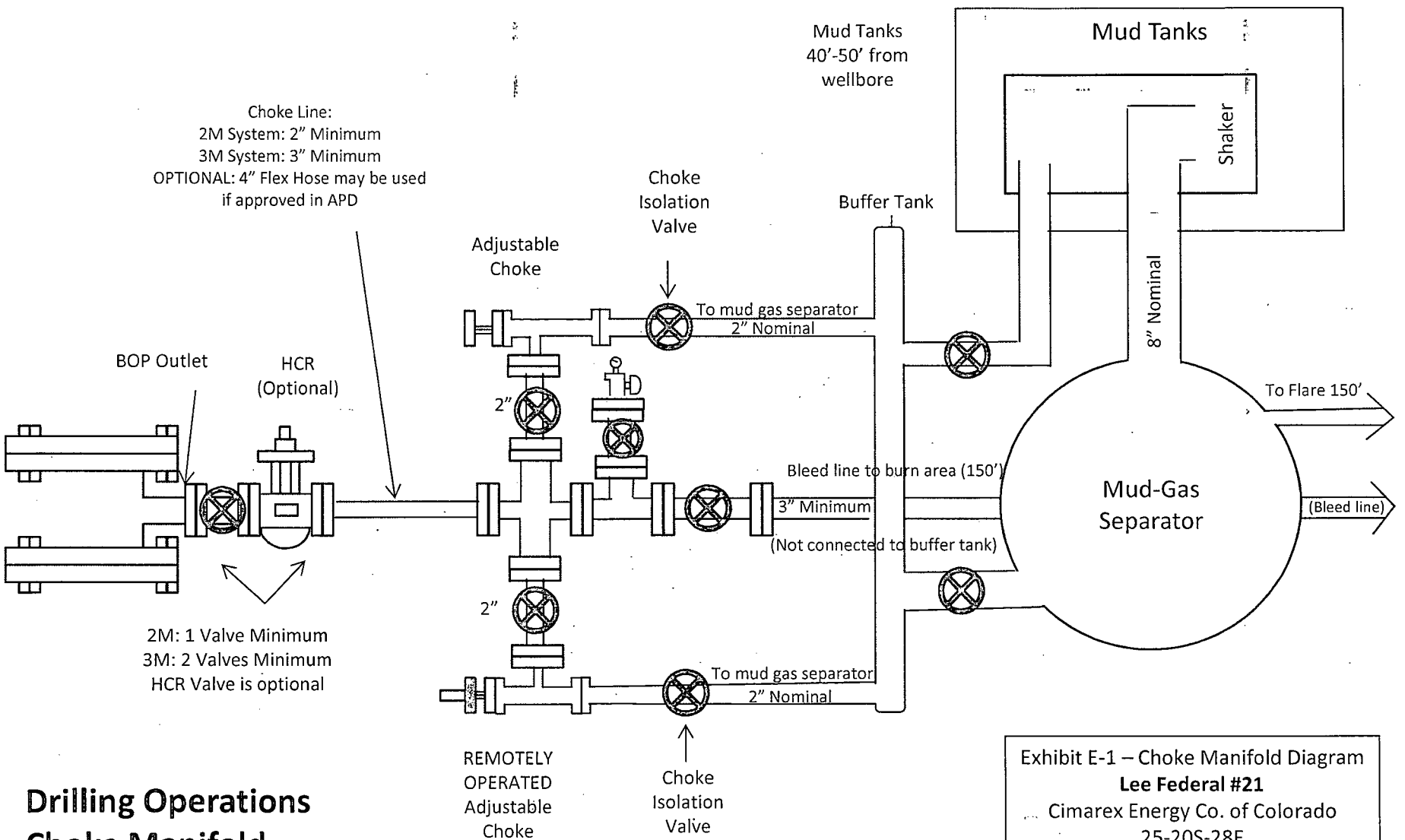
Exhibit E-1 – 2000# BOP
Lee Federal #21
Cimarex Energy Co. of Colorado
25-20S-28E
SHL 1980 FSL & 330 FEL
BHL 1980 FSL & 330 FWL
Eddy County, NM

Drilling 8-3/4" hole
below 9 5/8" Casing



SRR & A

Exhibit E-1 – 3000# BOP
Lee Federal #21
Cimarex Energy Co. of Colorado
25-20S-28E
SHL 1980 FSL & 330 FEL
BHL 1980 FSL & 330 FWL
Eddy County, NM



Drilling Operations
Choke Manifold
2M/3M Service

Exhibit E-1 – Choke Manifold Diagram
Lee Federal #21
Cimarex Energy Co. of Colorado
25-20S-28E
SHL 1980 FSL & 330 FEL
BHL 1980 FSL & 330 FWL
Eddy County, NM

Exhibit F-1 – Co-Flex Hose Hydrostatic Test
Lee Federal #21
Cimarex Energy Co. of Colorado
25-20S-28E
SHL 1980 FSL & 330 FEL
BHL 1980 FSL & 330 FWL
Eddy County, NM

Midwest Hose & Specialty, Inc.

INTERNAL HYDROSTATIC TEST REPORT

Customer:	P.O. Number:
Oderco Inc	odyd-271

HOSE SPECIFICATIONS

Type:	Hose Length:
Stainless Steel Armor Choke & Kill Hose	45'ft.

I.D.	O.D.
4 INCHES	9 INCHES

WORKING PRESSURE	TEST PRESSURE	BURST PRESSURE
10,000 PSI	15,000 PSI	0 PSI

COUPLINGS

Stem Part No.	Ferrule No.
OKC OKC	OKC OKC
Type of Coupling:	
Swage-It	

PROCEDURE

Hose assembly pressure tested with water at ambient temperature.

TIME HELD AT TEST PRESSURE	ACTUAL BURST PRESSURE:
15 MIN.	0 PSI

Hose Assembly Serial Number:	Hose Serial Number:
79793	OKC

Comments:

Date:	Tested:	Approved:
3/8/2011	A. Jairo Sierra	

Exhibit F-1 – Co-Flex Hose Hydrostatic Test
Lee Federal #21
Cimarex Energy Co. of Colorado
25-20S-28E
SHL 1980 FSL & 330 FEL
BHL 1980 FSL & 330 FWL
Eddy County, NM

Midwest Hose & Specialty, Inc.

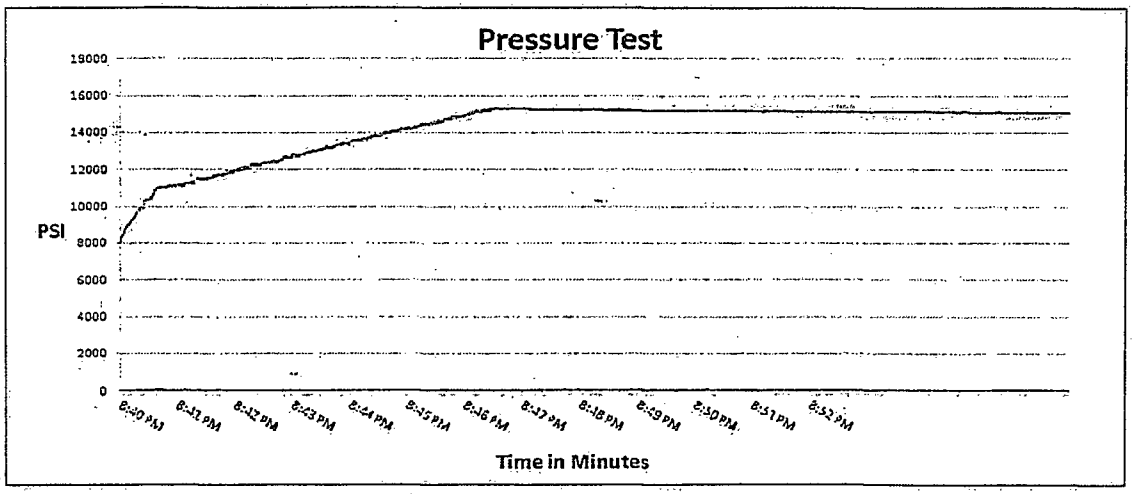
Internal Hydrostatic Test Graph

March 3, 2011

Customer: Houston

Pick Ticket #: 94260

Hose Specifications		Verification	
Hose Type: C & K	Length: 45'	Type of Fitting: 4 1/16 10K	Coupling Method: Swage
I.D.: 4"	O.D.: 6.09"	Die Size: 6.38"	Final O.D.: 6.25"
Working Pressure: 10000 PSI	Burst Pressure: Standard Safety Multiplier Applies	Hose Serial #: 5544	Hose Assembly Serial #: 79793



Test Pressure	Time Held at Test Pressure	Actual Burst Pressure	Peak Pressure
15000 PSI	11 Minutes		15483 PSI

Comments: Hose assembly pressure tested with water at ambient temperature.

Tested By: *Zac Mcconnell*

Approved By: *Kim Thomas*

Midwest Hose & Specialty, Inc.

Exhibit F -3– Co-Flex Hose
Lee Federal #21
Cimarex Energy Co. of Colorado
25-20S-28E
SHL 1980 FSL & 330 FEL
BHL 1980 FSL & 330 FWL
Eddy County, NM

Specification Sheet
Choke & Kill Hose

The Midwest Hose & Specialty Choke & Kill hose is manufactured with only premium componets.The reinforcement cables, inner liner and cover are made of the highest quality material to handle the tough drilling applications of today's industry. The end connections are available with API flanges, API male threads, hubs, hammer unions or other special fittings upon request. Hose assembly is manufactured to API 7K. This assembly is wrapped with fire resistant vermculite coated fiberglass insulation, rated at 2000 degrees with stainless steel armor cover.

Working Pressure:	5,000 or 10,000 psi working pressure
Test Pressure:	10,000 or 15,000 psi test pressure
Reinforcement:	Multiple steel cables
Cover:	Stainless Steel Armor
Inner Tube:	Petroleum resistant, Abrasion resistant
End Fitting:	API flanges, API male threads, threaded or butt weld hammer unions, unibolt and other special connections
Maximum Length:	110 Feet
ID:	2-1/2", 3", 3-1/2", 4"
Operating Temperature:	-22 deg F to +180 deg F (-30 deg C to +82 deg C)

P.O. Box 96558 – 1421 S.E. 29th St. Oklahoma City, OK 73143 * (405) 670-6718 * Fax: (405) 670-6816

Exhibit F-2 – Co-Flex Hose
Lee Federal #21
Cimarex Energy Co. of Colorado
25-20S-28E
SHL 1980 FSL & 330 FEL
BHL 1980 FSL & 330 FWL
Eddy County, NM

Midwest Hose
& Specialty, Inc.

Certificate of Conformity

Customer: DEM	PO ODYD-271
SPECIFICATIONS	
Sales Order 79793	Dated: 3/8/2011

We hereby cerify that the material supplied for the referenced purchase order to be true according to the requirements of the purchase order and current industry standards

Supplier:
Midwest Hose & Specialty, Inc.
10640 Tanner Road
Houston, Texas 77041

Comments:	
Approved:	Date: 3/8/2011

Exhibit F – Co-Flex Hose

Lee Federal #21

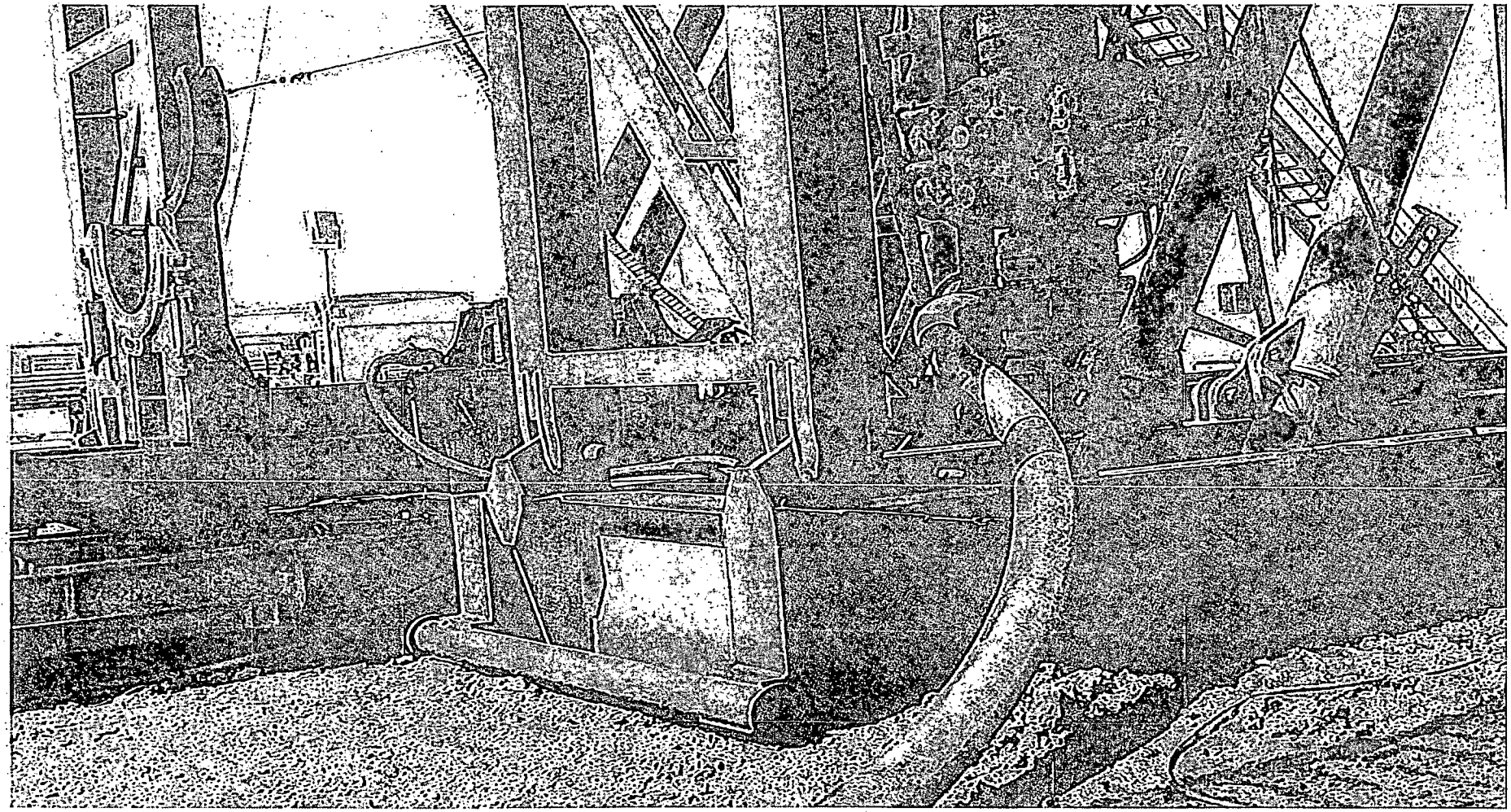
Cimarex Energy Co. of Colorado

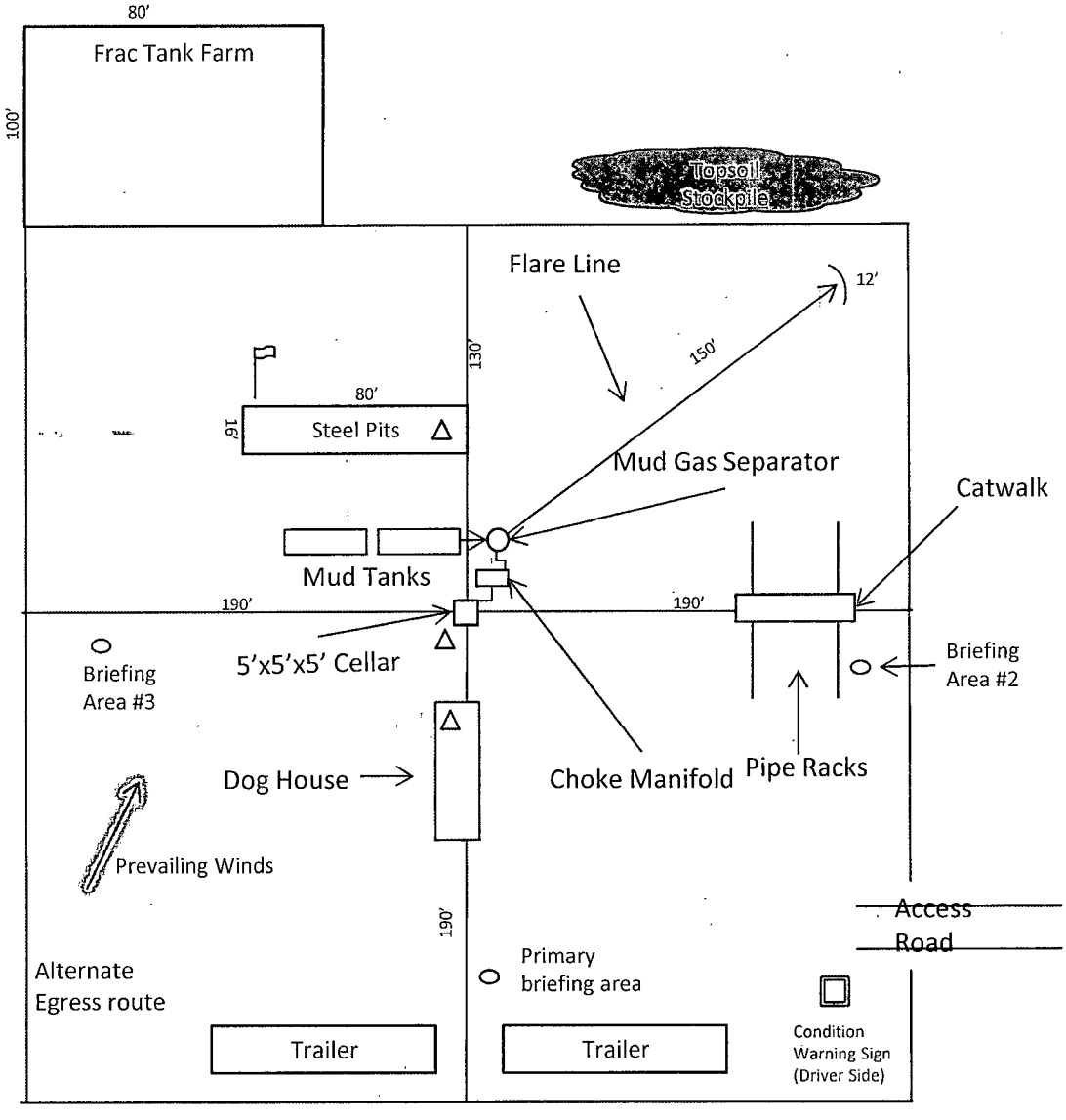
25-20S-28E

SHL 1980 FSL & 330 FEL

BHL 1980 FSL & 330 FWL

Eddy County, NM





Wind Direction Indicators (wind sock or streamers)

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

○ Briefing Areas

N

Exhibit D-1 – Rig Diagram
Lee Federal #21
Cimarex Energy Co. of Colorado
25-20S-28E
SHL 1980 FSL & 330 FEL
BHL 1980 FSL & 330 FWL
Eddy County, NM

Hydrogen Sulfide Drilling Operations Plan

Lee Federal #21H

Cimarex Energy Co.

UL: I, Sec. 25, 20S, 28E

Eddy Co., NM

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

A. Characteristics of H_2S
B. Physical effects and hazards
C. Principal and operation of H2S detectors, warning system and briefing areas.
D. Evacuation procedure, routes and first aid.
E. Proper use of safety equipment & life support systems
F. Essential personnel meeting Medical Evaluation criteria will receive additional training on the proper use of 30 minute pressure demand air packs.

2 H_2S Detection and Alarm Systems:

A. H2S sensors/detectors to be located on the drilling rig floor, in the base of the sub structure/cellar area, on the mud pits in the shale shaker area. Additional H2S detectors may play placed as deemed necessary.

B. An audio alarm system will be installed on the derrick floor and in the top doghouse.

3 Windsock and/or wind streamers:

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

B. Windsock on the rig floor and / or top doghouse 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_2S present in dangerous concentration). Only H2S trained and certified personnel admitted to location.

5 Well control equipment:

A. See exhibit "E-1"

6 Communication:

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

7 Drillstem Testing:

No DSTs r cores are planned at this time.

8 Drilling contractor supervisor will be required to be familiar with the effects H_2S has on tubular goods and other mechanical equipment.

9 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.

H_2S Contingency Plan
Lee Federal #21H
Cimarex Energy Co.
UL: I, Sec. 25, 20S, 28E
Eddy Co., NM

Emergency Procedures

In the event of a release of gas containing H_2S, 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_2S 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_2S, 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_2). 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_2S and SO_2

Please see attached International Chemical Safety Cards.

Contacting Authorities

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

H_2S Contingency Plan Emergency Contacts
Lee Federal #21H
Cimarex Energy Co.
UL: I, Sec. 25, 20S, 28E
Eddy Co., NM

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

Key Personnel			
Name	**Title**	**Office**	**Mobile**
Larry Seigrist	Drilling Manager	432-620-1934	580-243-8485
Doug McQuitty	Drilling Superintendent	432-620-1933	806-640-2605
Scott Lucas	Drilling Superintendent	432-620-1989	432-894-5572
Roy Shirley	Construction Superintendent		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

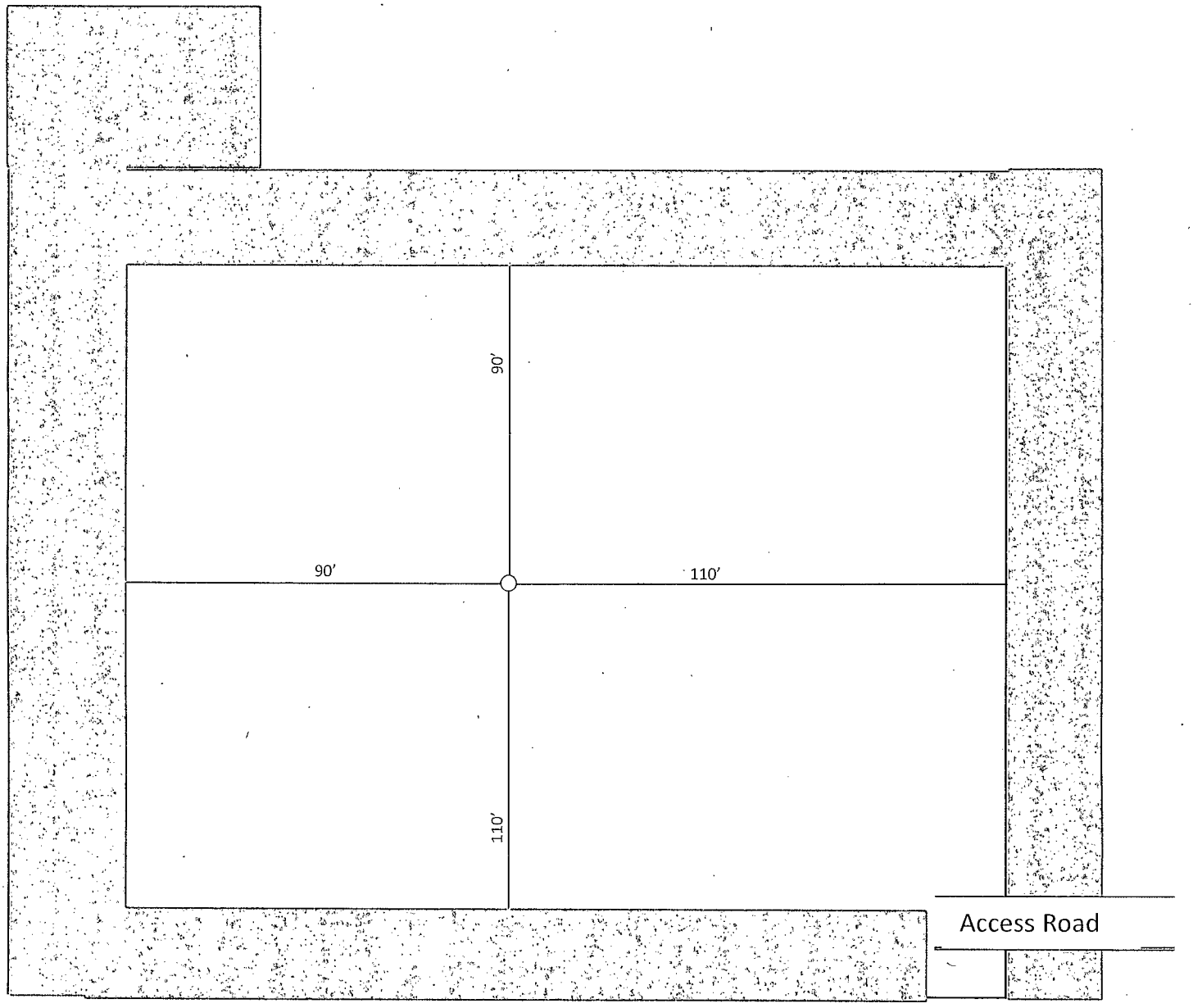
Carlsbad	
Ambulance	911
State Police	575-885-3137
City Police	575-885-2111
Sheriff's Office	575-887-7551
Fire Department	**575-887-3798**
Local Emergency Planning Committee	575-887-6544
US Bureau of Land Management	575-887-6544

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		



Wellbore

Interim Reclamation

N

Exhibit D-1
Interim Reclamation Diagram
Lee Federal #21
Cimarex Energy Co. of Colorado
25-20S-28E
SHL 1980 FSL & 330 FEL
BHL 1980 FSL & 330 FWL
Eddy County, NM

Surface Use Plan
Lee Federal #21H
Cimarex Energy Co.
UL: I, Sec. 25, 20S, 28E
Eddy Co., NM

The following surface use plan of operations will be followed and carried out once the APD is approved. No other disturbance will be created other than what is submitted in this surface use plan without approval. If any other disturbance is needed after the APD is approved, a BLM approved sundry notice or right of way application will be submitted for approval prior to any new surface disturbance.

1. Existing Roads:

Area access roads and general road maps:

- Exhibit B: General Highway Map
- Exhibit C: USGS Topographic Map
- Exhibit C-1: Public Access Road Map
- Exhibit C-2: Existing and proposed access roads plat

The maximum width of the driving surface will be 14.' The road will be crowned and ditched with a 2% slope from the tip of the crown to the edge of the driving surface. The ditches will be 1' deep with 3:1 slopes. The driving surface will be made of 6" rolled and compacted caliche.

Existing access road route to the proposed project is depicted on the public access point map if applicable. Improvements to the driving surface will be done where necessary. No new surface disturbance will be done, unless otherwiswe noted in the New or Reconstructed Access Roads section of the surface use plan.

From mile Marker of Burton Flats and Magnum, go South Magnum for 1.7 miles to proposed lease road.

If existing roads are used, the operator will improve or maintain existing roads in a condition the same as or better than before the operations began. The operator will repair pot holes, etc. All existing structures on the entire access route such as cattleguards, other range improvement projects, culverts, etc. will be properly repaired or replaced if they are damaged or have deterioated beyond practical use.

The operator will prevent and abate fugitive dust as needed, whether created by vehicular traffic, equipment operations, or other events. The operator will obtain written BLM approval prior to the application of surfactants, binding agents, or other dust suppression chemicals on the roadways.

2. New of Reconstructed Access Roads:

A new road will be constructed for this project.
Cimarex Energy plans to construct 159.5' of new on-lease access road to service the well. The planned access road does not cross lease boundaries, a right of way grant will not be acquired from the BLM.
The maximum width of the driving surface will be 14'. The road will be crowned and ditched with a 2% slope from the tip of the crown to the edge of the driving surface. The ditches will be 1' deep with 3:1 slopes. The driving surface will be made of 6" rolled and compacted caliche.
Proposed and existing access road route to the proposed wellsite is depicted on Exhibit C-2. Improvements to the driving surface will be done where necessary. No new surface disturbance will be done without prior approval from the BLM.
The operator will prevent and abate fugitive dust as needed, whether created by vehicular traffic, equipment operations, or other events.

Surface Use Plan
Lee Federal #21H
Cimarex Energy Co.
UL: I, Sec. 25, 20S, 28E
Eddy Co., NM

. Planned Electric Line:

No new electric lines are planned.

4. Location of Existing Well in a One-Mile Radius -Exhibit A:

- Water Wells - None known
- Disposal Wells - None known
- Drilling Wells - None known
- Producing Wells - As shown on Exhibit A
- Abandoned Wells - As shownd on Exhibit A

5. Location of Existing or 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 and production will be sent to the Lee Federal #20H. Cimarex Energy proposes to install two 4 inch buried HP polylines down existing lease road to the Lee Federal #20H battery.

Cimarex Energy plans to construct on lease flowlines to service the well.

Specifications of Polyline: 1 HP polyline for oil, gas, and water production. 1 HP polyline for gas lift.

Both lines will be buried 25'-35' East of the access road.

Length: 931.7'

MAOP: 1500 psi. Anticipated working pressure: 200-300 psi.

Allocation will be based on well test. Route is on lease, please see Exhibit C-2. Any changes to on lease route will be submited via sundry notice. If route is off lease, a right of way will be submitted to the BLM for approval.

6. Location and Type of Water Supply:

Water will be purchased locally from a commercial source and trucked over the access roads. NM

7. Source of Construction Material:

If possible, native caliche will be obtained from the excavation of drill site. The primary way of obtaining caliche will be by "turning over" the location. This means caliche will be obtained from the actual well site. A caliche permit will be obtained from BLM prior to pushing up any caliche. 2400 cu yds is the max amount of caliche needed for pad and roads. Amount will vary for each pad. The procedure below has been approved by BLM personnel:

- The top 6 inches of topsoil is pushed off and stockpiled along the side of the location.
- An approximate 120' x 120' area is used within the proposed well site to remove caliche.
- Subsoil is removed and piled alongside the 120' by 120' area within the pad site.
- When caliche is found, material will be stockpiled within the pad site to build the location and road.
- Then subsoil is pushed back in the hole and caliche is spread accordingly across entire location and road.
- Once well is drilled, the stockpiled top soil will be used for interim reclamation and spread along areas where caliche is picked up and the location size is reduced. Neither caliche nor subsoil will be stockpiled outside of the well pad. Topsoil will be stockpiled along the edge of the pad as depicted in Exhibit D – Rig Layout Diagram.

In the event that no caliche is found onsite, caliche will be hauled in from a BLM-approved caliche pit.

Surface Use Plan
Lee Federal #21H
Cimarex Energy Co.
UL: I, Sec. 25, 20S, 28E
Eddy Co., NM

8. Methods of Handling Waste

- Drilling fluids, produced oil, and water from the well during drilling and completion operations will be stored safely and disposed of properly in a NMOCD approved disposal facility.
- Garbage and trash produced during drilling and completion operations will be collected in a trash container and disposed of properly at a state approved disposal facility. All trash on and around well site will be collected for disposal.
- Human waste and grey water will be properly contained and disposed of properly at a state approved disposal site.
- After drilling and completion operations, trash, chemicals, salts, frac sand and other waste will be removed and disposed of properly at a state approved disposal site.
- The well will be drilled utilizing a closed loop system. Drill cuttings will be properly disposed of into steel tanks and taken to an NMOCD approved disposal facility.

9. Ancillary Facilities:

No camps or airstrips to be constructed.

10. Well Site Layout:

- Exhibit D: Rig Layout
- Exhibit D-2: Well Site layout plat
- Mud pits in the closed circulation system will be steel pits and the cuttings will be stored in steel containment pits.
- Cuttings will be stored in steel pits until they are hauled to a state-approved disposal facility.
- If the well is a producer, those areas of the location not essential to production facilities will be reclaimed and seeded per BLM requirements. Exhibit D-1: Interim Reclamation Diagram.

11. Plans for Restoration of Surface:

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

In areas planned for interim and final reclamation, surfacing materials will be removed and returned to a mineral pit or recycled to repair or build roads and well pads.

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

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

Should the well be a producer, those areas of the location not essential to porduction facilities and operations will be reclaimed and seeded per BLM requirements. Exhibit D-1 illustrates the proposed Interim Reclamation.

12. Other Information:

- Topography consists of a sloping plane with loose tan sands. Vegetation is mainly yucca, mesquite and shin oak.
- The well pad/location and proposed road have been arch cleared and the arch report has been filed with the BLM.
- There are no known dwellings within 1½ miles of this location.

13. On Site Notes and Information:

2011 - Onsite performed: John Fast on location. Location OK. V-Door East, Interim reclamation: North, South, East, and west. Access road from the southeast corner east to County Road. 2/21/14 Jesse Rice performed an additional onsite due to the last onsite being in 2011. Well okay where staked and okay on pad expansion for new rig.

14. Surface Ownership:

The wellsite is on surface owned by Burau of Land Management,

PECOS DISTRICT
CONDITIONS OF APPROVAL

OPERATOR'S NAME:	Cimarex Energy Co of Colorado - Knauls, Hope
LEASE NO.:	NM17103
WELL NAME & NO.:	Lee Federal - 21H
SURFACE HOLE FOOTAGE:	[1980] ' F [S] L [330] ' F [E] L
BOTTOM HOLE FOOTAGE:	[1980] ' F [S] L [330] ' F [W] L
LOCATION:	Section 025, T020. S., R 028 E., NMPM
COUNTY:	Eddy County, New Mexico

TABLE OF CONTENTS

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

- ☐ **General Provisions**
- ☐ **Permit Expiration**
- ☐ **Archaeology, Paleontology, and Historical Sites**
- ☐ **Noxious Weeds**
- ☒ **Special Requirements**
  - Cave/Karst
- ☐ **Construction**
  - Notification
  - Topsoil
  - Closed Loop System
  - Federal Mineral Material Pits
  - Well Pads
  - Roads
- ☐ **Road Section Diagram**
- ☒ **Drilling**
  - Logging
  - Waste Material and Fluids
- ☐ **Production (Post Drilling)**
  - Well Structures & Facilities
  - Pipelines
- ☐ **Interim Reclamation**
- ☐ **Final Abandonment & Reclamation**

I. GENERAL PROVISIONS

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

II. PERMIT EXPIRATION

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

III. ARCHAEOLOGICAL, PALEONTOLOGY & HISTORICAL SITES

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

IV. NOXIOUS WEEDS

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

V. SPECIAL REQUIREMENT(S)

Cave and Karst

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

Cave/Karst Surface Mitigation

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

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

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

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

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

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

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

Cave/Karst Subsurface Mitigation

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

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

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

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

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

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

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

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) 234-5909 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 strip the top portion of the soil (root zone) from the entire well pad area and stockpile the topsoil along the edge of the well pad as depicted in the APD. The root zone is typically six (6) inches in depth. All the stockpiled topsoil will be redistributed over the interim reclamation areas. Topsoil shall not be used for berming the pad or facilities. For final reclamation, the topsoil shall be spread over the entire pad area for seeding preparation.

Other subsoil (below six inches) stockpiles must be completely segregated from the topsoil stockpile. Large rocks or subsoil clods (not evident in the surrounding terrain) must be buried within the approved area 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. EXCLOSURE FENCING (CELLARS & PITS)

Exclosure Fencing
The operator will install and maintain exclosure fencing for all open well cellars to prevent access to public, livestock, and large forms of wildlife before and after drilling operations until the pit is free of fluids and the operator initiates backfilling. (For examples of exclosure fencing design, refer to BLM's Oil and Gas Gold Book, Exclosure Fence Illustrations, Figure 1, Page 18.)

G. 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-five (25) 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.

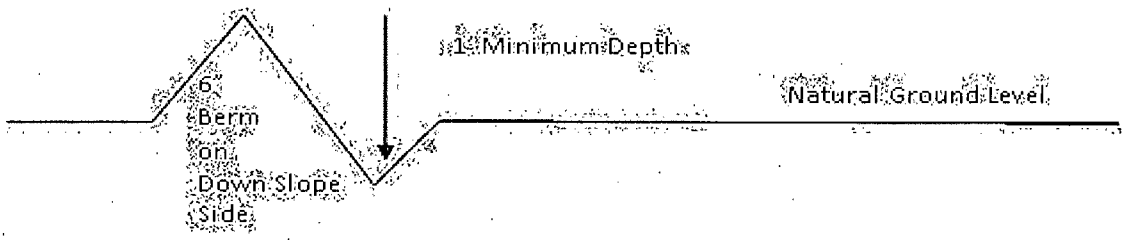
Turnouts
Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall conform to Figure 1; cross section and plans for typical road construction.

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

Cattleguards

An appropriately sized cattleguard sufficient to carry out the project shall be installed and maintained at fence/road crossings. Any existing cattleguards on the access road route 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 cattleguards that are in place and are utilized during lease operations.

Fence Requirement

Where entry is granted 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 fences.

Public Access

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

Construction Steps

1. Salvage topsoil
2. Construct road
3. Redistribute topsoil
4. Revegetate slopes

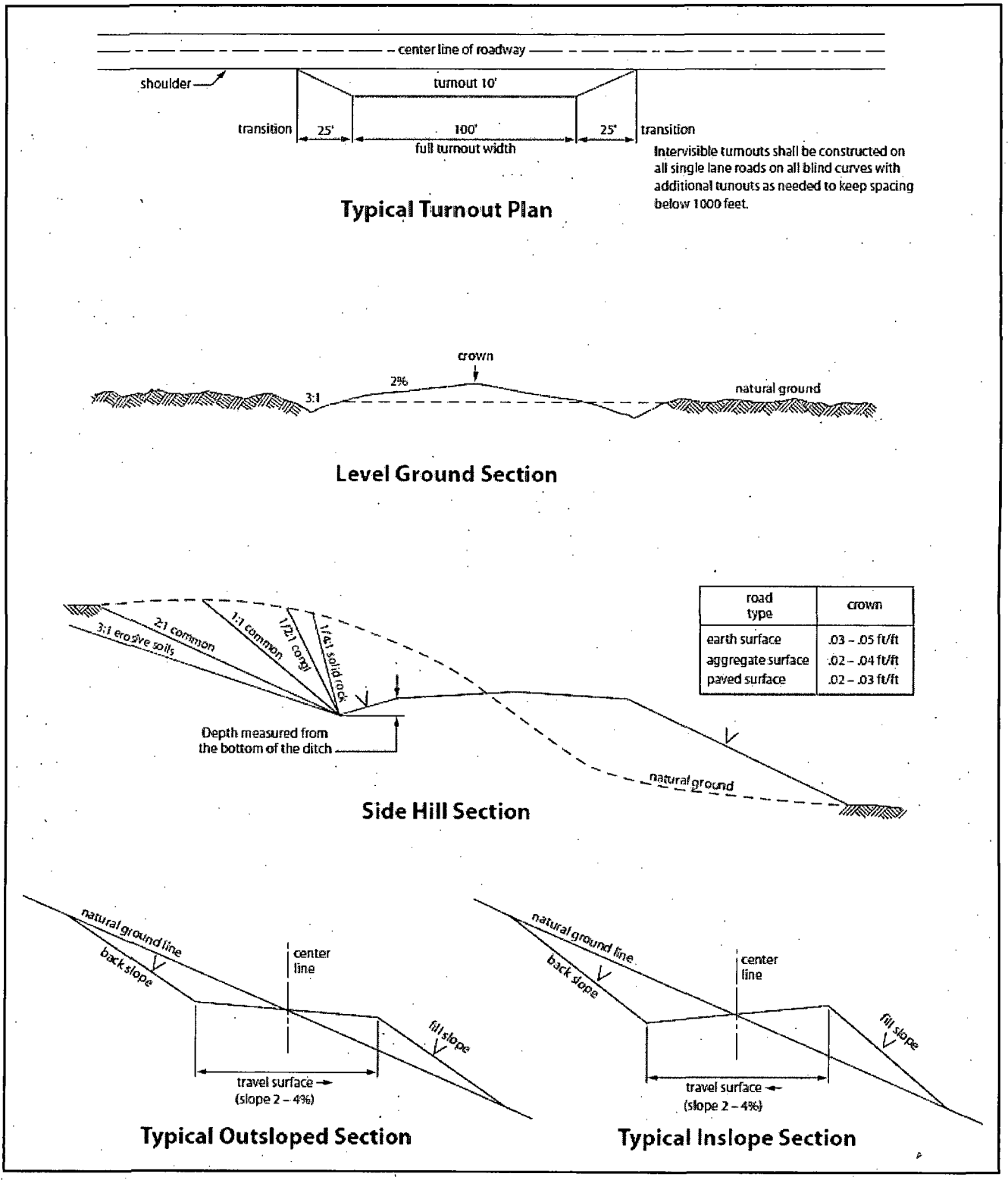


Figure 1. Cross-sections and plans for typical road sections representative of BLM resource or FS local and higher-class roads.

VII. DRILLING

A. DRILLING OPERATIONS REQUIREMENTS

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

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

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

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

2. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval. **If the drilling rig is removed without approval – an Incident of Non-Compliance will be written and will be a "Major" violation.**

3. Floor controls are required for 3M or Greater systems. These controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works is 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 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. The Rustler top and top and bottom of Salt are to be recorded on the Completion Report.**

B. CASING

Changes to the approved APD casing 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 APD 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) for Water Basin:
After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi at the shoe, 2) until cement has been in place at least 8 hours. WOC time will be recorded in the driller's log. 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.

High cave/karst
Possible lost circulation - Artesia Group, Delaware, Capitan Reef, & Bone Spring.

1. The **20** inch surface casing shall be set at **375** feet **(or a minimum of 25 feet into the Rustler Anhydrite and above the salt)** and cemented to the surface. **If salt is encountered set casing 25 feet above the top of salt. Additional cement may be required – excess calculates to -27%.**

    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 action will be done prior to drilling out that string.

2. The minimum required fill of cement behind the **13-3/8** inch first intermediate casing is **(Set casing above the Capitan Reef at approximately 1250')**:

    ☒ Cement to surface. . If cement does not circulate, contact the appropriate BLM office. **Wait on Cement (WOC) time for a primary cement job is to include the lead cement slurry due to high cave/karst and Capitan Reef concerns.**

3. The minimum required fill of cement behind the **9-5/8** inch 2nd intermediate casing is **(Set casing in the base of the Capitan reef at approximately 2920')**:

   a. First stage to DV tool:

   ☒ Cement to circulate. If cement does not circulate, contact the appropriate BLM office before proceeding with second stage cement job. Operator should have plans as to how they will achieve circulation on the next stage.

   b. Second stage above DV tool:

   ☒ Cement to surface. . If cement does not circulate, contact the appropriate BLM office. **Wait on Cement (WOC) time for a primary cement job is to include the lead cement slurry due to high cave/karst and Capitan Reef concerns.**

If 75% or greater lost circulation occurs while drilling the 8-5/8" second intermediate casing hole, the cement on the production casing must come to surface.

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

   ☒ Cement to **50'** above the Capitan Reef. Operator shall provide method of verification. **Additional cement may be required – excess calculates to -1%.**

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.

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. Variance approved to use flex line from BOP to choke manifold. Check condition of flexible line from BOP to choke manifold, replace if exterior is damaged or if line fails test. Line to be as straight as possible with no hard bends and is to be anchored according to Manufacturer's requirements. The flexible hose can be exchanged with a hose of equal size and equal or greater pressure rating. **Anchor requirements, specification sheet and hydrostatic pressure test certification matching the hose in service, to be onsite for review**. If the BLM inspector questions the straightness of the hose, a BLM engineer will be contacted and will review in the field or via picture supplied by inspector to determine if changes are required (operator shall expect delays if this occurs).

3. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **2000 (2M)** psi.

4. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the **9-5/8"** first intermediate casing shoe shall be **3000 (3M)** psi.

5. 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).

    a. 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 (8 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).

    b. The test shall be run on a 5000 psi chart for a 2-3M BOP/BOP, on a 10000 psi chart for a 5M BOP/BOPE and on a 15000 psi chart for a 10M BOP/BOPE. If a linear chart is used, it shall be a one hour chart. A circular chart shall have a maximum 2 hour clock. If a twelve hour or twenty-four hour chart is used, tester shall make a notation that it is run with a two hour clock.

    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. This test shall be performed prior to the test at full stack pressure.

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.

CRW 051115

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.

Exclosure Netting (Open-top Tanks)
Immediately following active drilling or completion operations, the operator will take actions necessary to prevent wildlife and livestock access, including avian wildlife, to all open-topped tanks that contain or have the potential to contain salinity sufficient to cause harm to wildlife or livestock, hydrocarbons, or Resource Conservation and Recovery Act of 1976-exempt hazardous substances. At a minimum, the operator will net, screen, or cover open-topped tanks to exclude wildlife and livestock and prevent mortality. If the operator uses netting, the operator will cover and secure the open portion of the tank to prevent wildlife entry. The operator will net, screen, or cover the tanks until the operator removes the tanks from the location or the tanks no longer contain substances that could be harmful to wildlife or livestock. Use a maximum netting mesh size of 1 ½ inches. The netting must not be in contact with fluids and must not have holes or gaps.

Chemical and Fuel Secondary Containment and Exclosure Screening
The operator will prevent all hazardous, poisonous, flammable, and toxic substances from coming into contact with soil and water. At a minimum, the operator will install and maintain an impervious secondary containment system for any tank or barrel containing hazardous, poisonous, flammable, or toxic substances sufficient to contain the contents of the tank or barrel and any drips, leaks, and anticipated precipitation. The operator will dispose of fluids within the containment system that do not meet applicable state or U. S. Environmental Protection Agency livestock water standards in accordance with state law; the operator must not drain the fluids to the soil or ground. The operator will design, construct, and maintain all secondary containment systems to prevent wildlife and livestock exposure to harmful substances. At a minimum, the operator will install effective wildlife and livestock exclosure systems such as fencing, netting, expanded metal mesh, lids, and grate covers. Use a maximum netting mesh size of 1 ½ inches.

Open-Vent Exhaust Stack Exclosures
The operator will construct, modify, equip, and maintain all open-vent exhaust stacks on production equipment to prevent birds and bats from entering, and to discourage perching, roosting, and nesting. (*Recommended exclosure structures on open-vent exhaust stacks are in the shape of a cone.*) Production equipment includes, but may not be limited to, tanks, heater-treaters, separators, dehydrators, flare stacks, in-line units, and compressor mufflers.

Containment Structures
Proposed production facilities such as storage tanks and other vessels will have a secondary containment structure that is constructed to hold the capacity of 1.5 times the largest tank, plus freeboard to account for precipitation, unless more stringent protective requirements are deemed necessary.

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** from the BLM Standard Environmental Color Chart (CC-001: June 2008).

B. PIPELINES

BURIED PIPELINE STIPULATIONS

A copy of the application (Grant, APD, or Sundry Notice) and attachments, including conditions of approval, survey plat and/or map, will be on location during construction. BLM personnel may request to you a copy of your permit during construction to ensure compliance with all stipulations.

Holder agrees to comply with the following stipulations to the satisfaction of the Authorized Officer:

1. The Holder shall indemnify the United States against any liability for damage to life or property arising from the occupancy or use of public lands under this grant.

2. The Holder shall comply with all applicable Federal laws and regulations existing or hereafter enacted or promulgated. In any event, the holder shall comply with the Toxic Substances Control Act of 1976 as amended, 15 USC 2601 et seq. (1982) with regards to any toxic substances that are used, generated by or stored on the right-of-way or on facilities authorized under this right-of-way grant. (See 40 CFR Part 702-799 and especially, provisions on polychlorinated biphenyls, 40 CFR 761.1-761.193.) Additionally, any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity established by 40 CFR Part 117 shall be reported as required by the Comprehensive Environmental Response, Compensation, and Liability Act, section 102b. A copy of any report required or requested by any Federal agency or State government as a result of a reportable release or spill of any toxic substances shall be furnished to the authorized officer concurrent with the filing of the reports to the involved Federal agency or State government.

3. The holder agrees to indemnify the United States against any liability arising from the release of any hazardous substance or hazardous waste (as these terms are defined in the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. 9601, et seq. or the Resource Conservation and Recovery Act, 42 U.S.C.6901, et seq.) on the Right-of-Way (unless the release or threatened release is wholly unrelated to the Right-of-Way holder's activity on the Right-of-Way), or resulting from the activity of the Right-of-Way holder on the Right-of-Way. This agreement applies without regard to whether a release is caused by the holder, its agent, or unrelated third parties.

4. If, during any phase of the construction, operation, maintenance, or termination of the pipeline, any oil or other pollutant should be discharged from the pipeline system, impacting Federal lands, the control and total removal, disposal, and cleaning up of such oil or other pollutant, wherever found, shall be the responsibility of holder, regardless of fault. Upon failure of holder to control, dispose of, or clean up such discharge on or affecting Federal lands, or to repair all damages resulting therefrom, on the Federal lands, the Authorized Officer may take such measures as he deems necessary to control and clean up the discharge and restore the area, including where appropriate, the aquatic environment and fish and wildlife

habitats, at the full expense of the holder. Such action by the Authorized Officer shall not relieve holder of any responsibility as provided herein.

5. All construction and maintenance activity will be confined to the authorized right-of-way.

6. The pipeline will be buried with a minimum cover of **36** inches between the top of the pipe and ground level.

7. The maximum allowable disturbance for construction in this right-of-way will be **30** feet:

- Blading of vegetation within the right-of-way will be allowed: maximum width of blading operations will not exceed **20** feet. The trench is included in this area. (*Blading is defined as the complete removal of brush and ground vegetation.*)

- Clearing of brush species within the right-of-way will be allowed: maximum width of clearing operations will not exceed **30** feet. The trench and bladed area are included in this area. (*Clearing is defined as the removal of brush while leaving ground vegetation (grasses, weeds, etc.) intact. Clearing is best accomplished by holding the blade 4 to 6 inches above the ground surface.*)

- The remaining area of the right-of-way (if any) shall only be disturbed by compressing the vegetation. (*Compressing can be caused by vehicle tires, placement of equipment, etc.*)

8. The holder shall stockpile an adequate amount of topsoil where blading is allowed. The topsoil to be stripped is approximately 6 inches in depth. The topsoil will be segregated from other spoil piles from trench construction. The topsoil will be evenly distributed over the bladed area for the preparation of seeding.

9. The holder shall minimize disturbance to existing fences and other improvements on public lands. The holder is required to promptly repair improvements to at least their former state. Functional use of these improvements will be maintained at all times. The holder will contact the owner of any improvements prior to disturbing them. When necessary to pass through a fence line, the fence shall be braced on both sides of the passageway prior to cutting of the fence. No permanent gates will be allowed unless approved by the Authorized Officer.

10. Vegetation, soil, and rocks left as a result of construction or maintenance activity will be randomly scattered on this right-of-way and will not be left in rows, piles, or berms, unless otherwise approved by the Authorized Officer. The entire right-of-way shall be recontoured to match the surrounding landscape. The backfilled soil shall be compacted and a 6 inch berm will be left over the ditch line to allow for settling back to grade.

11. In those areas where erosion control structures are required to stabilize soil conditions, the holder will install such structures as are suitable for the specific soil conditions being encountered and which are in accordance with sound resource management practices.

12. The holder will reseed all disturbed areas. Seeding will be done according to the attached seeding requirements, using the following seed mix.

( ) seed mixture 1	( ) seed mixture 3
( ) seed mixture 2	(X) seed mixture 4
( ) seed mixture 2/LPC	( ) Aplomado Falcon Mixture

13. All above-ground structures not subject to safety requirements shall be painted by the holder to blend with the natural color of the landscape. The paint used shall be color which simulates "Standard Environmental Colors" – **Shale Green**, Munsell Soil Color No. 5Y 4/2.

14. The pipeline will be identified by signs at the point of origin and completion of the right-of-way and at all road crossings. At a minimum, signs will state the holder's name, BLM serial number, and the product being transported. All signs and information thereon will be posted in a permanent, conspicuous manner, and will be maintained in a legible condition for the life of the pipeline.

15. The holder shall not use the pipeline route as a road for purposes other than routine maintenance as determined necessary by the Authorized Officer in consultation with the holder before maintenance begins. The holder will take whatever steps are necessary to ensure that the pipeline route is not used as a roadway. As determined necessary during the life of the pipeline, the Authorized Officer may ask the holder to construct temporary deterrence structures.

16. Any cultural and/or paleontological resources (historic or prehistoric site or object) discovered by the holder, or any person working on his behalf, on public or Federal land shall be immediately reported to the Authorized Officer. Holder 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 will be made by the Authorized Officer to determine appropriate actions to prevent the loss of significant cultural or scientific values. The holder will be responsible for the cost of evaluation and any decision as to proper mitigation measures will be made by the Authorized Officer after consulting with the holder.

17. 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 associated roads, 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.

18. Escape Ramps - The operator will construct and maintain pipeline/utility trenches that are not otherwise fenced, screened, or netted to prevent livestock, wildlife, and humans from becoming entrapped. At a minimum, the operator will construct and maintain escape ramps, ladders, or other methods of avian and terrestrial wildlife escape in the trenches according to the following criteria:

a. Any trench left open for eight (8) hours or less is not required to have escape ramps; however, before the trench is backfilled, the contractor/operator shall inspect the trench for wildlife, remove all trapped wildlife, and release them at least 100 yards from the trench.

For trenches left open for eight (8) hours or more, earthen escape ramps (built at no more than a 30 degree slope and spaced no more than 500 feet apart) shall be placed in the trench.

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 4, for Gypsum Sites

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

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

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

Species	lb/acre
Alkali Sacaton (*Sporobolus airoides*)	1.0
DWS Four-wing saltbush (*Atriplex canescens*)	5.0

DWS: DeWinged Seed

*Pounds of pure live seed:

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