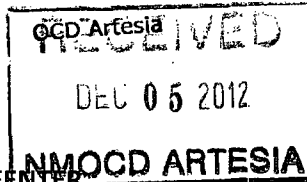


ATS-12-979

FORM APPROVED
OMB No. 1004-013
Expires July 31, 2010

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
APPLICATION FOR PERMIT TO DRILL OR REENTER



5. Lease Serial No. **150**
SHL: NMNM69033, BHL: NMNM100858
Lot 2: NMNM009003B

6. If Indian, Allottee or Tribe Name

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

8. Lease Name and Well No. **238444**
Blue Thunder 5 Federal #7H

9. API Well No. **30-015-40874**

10. Field and Pool, or Exploratory, **970567**
Hackberry, Bone Spring, **North**

11. Sec., T.R.M. or Blk and Survey or Area

Sec. 5 - T19S - R31E

12. County or Parish

Eddy County

13. State

NM

1a. Type of Work: ☒ DRILL ☐ REENTER

1b. Type of Well: ☒ Oil Well ☐ Gas Well ☐ Other ☒ Single Zone ☐ Multiple Zone

2. Name of Operator

COG Operating LLC.

3a. Address
2208 West Main Street
Artesia, NM 88210

3b. Phone No. (include area code)

575-748-6940

4. Location of Well (Report location clearly and in accordance with any State requirements. *)

At surface 660' FNL & 200' FEL Lot #1 (NENE)

At proposed prod. Zone 660' FNL & 330' FWL Lot #4 (NWNW)

14. Distance in miles and direction from nearest town or post office*

About 18 miles from Carlsbad

15. Distance from proposed*
location to nearest
property or lease line, ft.
(Also to nearest drig. Unit line, if any)

150'

16. No. of acres in lease

SHL: 639.22

Lot 2: 79.60

BHL: 159.58

17. Spacing Unit dedicated to this well

158.4

18. Distance from location*
to nearest well, drilling, completed,
applied for, on this lease, ft.

390'

TVD: 8810' MD: 13355'

NMB000740; NMB00215

21. Elevations (Show whether DF, KDB, RT, GL, etc.)

3583.3

22. Approximate date work will start*

12/1/2012

23. Estimated duration

30 days

24. Attachments

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

1. Well plat certified by a registered surveyor.
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

Mayte Reyes

Name (Printed/Typed)

Mayte Reyes

Date

7/19/2012

Title

Regulatory Analyst

Approved by (Signature)

/s/ Don Peterson

Name (Printed/Typed)

Date

NOV 30 2012

Title

FIELD MANAGER

Office

CARLSBAD FIELD OFFICE

Application approval does not warrant or certify that the applicant holds legan 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.C. 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)

*(Instructions on page 2)

Capitan Controlled Water Basin

Approval Subject to General Requirements
& Special Stipulations Attached

SEE ATTACHED FOR
CONDITIONS OF APPROVAL

District I
1625 N. French Dr., Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720
District III
1000 Rio Brazos Road, 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 & Natural Resources Department
OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-102
Revised August 1, 2011
Submit one copy to appropriate
District Office
☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number 30-015-40874	² Pool Code 990.56	³ Pool Name Wildcat, Bone Spring; North Hackberry
⁴ Property Code 38447	⁵ Property Name BLUE THUNDER 5 FEDERAL	
⁷ OGRID No. 229137	⁸ Operator Name COG OPERATING LLC	
		⁶ Well Number 7H
		⁹ Elevation 3583.3

¹⁰ Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
1	5	19 S	31 E		660	NORTH	200	EAST	EDDY

¹¹ 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
4	5	19 S	31 E		660	NORTH	330	WEST	EDDY

¹² Dedicated Acres 158.40	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No.
---	-------------------------------	----------------------------------	-------------------------

No allowable will be assigned to this completion until all interests have been consolidated or a non-standard unit has been approved by the division.

<p>S89°40'23"W 2640.74 FT LOT 4 LOT 3 N Q CORNER SEC. 5 LAT. = 32°41'47.977"N LONG. = 103°53'29.744"W NMSP EAST (FT) N = 617461.77 E = 677221.55</p>		<p>S89°38'22"W 2639.54 FT LOT 2 LOT 1 (SVY) SURFACE LOCATION 200' NE CORNER SEC. 5 LAT. = 32°41'48.031"N LONG. = 103°52'58.862"W NMSP EAST (FT) N = 617478.39 E = 679861.04</p>	
<p>660' BOTTOM OF HOLE 330' NW CORNER SEC. 5 LAT. = 32°41'47.935"N LONG. = 103°54'00.640"W NMSP EAST (FT) N = 617446.70 E = 674580.86</p>		<p>660' BLUE THUNDER 5 FEDERAL #7H ELEV. = 3583.3' LAT. = 32°41'41.498"N (NAD83) LONG. = 103°53'01.180"W NMSP EAST (FT) N = 616817.12 E = 679665.80</p>	
<p>660' W Q CORNER SEC. 5 LAT. = 32°41'21.950"N LONG. = 103°54'00.551"W NMSP EAST (FT) N = 614820.12 E = 674599.25</p>		<p>660' BOTTOM OF HOLE LAT. = 32°41'41.435"N LONG. = 103°53'56.815"W NMSP EAST (FT) N = 616788.60 E = 674915.47</p>	
<p>660' SW CORNER SEC. 5 LAT. = 32°40'55.819"N LONG. = 103°54'00.461"W NMSP EAST (FT) N = 612178.78 E = 674617.70</p>		<p>660' SE CORNER SEC. 5 LAT. = 32°40'55.904"N LONG. = 103°52'58.676"W NMSP EAST (FT) N = 612209.32 E = 679899.31</p>	
<p>660' COMPUTED</p>		<p>660'</p>	

N89°40'07"E 2640.85 FT

N89°40'07"E 2640.85 FT

N00°24'04"E 2626.64 FT

N00°24'49"W 2628.62 FT

N00°25'07"W 2640.59 FT

¹⁷ 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 released 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.
Signature: *Melanie J Parker* Date: 8/13/12
Printed Name: Melanie J Parker
E-mail Address: mparker@concho.com

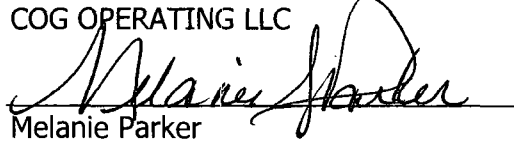
¹⁸ SURVEYOR CERTIFICATION
I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.
Date of Survey: JUNE 17, 2012
Signature and Seal of Professional Surveyor: *Frank J. Gamble*
Certificate Number: EILIMON F. GAMBLE, PLS 12797
SURVEY NO. 989

CERTIFICATION:

I hereby certify that I, or persons under my direct supervision, have inspected the proposed drillsite and access route, that I am familiar with the conditions which presently exist; that the statements made in this plan are to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed by COG Operating LLC and its contractors and subcontractors in conformity with this plan and the terms and conditions under which it is approved. This statement is subject to the provisions of 18 U.S.C. 1001 for the filing of a false statement.

07/18/12
Date

COG OPERATING LLC


Melanie Parker
Regulatory Coordinator

COG Operating LLC
DRILLING AND OPERATIONS PROGRAM

Blue Thunder 5 Fed #7H
SHL: 660' FNL & 200' FEL
BHL: 660' FNL & 330' FWL
Section 5 T19S R31E
Eddy County, New Mexico

In conjunction with Form 3160-3, Application for Permit to Drill subject well, COG Operating LLC submits the following eleven items of pertinent information in accordance with BLM requirements.

1. Geological surface formation: Permian
2. The estimated tops of geologic markers & estimated depths at which anticipated water, oil or gas formations are expected to be encountered are as follows:

Fresh Water	130'	
Rustler	640'	
Top of Salt	723'	
Base of Salt	2,195'	
Yates	2,401'	
Seven Rivers	2,686'	
Queen	3,276'	
Grayburg	3,774'	
Delaware	4,292'	Oil
Bone Spring	6,440'	Oil
2 nd Bone Spring	8,593'	Oil
TD TVD	8,810'	
TD MD	13,355'	

No other formations are expected to give up oil, gas or fresh water in measurable quantities. The surface fresh water sands will be protected by setting 13-3/8" casing at 670' and circulating cement back to surface. All intervals will be isolated by setting 5 1/2" casing to total depth and tying back cement to a minimum of 500' into 9-5/8" csg.

3. Proposed Casing Program: All casing is new and API approved

Hole Size	Depths	* Section *	OD Casing	New/Used	Wt	Collar	Grade	Collapse Design Factor	Burst Design Factor	Tension Design Factor
17 1/2"	0' - 670' ⁷²⁰	See COA Surface	13 3/8"	New	54.5#	STC	J-55	1.125	1.125	1.6
12 1/4"	0' - 2,700'	Intrmd	9 5/8"	New	36#	LTC	J-55	1.125	1.125	1.6
7 7/8"	0' - 13,355'	Production Curve & Lateral	5 1/2"	New	17#	LTC	P-110	1.125	1.125	1.6

- While running all casing strings, the pipe will be kept a minimum of 1/3 full at all times to avoid approaching the collapse pressure of casing.

4. Proposed Cement Program

- a. 13-3/8" Surface
- Lead: 200 sx Class C + 4% Gel + 2% CaCl₂
(13.5 ppg / 1.75 cuft/sx)
- Tail: 250 sx Class C + 2% CaCl₂
(14.8 ppg / 1.34 cuft/sx)
- **Calculated w/50% excess on OH volumes
- b. 9 5/8" Intermediate:
- Lead: 450 sx Class C + 4% Gel + 2% CaCl₂
(13.5 ppg / 1.75 cuft/sx)
- Tail: 250 sx Class C + 2% CaCl₂
(14.8 ppg / 1.34 cuft/sx)
- **Calculated w/35% excess on OH volumes
- d. 5 1/2" Production
- Lead: 575 sx 50:50:10 H + Salt+Gilsonite+CFR-3+ HR601
(11.8 ppg / 2.5 cuft/sx)
- Tail: 950 sx 50:50:2 H +Salt+GasStop +HR601 +CFR-3
(14.4 ppg / 1.25 cuft/sx)
- **Calculated w/35% excess on OH volumes
- The above cement volumes could be revised pending the caliper measurement from the open hole logs.
 - The 9-5/8" intermediate string is designed to circulate to surface.
 - The production string will at least tie back 500' into 9-5/8" shoe

5. Control:

Nipple up on 13 3/8 with annular preventer tested to 50% of rating working pressure by independent tester and the rest of the 2M system tested to 2000 psi.

Nipple up on 9 5/8 with 3M system tested 3000 psi to by independent tester.

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. A 2" kill line and a minimum 3" choke line will be included in the drilling spool located below the ram-type BOP. Other accessories to the BOP equipment will include a Kelly cock and floor safety valve (inside BOP) and choke lines and choke manifold with 3000 psi WP rating.

6. Estimated BHP:

Lateral TD = 3821 psi

7. Mud Program: The applicable depths and properties of this system are as follows:

Depth	Type System	Mud Weight	Viscosity (sec)	Waterloss (cc)
0' - 670' ¹²⁰	Fresh Water	8.4	29	N.C.
670' - 2,700'	Brine	10	29	N.C.
2,700' - 13,355' (Lateral)	Cut Brine	8.8 - 9.2	29	N.C.

The necessary mud products for weight addition and fluid loss control will be on location at all times.

8. Auxiliary Well Control and Monitoring Equipment:

- a. A Kelly cock will be in the drill string at all times.
- b. A full opening drill pipe stabbing valve having the appropriate connections will be on the rig floor at all times.
- c. Hydrogen Sulfide detection equipment will be in operation after drilling out the 13 3/8" casing shoe until the 5 1/2" casing is cemented. Breathing equipment will be on location upon drilling the 13 3/8" shoe until total depth is reached.

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

- a. Drill stem tests will be based on geological sample shows.
- b. If open hole electrical logging is preformed, the program will be:
 - i. Total Depth to Intermediate Casing: Dual Laterolog-Micro Laterolog and Gamma Ray. Compensated Neutron – Z Density log with Gamma Ray and Caliper.
 - ii. Total Depth to Surface: Compensated Neutron with Gamma Ray
 - iii. No coring program is planned
 - iv. Additional testing will be initiated subsequent to setting the 5 1/2" production casing. Specific intervals will be targeted based on log evaluation, geological sample shows and drill stem tests.

10. Potential Hazards:

- a. No abnormal pressures or temperatures are expected. There is no known presence of H₂S in this area. If H₂S is encountered the operator will comply with the provisions of Onshore Oil and Gas Order No. 6. All personnel will be familiar with all aspects of safe operation of equipment being used to drill this well. No H₂S is anticipated to be encountered.

11. Anticipated starting date and Duration of Operations:

- a. Road and location construction will begin after the BLM has approved the APD. Anticipated spud date will be as possible after BLM approval and as soon as a rig will be available. Move in operations and drilling is expected to take 30 days.



COG Operating LLC

Eddy County(NAD83)

Blue Thunder 5 Federal

#7H

OH

Plan: Plan #1

Pathfinder X & Y Report

13 July, 2012



A Schlumberger Company



Pathfinder
Pathfinder X & Y Report

PATHFINDER
A Schlumberger Company

Company:	C&G Operating LLC	Local Co-ordinate Reference:	Well #7H
Project:	Eddy County(NAD83)	TVD Reference:	KB = 17' @ 3600.3usft (Original Well Elev)
Site:	Blue Thunder 5 Federal	MD Reference:	KB = 17' @ 3600.3usft (Original Well Elev)
Well:	#7H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1	Database:	EDM 5000.1 Single User Db

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

Site: Blue Thunder 5 Federal	
Site Position:	
From: Map	
Position Uncertainty: 0.0 usft	
Northing: 612,684.890 usft	Latitude: 32.684
Easting: 679,399.520 usft	Longitude: -103.885
Slot Radius: 13-3/16 "	Grid Convergence: 0.24 °

Well:	#7H					
Well Position	+N/-S	0.0 usft	Northing:	616,817.120 usft	Latitude:	32.695
	+E/-W	0.0 usft	Easting:	679,665.800 usft	Longitude:	-103.884
Position Uncertainty	0.0 usft		Wellhead Elevation:	usft	Ground Level:	3,583.3 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	7/13/2012	7.62	60.57	48,797

Design:		Plan #1		
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction
	(usft)	(usft)	(usft)	(°)
	0.0	0.0	0.0	269.66

Survey Tool Program	Date	7/13/2012
From	To	
(usft)	(usft)	
Survey (Wellbore)	Tool Name	Description
0.0	13,355.5	Plan #1 (OH)



Pathfinder
Pathfinder X & Y Report

PATHFINDER
A Schlumberger Company

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #7H
Project:	Eddy County(NAD83)	TVD Reference:	KB = 17' @ 3600.3usft (Original Well Elev)
Site:	Blue Thunder 5 Federal	MD Reference:	KB = 17' @ 3600.3usft (Original Well Elev)
Well:	#7H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1	Database:	EDM 5000.1 Single User Db

Planned Survey												
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)		
0.0	0.00	0.00	0.0	-3,600.3	0.0	0.0	0.0	0.00	616,817.12	679,665.80		
100.0	0.00	0.00	100.0	-3,500.3	0.0	0.0	0.0	0.00	616,817.12	679,665.80		
200.0	0.00	0.00	200.0	-3,400.3	0.0	0.0	0.0	0.00	616,817.12	679,665.80		
300.0	0.00	0.00	300.0	-3,300.3	0.0	0.0	0.0	0.00	616,817.12	679,665.80		
400.0	0.00	0.00	400.0	-3,200.3	0.0	0.0	0.0	0.00	616,817.12	679,665.80		
500.0	0.00	0.00	500.0	-3,100.3	0.0	0.0	0.0	0.00	616,817.12	679,665.80		
600.0	0.00	0.00	600.0	-3,000.3	0.0	0.0	0.0	0.00	616,817.12	679,665.80		
700.0	0.00	0.00	700.0	-2,900.3	0.0	0.0	0.0	0.00	616,817.12	679,665.80		
800.0	0.00	0.00	800.0	-2,800.3	0.0	0.0	0.0	0.00	616,817.12	679,665.80		
900.0	0.00	0.00	900.0	-2,700.3	0.0	0.0	0.0	0.00	616,817.12	679,665.80		
1,000.0	0.00	0.00	1,000.0	-2,600.3	0.0	0.0	0.0	0.00	616,817.12	679,665.80		
1,100.0	0.00	0.00	1,100.0	-2,500.3	0.0	0.0	0.0	0.00	616,817.12	679,665.80		
1,200.0	0.00	0.00	1,200.0	-2,400.3	0.0	0.0	0.0	0.00	616,817.12	679,665.80		
1,300.0	0.00	0.00	1,300.0	-2,300.3	0.0	0.0	0.0	0.00	616,817.12	679,665.80		
1,400.0	0.00	0.00	1,400.0	-2,200.3	0.0	0.0	0.0	0.00	616,817.12	679,665.80		
1,500.0	0.00	0.00	1,500.0	-2,100.3	0.0	0.0	0.0	0.00	616,817.12	679,665.80		
1,600.0	0.00	0.00	1,600.0	-2,000.3	0.0	0.0	0.0	0.00	616,817.12	679,665.80		
1,700.0	0.00	0.00	1,700.0	-1,900.3	0.0	0.0	0.0	0.00	616,817.12	679,665.80		
1,800.0	0.00	0.00	1,800.0	-1,800.3	0.0	0.0	0.0	0.00	616,817.12	679,665.80		
1,900.0	0.00	0.00	1,900.0	-1,700.3	0.0	0.0	0.0	0.00	616,817.12	679,665.80		
2,000.0	0.00	0.00	2,000.0	-1,600.3	0.0	0.0	0.0	0.00	616,817.12	679,665.80		
2,100.0	0.00	0.00	2,100.0	-1,500.3	0.0	0.0	0.0	0.00	616,817.12	679,665.80		
2,200.0	0.00	0.00	2,200.0	-1,400.3	0.0	0.0	0.0	0.00	616,817.12	679,665.80		
2,300.0	0.00	0.00	2,300.0	-1,300.3	0.0	0.0	0.0	0.00	616,817.12	679,665.80		
2,400.0	0.00	0.00	2,400.0	-1,200.3	0.0	0.0	0.0	0.00	616,817.12	679,665.80		
2,500.0	0.00	0.00	2,500.0	-1,100.3	0.0	0.0	0.0	0.00	616,817.12	679,665.80		
2,600.0	0.00	0.00	2,600.0	-1,000.3	0.0	0.0	0.0	0.00	616,817.12	679,665.80		



Pathfinder Pathfinder X & Y Report

PATHFINDER
A Schlumberger Company

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #7H
Project:	Eddy County(NAD83)	TVD Reference:	KB = 17' @ 3600.3usft (Original Well Elev)
Site:	Blue Thunder 5 Federal	MD Reference:	KB = 17' @ 3600.3usft (Original Well Elev)
Well:	#7H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1	Database:	EDM 5000.1 Single User Db

Planned Survey											
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)	
2,700.0	0.00	0.00	2,700.0	-900.3	0.0	0.0	0.0	0.00	616,817.12	679,665.80	
2,800.0	0.00	0.00	2,800.0	-800.3	0.0	0.0	0.0	0.00	616,817.12	679,665.80	
2,900.0	0.00	0.00	2,900.0	-700.3	0.0	0.0	0.0	0.00	616,817.12	679,665.80	
3,000.0	0.00	0.00	3,000.0	-600.3	0.0	0.0	0.0	0.00	616,817.12	679,665.80	
3,100.0	0.00	0.00	3,100.0	-500.3	0.0	0.0	0.0	0.00	616,817.12	679,665.80	
3,200.0	0.00	0.00	3,200.0	-400.3	0.0	0.0	0.0	0.00	616,817.12	679,665.80	
3,300.0	0.00	0.00	3,300.0	-300.3	0.0	0.0	0.0	0.00	616,817.12	679,665.80	
3,400.0	0.00	0.00	3,400.0	-200.3	0.0	0.0	0.0	0.00	616,817.12	679,665.80	
3,500.0	0.00	0.00	3,500.0	-100.3	0.0	0.0	0.0	0.00	616,817.12	679,665.80	
3,600.0	0.00	0.00	3,600.0	-0.3	0.0	0.0	0.0	0.00	616,817.12	679,665.80	
3,700.0	0.00	0.00	3,700.0	99.7	0.0	0.0	0.0	0.00	616,817.12	679,665.80	
3,800.0	0.00	0.00	3,800.0	199.7	0.0	0.0	0.0	0.00	616,817.12	679,665.80	
3,900.0	0.00	0.00	3,900.0	299.7	0.0	0.0	0.0	0.00	616,817.12	679,665.80	
4,000.0	0.00	0.00	4,000.0	399.7	0.0	0.0	0.0	0.00	616,817.12	679,665.80	
4,100.0	0.00	0.00	4,100.0	499.7	0.0	0.0	0.0	0.00	616,817.12	679,665.80	
4,200.0	0.00	0.00	4,200.0	599.7	0.0	0.0	0.0	0.00	616,817.12	679,665.80	
4,300.0	0.00	0.00	4,300.0	699.7	0.0	0.0	0.0	0.00	616,817.12	679,665.80	
4,400.0	0.00	0.00	4,400.0	799.7	0.0	0.0	0.0	0.00	616,817.12	679,665.80	
4,500.0	0.00	0.00	4,500.0	899.7	0.0	0.0	0.0	0.00	616,817.12	679,665.80	
4,600.0	0.00	0.00	4,600.0	999.7	0.0	0.0	0.0	0.00	616,817.12	679,665.80	
4,700.0	0.00	0.00	4,700.0	1,099.7	0.0	0.0	0.0	0.00	616,817.12	679,665.80	
4,800.0	0.00	0.00	4,800.0	1,199.7	0.0	0.0	0.0	0.00	616,817.12	679,665.80	
4,900.0	0.00	0.00	4,900.0	1,299.7	0.0	0.0	0.0	0.00	616,817.12	679,665.80	
5,000.0	0.00	0.00	5,000.0	1,399.7	0.0	0.0	0.0	0.00	616,817.12	679,665.80	
5,100.0	0.00	0.00	5,100.0	1,499.7	0.0	0.0	0.0	0.00	616,817.12	679,665.80	
5,200.0	0.00	0.00	5,200.0	1,599.7	0.0	0.0	0.0	0.00	616,817.12	679,665.80	
5,300.0	0.00	0.00	5,300.0	1,699.7	0.0	0.0	0.0	0.00	616,817.12	679,665.80	



Pathfinder
Pathfinder X & Y Report

PATHFINDER
A Schlumberger Company

Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well #7H
Project:	Eddy County(NAD83)	TVD Reference:	KB = 17' @ 3600.3usft (Original Well Elev)
Site:	Blue Thunder 5 Federal	MD Reference:	KB = 17' @ 3600.3usft (Original Well Elev)
Well:	#7H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1	Database:	EDM 5000.1 Single User Db

Planned Survey												
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)		
5,400.0	0.00	0.00	5,400.0	1,799.7	0.0	0.0	0.0	0.00	616,817.12	679,665.80		
5,500.0	0.00	0.00	5,500.0	1,899.7	0.0	0.0	0.0	0.00	616,817.12	679,665.80		
5,600.0	0.00	0.00	5,600.0	1,999.7	0.0	0.0	0.0	0.00	616,817.12	679,665.80		
5,700.0	0.00	0.00	5,700.0	2,099.7	0.0	0.0	0.0	0.00	616,817.12	679,665.80		
5,800.0	0.00	0.00	5,800.0	2,199.7	0.0	0.0	0.0	0.00	616,817.12	679,665.80		
5,900.0	0.00	0.00	5,900.0	2,299.7	0.0	0.0	0.0	0.00	616,817.12	679,665.80		
6,000.0	0.00	0.00	6,000.0	2,399.7	0.0	0.0	0.0	0.00	616,817.12	679,665.80		
6,100.0	0.00	0.00	6,100.0	2,499.7	0.0	0.0	0.0	0.00	616,817.12	679,665.80		
6,200.0	0.00	0.00	6,200.0	2,599.7	0.0	0.0	0.0	0.00	616,817.12	679,665.80		
6,300.0	0.00	0.00	6,300.0	2,699.7	0.0	0.0	0.0	0.00	616,817.12	679,665.80		
6,400.0	0.00	0.00	6,400.0	2,799.7	0.0	0.0	0.0	0.00	616,817.12	679,665.80		
6,500.0	0.00	0.00	6,500.0	2,899.7	0.0	0.0	0.0	0.00	616,817.12	679,665.80		
6,600.0	0.00	0.00	6,600.0	2,999.7	0.0	0.0	0.0	0.00	616,817.12	679,665.80		
6,700.0	0.00	0.00	6,700.0	3,099.7	0.0	0.0	0.0	0.00	616,817.12	679,665.80		
6,800.0	0.00	0.00	6,800.0	3,199.7	0.0	0.0	0.0	0.00	616,817.12	679,665.80		
6,900.0	0.00	0.00	6,900.0	3,299.7	0.0	0.0	0.0	0.00	616,817.12	679,665.80		
7,000.0	0.00	0.00	7,000.0	3,399.7	0.0	0.0	0.0	0.00	616,817.12	679,665.80		
7,100.0	0.00	0.00	7,100.0	3,499.7	0.0	0.0	0.0	0.00	616,817.12	679,665.80		
7,200.0	0.00	0.00	7,200.0	3,599.7	0.0	0.0	0.0	0.00	616,817.12	679,665.80		
7,300.0	0.00	0.00	7,300.0	3,699.7	0.0	0.0	0.0	0.00	616,817.12	679,665.80		
7,400.0	0.00	0.00	7,400.0	3,799.7	0.0	0.0	0.0	0.00	616,817.12	679,665.80		
7,500.0	0.00	0.00	7,500.0	3,899.7	0.0	0.0	0.0	0.00	616,817.12	679,665.80		
7,600.0	0.00	0.00	7,600.0	3,999.7	0.0	0.0	0.0	0.00	616,817.12	679,665.80		
7,700.0	0.00	0.00	7,700.0	4,099.7	0.0	0.0	0.0	0.00	616,817.12	679,665.80		
7,800.0	0.00	0.00	7,800.0	4,199.7	0.0	0.0	0.0	0.00	616,817.12	679,665.80		
7,900.0	0.00	0.00	7,900.0	4,299.7	0.0	0.0	0.0	0.00	616,817.12	679,665.80		
8,000.0	0.00	0.00	8,000.0	4,399.7	0.0	0.0	0.0	0.00	616,817.12	679,665.80		



Pathfinder Pathfinder X & Y Report

PATHFINDER
A Schlumberger Company

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #7H
Project:	Eddy County(NAD83)	TVD Reference:	KB = 17' @ 3600.3usft (Original Well Elev)
Site:	Blue Thunder 5 Federal	MD Reference:	KB = 17' @ 3600.3usft (Original Well Elev)
Well:	#7H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1	Database:	EDM 5000:1 Single User Db

Planned Survey:											
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	V: Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)	
8,100.0	0.00	0.00	8,100.0	4,499.7	0.0	0.0	0.0	0.00	616,817.12	679,665.80	
8,200.0	0.00	0.00	8,200.0	4,599.7	0.0	0.0	0.0	0.00	616,817.12	679,665.80	
8,300.0	0.00	0.00	8,300.0	4,699.7	0.0	0.0	0.0	0.00	616,817.12	679,665.80	
8,332.5	0.00	0.00	8,332.5	4,732.2	0.0	0.0	0.0	0.00	616,817.12	679,665.80	
8,350.0	2.10	269.66	8,350.0	4,749.7	0.0	-0.3	0.3	12.00	616,817.12	679,665.48	
8,375.0	5.10	269.66	8,374.9	4,774.6	0.0	-1.9	1.9	12.00	616,817.11	679,663.91	
8,400.0	8.10	269.66	8,399.8	4,799.5	0.0	-4.8	4.8	12.00	616,817.09	679,661.04	
8,425.0	11.10	269.66	8,424.4	4,824.1	-0.1	-8.9	8.9	12.00	616,817.07	679,656.87	
8,450.0	14.10	269.66	8,448.8	4,848.5	-0.1	-14.4	14.4	12.00	616,817.03	679,651.42	
8,475.0	17.10	269.66	8,472.9	4,872.6	-0.1	-21.1	21.1	12.00	616,816.99	679,644.69	
8,500.0	20.10	269.66	8,496.6	4,896.3	-0.2	-29.1	29.1	12.00	616,816.95	679,636.72	
8,525.0	23.10	269.66	8,519.8	4,919.5	-0.2	-38.3	38.3	12.00	616,816.89	679,627.52	
8,550.0	26.10	269.66	8,542.6	4,942.3	-0.3	-48.7	48.7	12.00	616,816.83	679,617.11	
8,575.0	29.10	269.66	8,564.7	4,964.4	-0.4	-60.3	60.3	12.00	616,816.76	679,605.53	
8,600.0	32.10	269.66	8,586.2	4,985.9	-0.4	-73.0	73.0	12.00	616,816.68	679,592.81	
8,625.0	35.10	269.66	8,607.0	5,006.7	-0.5	-86.8	86.8	12.00	616,816.60	679,578.97	
8,650.0	38.10	269.66	8,627.1	5,026.8	-0.6	-101.7	101.7	12.00	616,816.51	679,564.07	
8,675.0	41.10	269.66	8,646.4	5,046.1	-0.7	-117.7	117.7	12.00	616,816.41	679,548.14	
8,700.0	44.10	269.66	8,664.8	5,064.5	-0.8	-134.6	134.6	12.00	616,816.31	679,531.22	
8,725.0	47.10	269.66	8,682.3	5,082.0	-0.9	-152.4	152.4	12.00	616,816.20	679,513.36	
8,750.0	50.10	269.66	8,698.8	5,098.5	-1.0	-171.2	171.2	12.00	616,816.09	679,494.61	
8,775.0	53.10	269.66	8,714.3	5,114.0	-1.1	-190.8	190.8	12.00	616,815.97	679,475.02	
8,800.0	56.10	269.66	8,728.8	5,128.5	-1.3	-211.2	211.2	12.00	616,815.85	679,454.64	
8,825.0	59.10	269.66	8,742.2	5,141.9	-1.4	-232.3	232.3	12.00	616,815.73	679,433.54	
8,850.0	62.10	269.66	8,754.5	5,154.2	-1.5	-254.0	254.0	12.00	616,815.59	679,411.76	
8,875.0	65.10	269.66	8,765.6	5,165.3	-1.7	-276.4	276.4	12.00	616,815.46	679,389.37	
8,900.0	68.10	269.66	8,775.5	5,175.2	-1.8	-299.4	299.4	12.00	616,815.32	679,366.43	



Pathfinder
Pathfinder X & Y Report

PATHFINDER
A Schlumberger Company

Company: COG Operating LLC
Project: Eddy County(NAD83)
Site: Blue Thunder 5 Federal
Well: #7H
Wellbore: OH
Design: Plan #1

Local Co-ordinate Reference:
TVD Reference:
MD Reference:
North Reference:
Survey Calculation Method:
Database:

Well #7H
KB = 17' @ 3600.3usft (Original Well Elev)
KB = 17' @ 3600.3usft (Original Well Elev)
Grid
Minimum Curvature
EDM 5000.1 Single User Db

Planned Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)
8,925.0	71.10	269.66	8,784.2	5,183.9	-1.9	-322.8	322.8	12.00	616,815.18	679,343.00
8,950.0	74.10	269.66	8,791.7	5,191.4	-2.1	-346.7	346.7	12.00	616,815.04	679,319.15
8,975.0	77.10	269.66	8,797.9	5,197.6	-2.2	-370.9	370.9	12.00	616,814.89	679,294.94
9,000.0	80.10	269.66	8,802.9	5,202.6	-2.4	-395.4	395.4	12.00	616,814.75	679,270.43
9,025.0	83.10	269.66	8,806.5	5,206.2	-2.5	-420.1	420.1	12.00	616,814.60	679,245.70
9,050.0	86.10	269.66	8,808.9	5,208.6	-2.7	-445.0	445.0	12.00	616,814.45	679,220.82
9,075.0	89.10	269.66	8,809.9	5,209.6	-2.8	-470.0	470.0	12.00	616,814.30	679,195.84
9,082.5	90.00	269.66	8,810.0	5,209.7	-2.9	-477.5	477.5	12.00	616,814.25	679,188.35
9,100.0	90.00	269.66	8,810.0	5,209.7	-3.0	-495.0	495.0	0.00	616,814.15	679,170.84
9,200.0	90.00	269.66	8,810.0	5,209.7	-3.6	-595.0	595.0	0.00	616,813.55	679,070.85
9,300.0	90.00	269.66	8,810.0	5,209.7	-4.2	-695.0	695.0	0.00	616,812.95	678,970.85
9,400.0	90.00	269.66	8,810.0	5,209.7	-4.8	-795.0	795.0	0.00	616,812.35	678,870.85
9,500.0	90.00	269.66	8,810.0	5,209.7	-5.4	-894.9	895.0	0.00	616,811.75	678,770.85
9,600.0	90.00	269.66	8,810.0	5,209.7	-6.0	-994.9	995.0	0.00	616,811.15	678,670.85
9,700.0	90.00	269.66	8,810.0	5,209.7	-6.6	-1,094.9	1,095.0	0.00	616,810.55	678,570.85
9,800.0	90.00	269.66	8,810.0	5,209.7	-7.2	-1,194.9	1,195.0	0.00	616,809.95	678,470.86
9,900.0	90.00	269.66	8,810.0	5,209.7	-7.8	-1,294.9	1,295.0	0.00	616,809.35	678,370.86
10,000.0	90.00	269.66	8,810.0	5,209.7	-8.4	-1,394.9	1,395.0	0.00	616,808.75	678,270.86
10,100.0	90.00	269.66	8,810.0	5,209.7	-9.0	-1,494.9	1,495.0	0.00	616,808.14	678,170.86
10,200.0	90.00	269.66	8,810.0	5,209.7	-9.6	-1,594.9	1,595.0	0.00	616,807.54	678,070.86
10,300.0	90.00	269.66	8,810.0	5,209.7	-10.2	-1,694.9	1,695.0	0.00	616,806.94	677,970.87
10,400.0	90.00	269.66	8,810.0	5,209.7	-10.8	-1,794.9	1,795.0	0.00	616,806.34	677,870.87
10,500.0	90.00	269.66	8,810.0	5,209.7	-11.4	-1,894.9	1,895.0	0.00	616,805.74	677,770.87
10,600.0	90.00	269.66	8,810.0	5,209.7	-12.0	-1,994.9	1,995.0	0.00	616,805.14	677,670.87
10,700.0	90.00	269.66	8,810.0	5,209.7	-12.6	-2,094.9	2,095.0	0.00	616,804.54	677,570.87
10,800.0	90.00	269.66	8,810.0	5,209.7	-13.2	-2,194.9	2,195.0	0.00	616,803.94	677,470.87
10,900.0	90.00	269.66	8,810.0	5,209.7	-13.8	-2,294.9	2,295.0	0.00	616,803.34	677,370.88



Pathfinder
Pathfinder X & Y Report

PATHFINDER
A Schlumberger Company

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #7H
Project:	Eddy County(NAD83)	TVD Reference:	KB = 17' @ 3600.3usft (Original Well Elev)
Site:	Blue Thunder 5 Federal	MD Reference:	KB = 17' @ 3600.3usft (Original Well Elev)
Well:	#7H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1	Database:	EDM 5000.1 Single User Db

Planned Survey											
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (%/100usft)	Northing (usft)	Easting (usft)	
11,000.0	90.00	269.66	8,810.0	5,209.7	-14.4	-2,394.9	2,395.0	0.00	616,802.74	677,270.88	
11,100.0	90.00	269.66	8,810.0	5,209.7	-15.0	-2,494.9	2,495.0	0.00	616,802.14	677,170.88	
11,200.0	90.00	269.66	8,810.0	5,209.7	-15.6	-2,594.9	2,595.0	0.00	616,801.54	677,070.88	
11,300.0	90.00	269.66	8,810.0	5,209.7	-16.2	-2,694.9	2,695.0	0.00	616,800.94	676,970.88	
11,400.0	90.00	269.66	8,810.0	5,209.7	-16.8	-2,794.9	2,795.0	0.00	616,800.34	676,870.89	
11,500.0	90.00	269.66	8,810.0	5,209.7	-17.4	-2,894.9	2,895.0	0.00	616,799.74	676,770.89	
11,600.0	90.00	269.66	8,810.0	5,209.7	-18.0	-2,994.9	2,995.0	0.00	616,799.14	676,670.89	
11,700.0	90.00	269.66	8,810.0	5,209.7	-18.6	-3,094.9	3,095.0	0.00	616,798.54	676,570.89	
11,800.0	90.00	269.66	8,810.0	5,209.7	-19.2	-3,194.9	3,195.0	0.00	616,797.94	676,470.89	
11,900.0	90.00	269.66	8,810.0	5,209.7	-19.8	-3,294.9	3,295.0	0.00	616,797.34	676,370.89	
12,000.0	90.00	269.66	8,810.0	5,209.7	-20.4	-3,394.9	3,395.0	0.00	616,796.74	676,270.90	
12,100.0	90.00	269.66	8,810.0	5,209.7	-21.0	-3,494.9	3,495.0	0.00	616,796.14	676,170.90	
12,200.0	90.00	269.66	8,810.0	5,209.7	-21.6	-3,594.9	3,595.0	0.00	616,795.54	676,070.90	
12,300.0	90.00	269.66	8,810.0	5,209.7	-22.2	-3,694.9	3,695.0	0.00	616,794.94	675,970.90	
12,400.0	90.00	269.66	8,810.0	5,209.7	-22.8	-3,794.9	3,795.0	0.00	616,794.34	675,870.90	
12,500.0	90.00	269.66	8,810.0	5,209.7	-23.4	-3,894.9	3,895.0	0.00	616,793.74	675,770.91	
12,600.0	90.00	269.66	8,810.0	5,209.7	-24.0	-3,994.9	3,995.0	0.00	616,793.14	675,670.91	
12,700.0	90.00	269.66	8,810.0	5,209.7	-24.6	-4,094.9	4,095.0	0.00	616,792.54	675,570.91	
12,800.0	90.00	269.66	8,810.0	5,209.7	-25.2	-4,194.9	4,195.0	0.00	616,791.93	675,470.91	
12,900.0	90.00	269.66	8,810.0	5,209.7	-25.8	-4,294.9	4,295.0	0.00	616,791.33	675,370.91	
13,000.0	90.00	269.66	8,810.0	5,209.7	-26.4	-4,394.9	4,395.0	0.00	616,790.73	675,270.91	
13,100.0	90.00	269.66	8,810.0	5,209.7	-27.0	-4,494.9	4,495.0	0.00	616,790.13	675,170.92	
13,200.0	90.00	269.66	8,810.0	5,209.7	-27.6	-4,594.9	4,595.0	0.00	616,789.53	675,070.92	
13,300.0	90.00	269.66	8,810.0	5,209.7	-28.2	-4,694.9	4,695.0	0.00	616,788.93	674,970.92	
13,355.5	90.00	269.66	8,810.0	5,209.7	-28.5	-4,750.3	4,750.4	0.00	616,788.60	674,915.47	



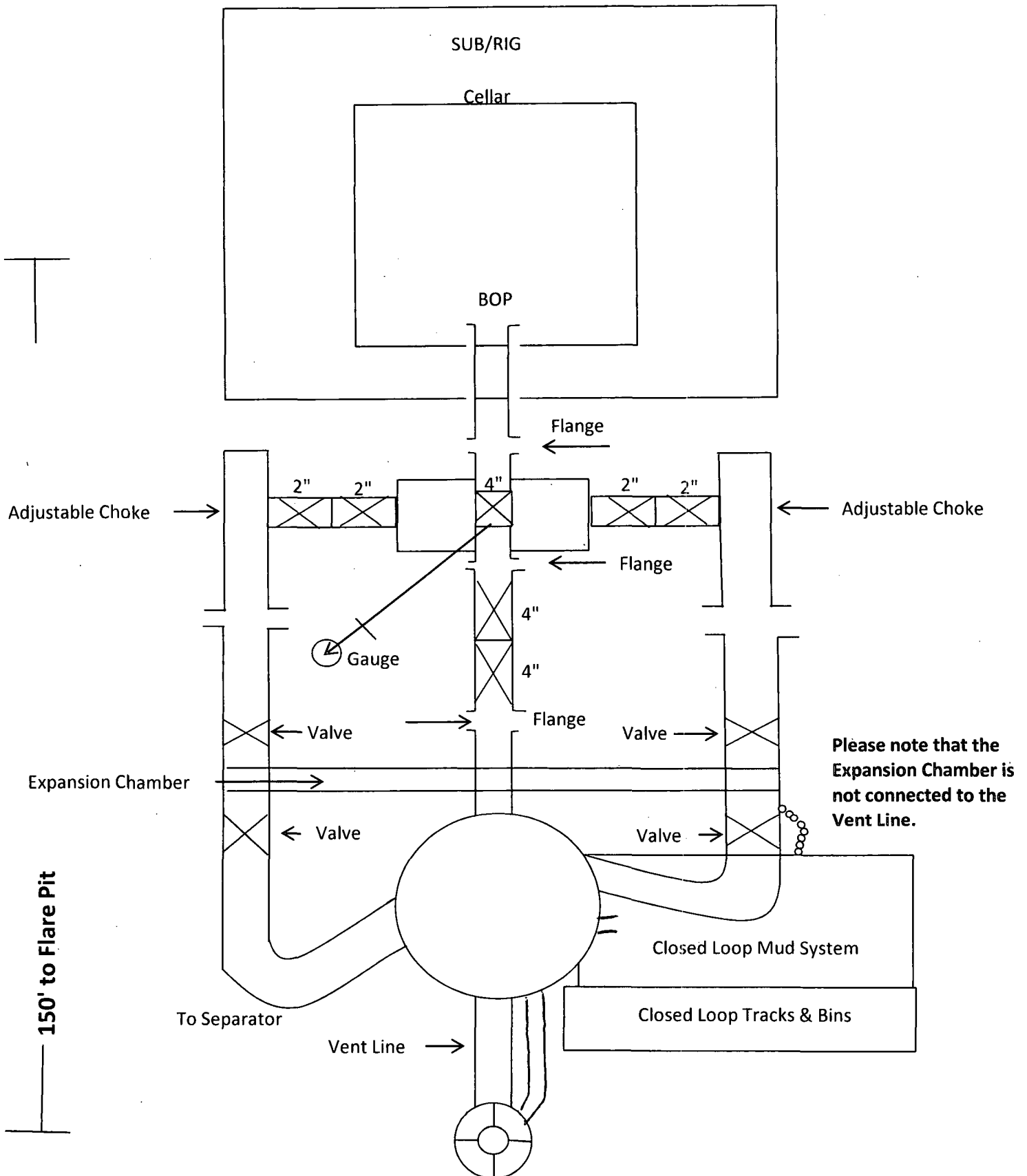
Pathfinder
Pathfinder X & Y Report

PATHFINDER
A Schlumberger Company

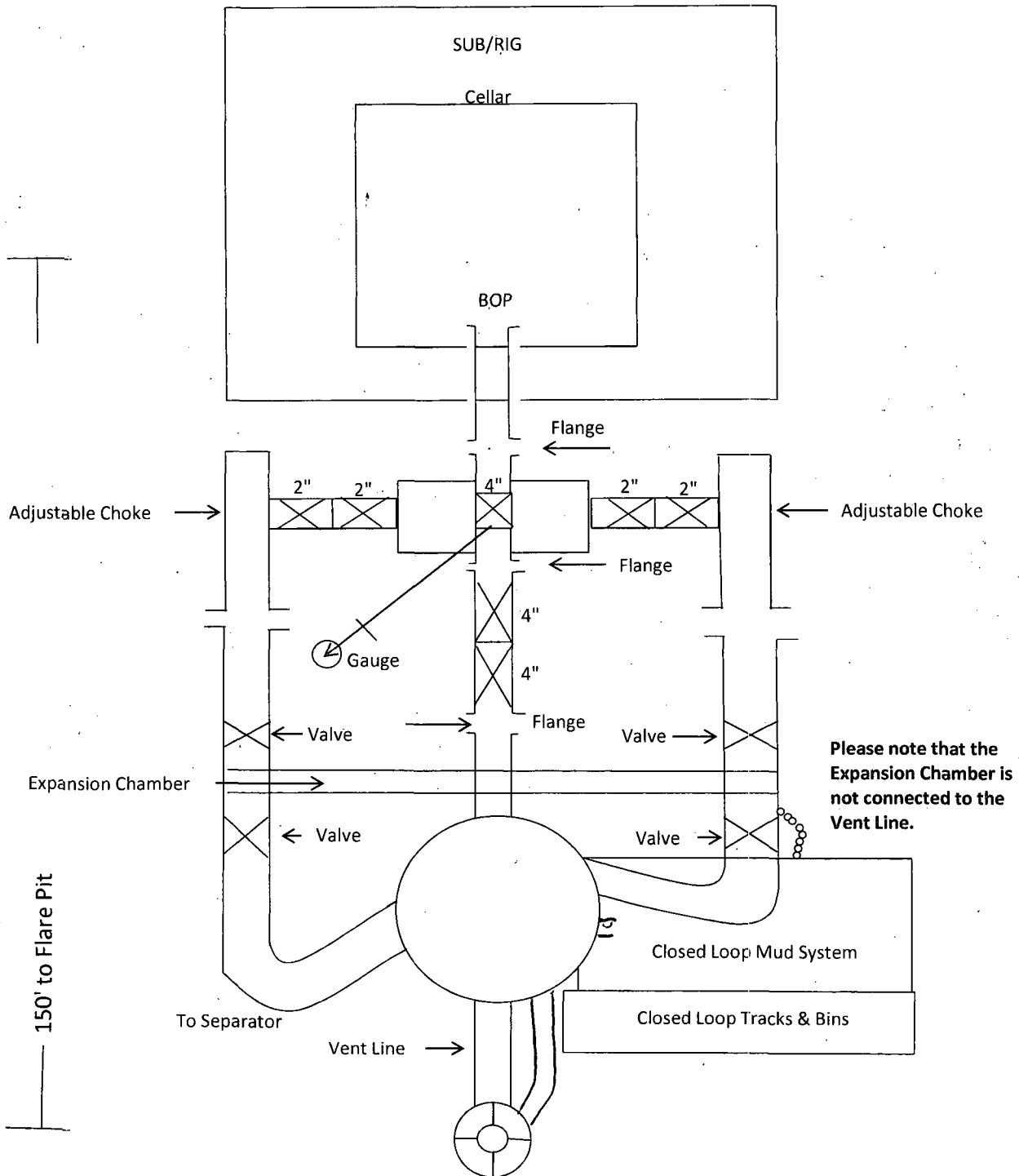
Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #7H
Project:	Eddy County(NAD83)	TVD Reference:	KB = 17' @ 3600.3usft (Original Well Elev)
Site:	Blue Thunder 5 Federal	MD Reference:	KB = 17' @ 3600.3usft (Original Well Elev)
Well:	#7H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1	Database:	EDM 5000.1 Single User Db

Checked By: _____ Approved By: _____ Date: _____

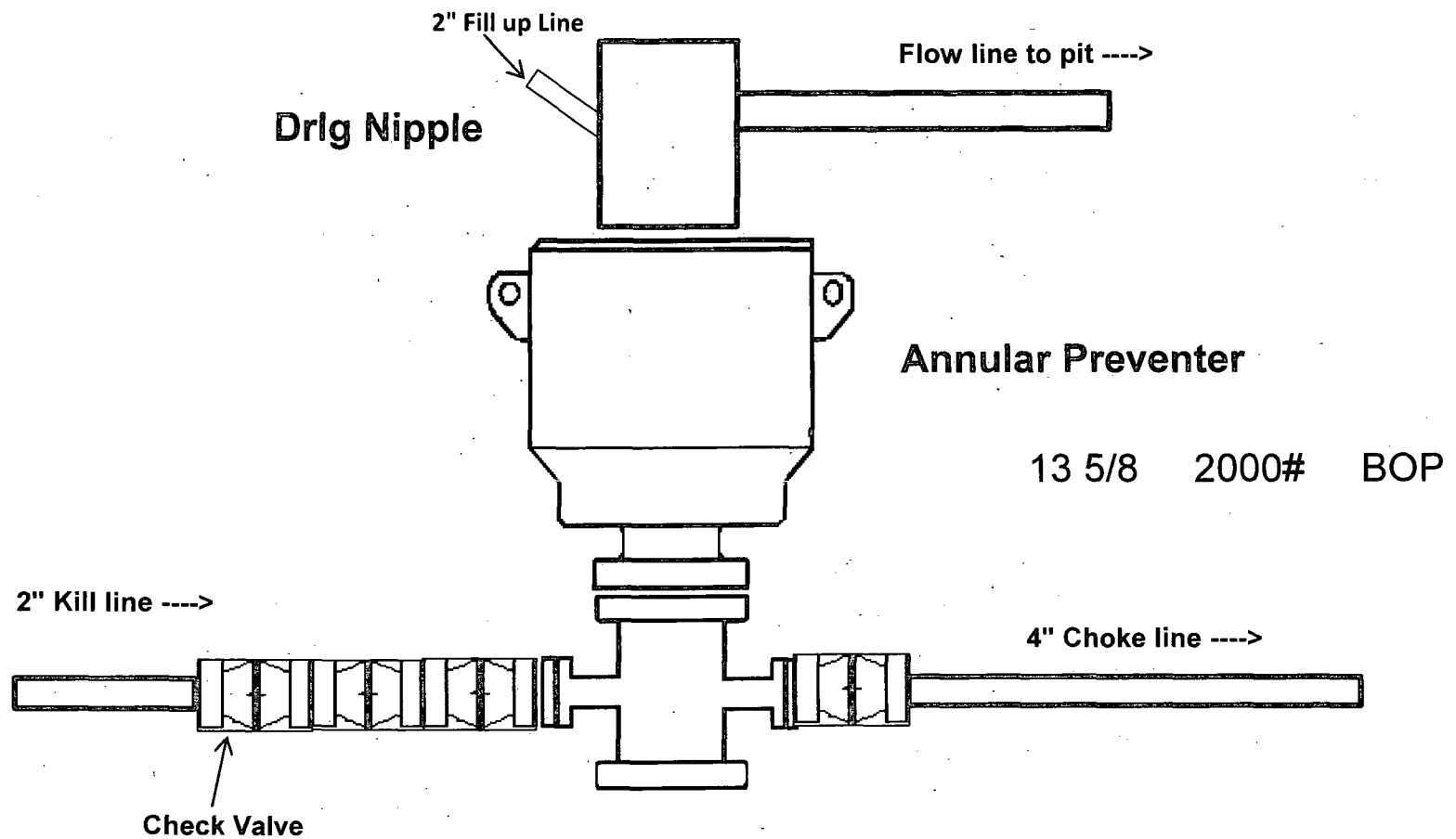
2M Choke Manifold Equipment



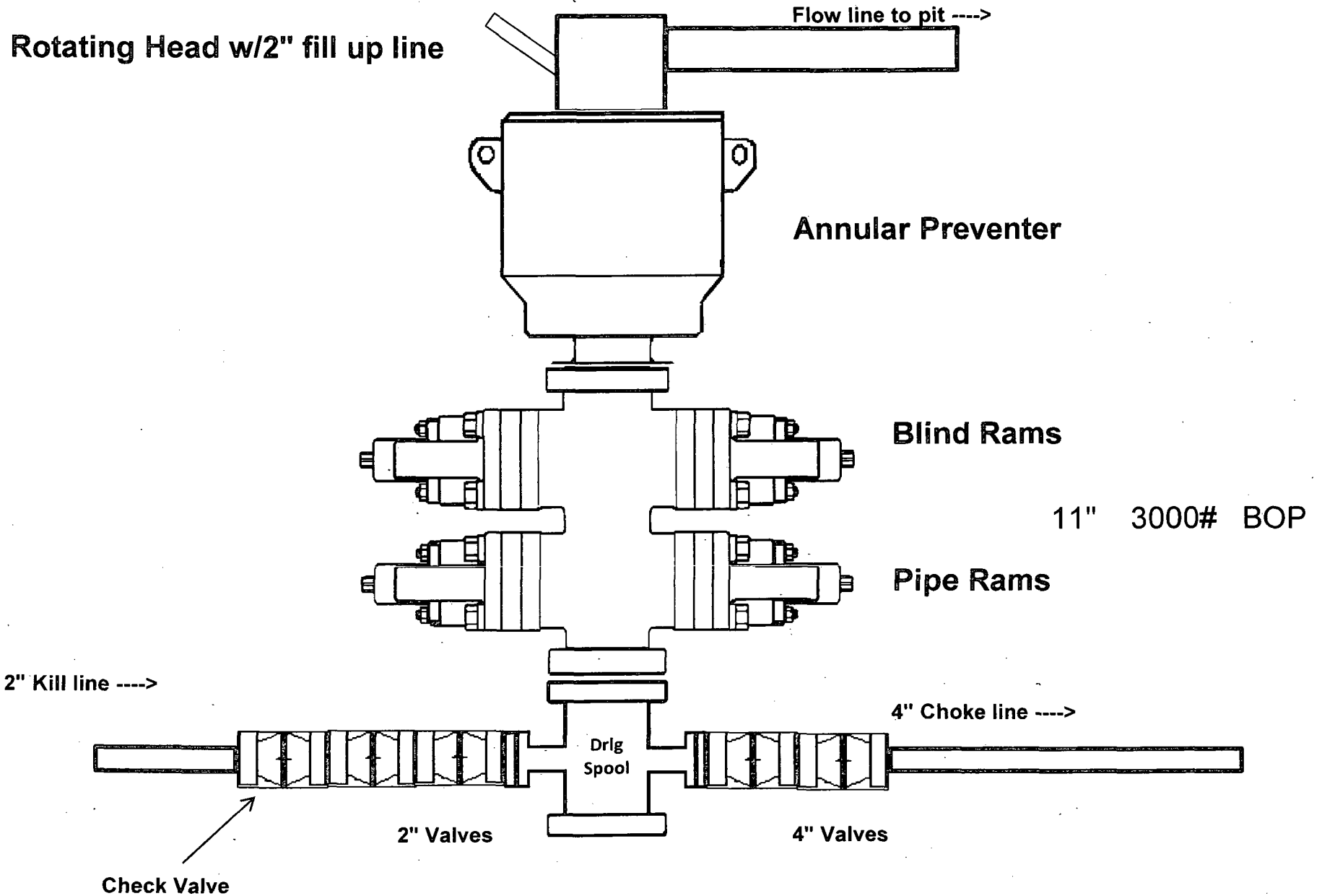
3M Choke Manifold Equipment



2,000 psi BOP Schematic



3,000 psi BOP Schematic





New Mexico Office of the State Engineer **Water Column/Average Depth to Water**

No records found.

PLSS Search:

Section(s): 5

Township: 19S

Range: 31E

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.

7/18/12 2:14 PM

Page 1 of 1

WATER COLUMN/ AVERAGE
DEPTH TO WATER

COG Operating LLC

Rig Plat & Closed Loop Equipment Diagram

Well pad will be 340' X 340'
with cellar in center of pad

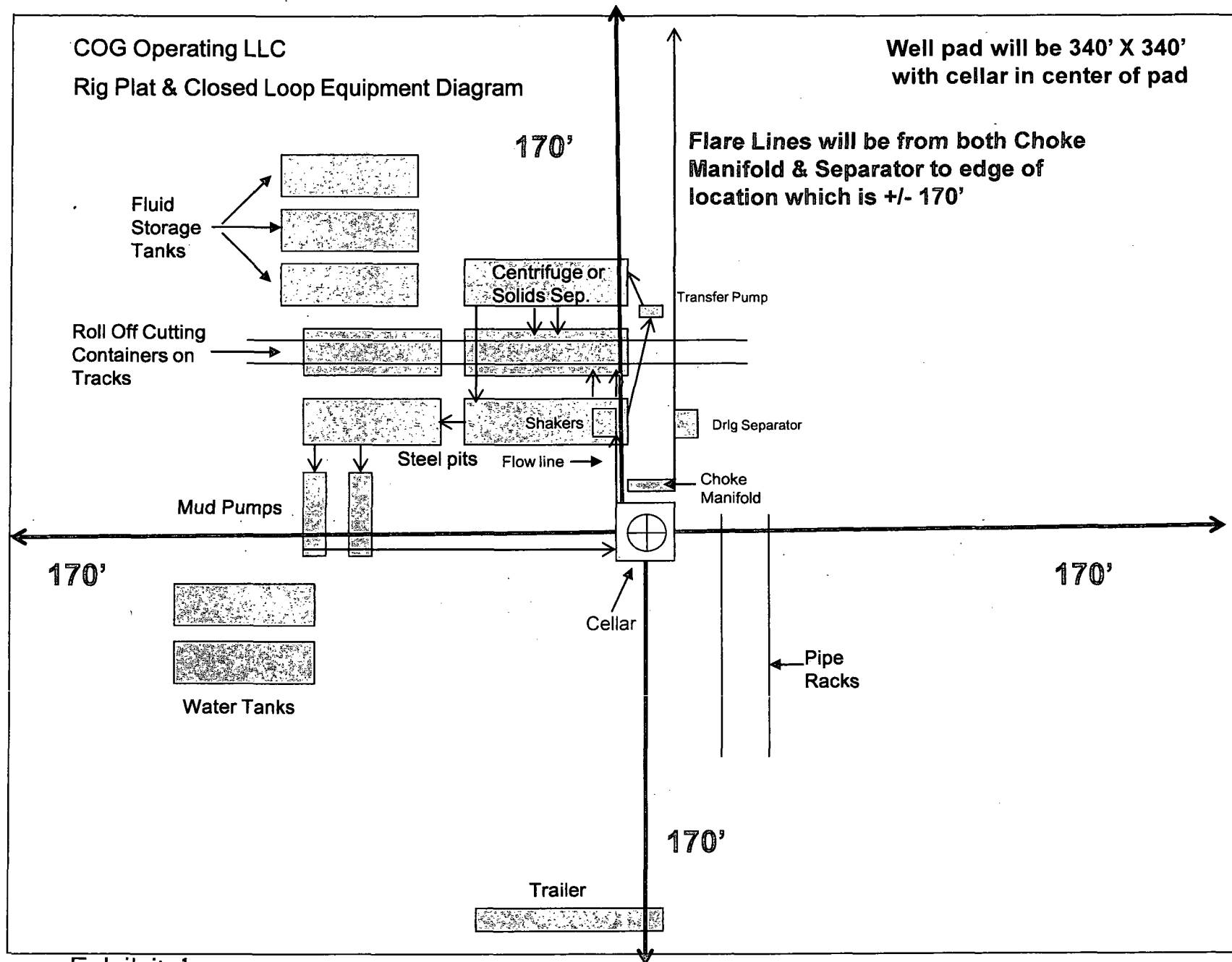


Exhibit 1

COG OPERATING LLC
HYDROGEN SULFIDE DRILLING OPERATIONS PLAN

I. HYDROGEN SULFIDE TRAINING

All personnel, whether regularly assigned, contracted, or employed on an unscheduled basis, will receive training from a qualified instructor in the following areas prior to commencing drilling operations on this well:

- A. The hazards and characteristics of hydrogen sulfide (H₂S).
- B. The proper use and maintenance of personal protective equipment and life support systems.
- C. The proper use of H₂S detectors, alarms, warning systems, briefing areas, evacuation procedures, and prevailing winds.
- D. The proper techniques for first aid and rescue procedures.

In addition, supervisory personnel will be trained in the following areas:

- A. The effects of H₂S on metal components. If high tensile tubulars are to be used, personnel will be trained in their special maintenance requirements.
- B. Corrective action and shut-in procedures when drilling or reworking a well and blowout prevention and well control procedures.
- C. The contents and requirements of the H₂S Drilling Operations Plan and the Public Protection Plan.

There will be an initial training session just prior to encountering a known or probable H₂S zone (within 3 days or 500 feet) and weekly H₂S and well control drills for all personnel in each crew. The initial training session shall include a review of the site specific H₂S Drilling Operations Plan and the Public Protection Plan. This plan shall be available at the well site. All personnel will be required to carry documentation that they have received the proper training.

II. H₂S SAFETY EQUIPMENT AND SYSTEMS

EMERGENCY CALL LIST

	<u>OFFICE</u>	<u>MOBILE</u>	<u>HOME</u>
COG OPERATING LLC OFFICE	575-748-6940		
SHERYL BAKER	575-748-6940	432-934-1873	575-748-2396
RON BEASLEY	575-746-2010	432-254-9883	
SETH WILD	575-748-6940	432-528-3633	
DEAN CHUMBLEY	575-748-3303	575-748-5988	575-748-2426

EMERGENCY RESPONSE NUMBERS

	<u>OFFICE</u>
STATE POLICE	575-748-9718
EDDY COUNTY SHERIFF	575-746-2701
EMERGENCY MEDICAL SERVICES (AMBULANCE)	911 or 575-746-2701
EDDY COUNTY EMERGENCY MANAGEMENT (HARRY BURGESS)	575-887-9511
STATE EMERGENCY RESPONSE CENTER (SERC)	575-476-9620
CARLSBAD POLICE DEPARTMENT	575-885-2111
CARLSBAD FIRE DEPARTMENT	575-885-3125
NEW MEXICO OIL CONSERVATION DIVISION	575-748-1283
INDIAN FIRE & SAFETY	800-530-8693
HALLIBURTON SERVICES	800-844-8451

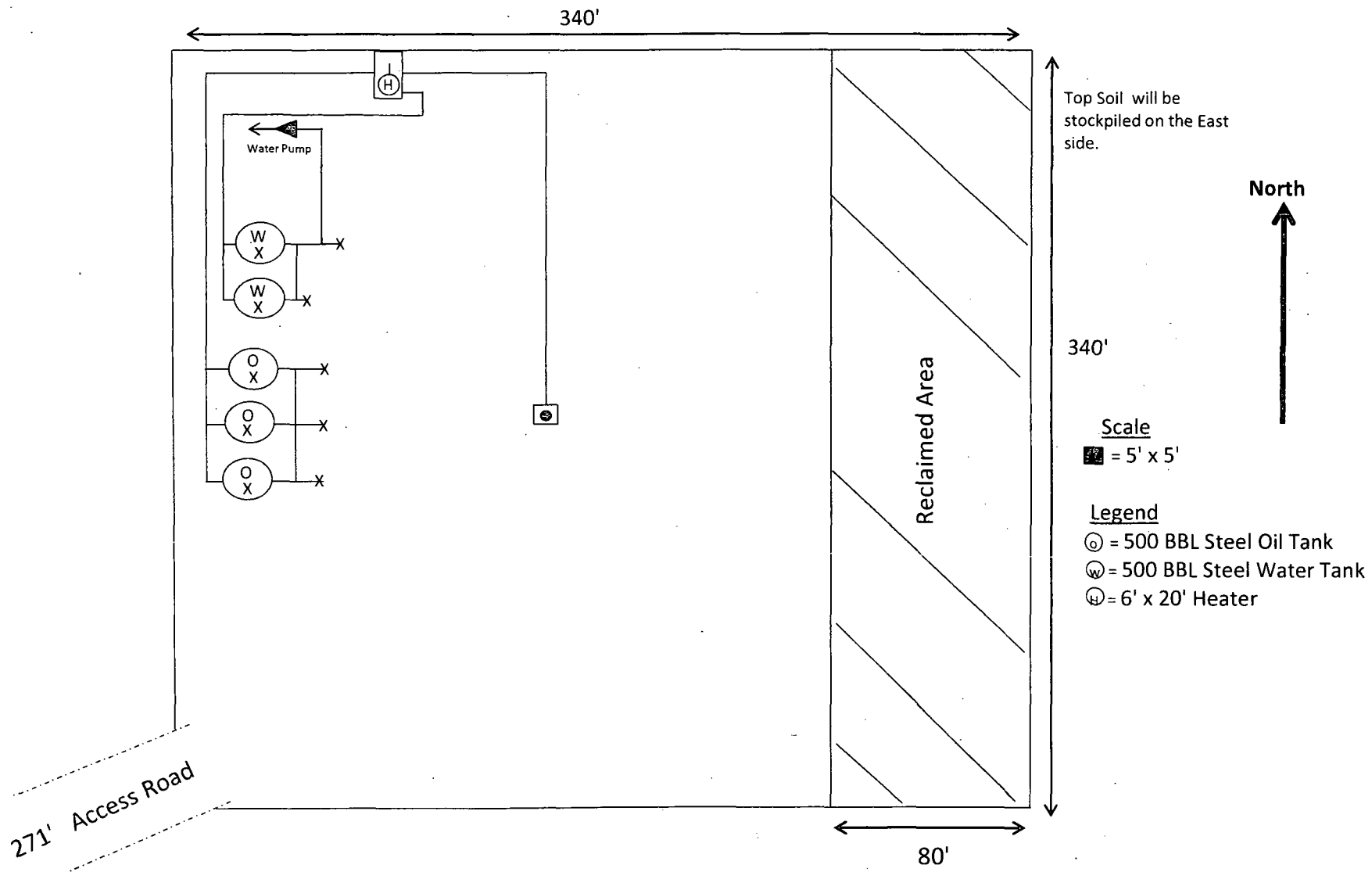


COG Operating LLC
2208 West Main
Artesia, NM 88210

Exhibit 3

Production Facility Layout

Blue Thunder 5 Fed #7H



PECOS DISTRICT CONDITIONS OF APPROVAL

OPERATOR'S NAME:	COG Operating
LEASE NO.:	NM100858
WELL NAME & NO.:	7H Blue Thunder 5 Federal
SURFACE HOLE FOOTAGE:	660' FNL & 200' FEL
BOTTOM HOLE FOOTAGE:	660' FNL & 330' FWL
LOCATION:	Section 5, T.19 S., R.31 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**
 - Lesser Prairie-Chicken Timing Stipulations
 - Ground-level Abandoned Well Marker
 - Hackberry OHV recreation area
 - Communitization Agreement
- ☐ **Construction**
 - Notification
 - Topsoil
 - Closed Loop System
 - Federal Mineral Material Pits
 - Well Pads
 - Roads
- ☐ **Road Section Diagram**
- ☒ **Drilling**
 - H₂S – Onshore Order #6
 - Logging Requirements
 - Waste Material and Fluids
- ☐ **Production (Post Drilling)**
 - Well Structures & Facilities
 - Pipelines
 - Electric Lines
- ☐ **Interim Reclamation**
- ☐ **Final Abandonment & Reclamation**

I. GENERAL PROVISIONS

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

II. PERMIT EXPIRATION

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

III. ARCHAEOLOGICAL, PALEONTOLOGY & HISTORICAL SITES

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

IV. NOXIOUS WEEDS

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

V. SPECIAL REQUIREMENT(S)

Timing Limitation Stipulation / Condition of Approval for lesser prairie-chicken:

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

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

Hackberry OHV recreation area

Pipelines (including surface lines) shall be buried a minimum of 24 inches under all roads, "two-tracks," and trails. Burial of the pipe will continue for 20 feet on each side of each crossing. Power poles and associated ground structures (poles, guy wires) will not be placed within 20 feet of recreation trails. Guy wires must be equipped with a sleeve, tape or other industry approved apparatus that is highly visible during the day and reflective at night. Appropriate safety signage will be in place during all phases of the project. Upon completion of construction, the road shall be returned to pre-construction condition with no bumps or dips. All vehicle and equipment operators will observe speed limits and practice responsible defensive driving habits.

Communitization Agreement

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

VI. CONSTRUCTION

A. NOTIFICATION

The BLM shall administer compliance and monitor construction of the access road and well pad. Notify the Carlsbad Field Office at (575) 234-6235 at least 3 working days prior to commencing construction of the access road and/or well pad.

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

B. TOPSOIL

The operator shall stockpile the topsoil in a low profile manner in order to prevent wind/water erosion of the topsoil. The topsoil to be stripped is approximately 4 inches in depth. The topsoil will be used for interim and final reclamation.

C. CLOSED LOOP SYSTEM

Tanks are required for drilling operations: No Pits.

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

D. FEDERAL MINERAL MATERIALS PIT

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

E. WELL PAD SURFACING

Surfacing of the well pad is not required.

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

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

F. ON LEASE ACCESS ROADS

Road Width

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

Surfacing

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

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

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

Crowning

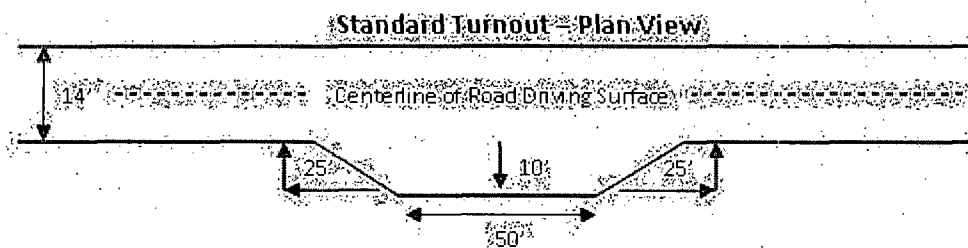
Crowning shall be done on the access road driving surface. The road crown shall have a grade of approximately 2% (i.e., a 1" crown on a 14' wide road). The road shall conform to Figure 1; cross section and plans for typical road construction.

Ditching

Ditching shall be required on both sides of the road.

Turnouts

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

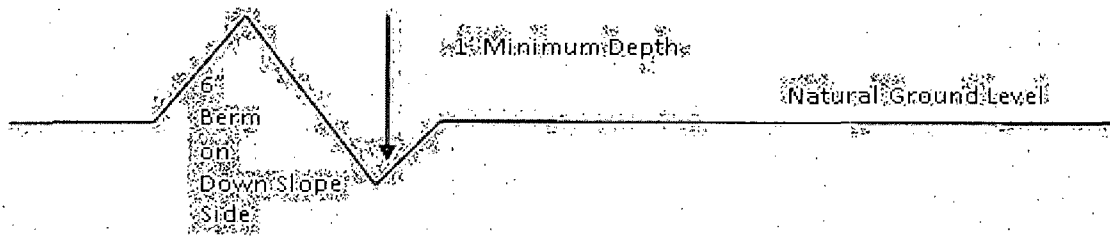


Drainage

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

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

Cross Section of a Typical Lead-off Ditch



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

Formula for Spacing Interval of Lead-off Ditches

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

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

Culvert Installations

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

Cattleguards

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

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

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

Fence Requirement

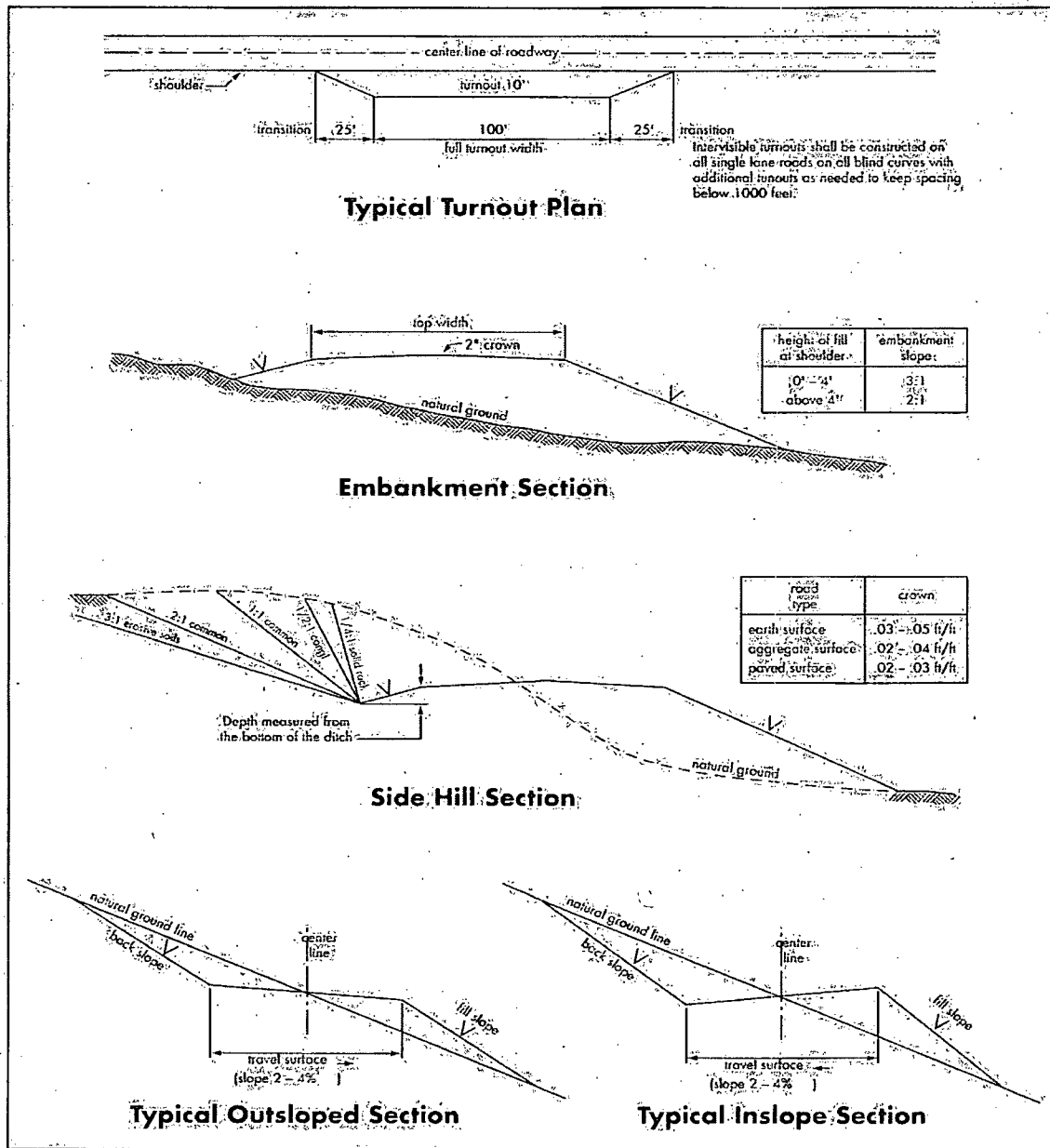
Where entry is required across a fence line, the fence shall be braced and tied off on both sides of the passageway prior to cutting.

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

Public Access

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

Figure 1 – Cross Sections and Plans For Typical Road Sections



VII. DRILLING

A. DRILLING OPERATIONS REQUIREMENTS

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

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

☒ **Eddy County**

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

1. A Hydrogen Sulfide (H₂S) Drilling Plan should be activated 500 feet prior to drilling into the Yates 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. Floor controls are required for 3M or Greater systems. These controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works are located, this does not include the dog house or stairway area.
3. **The record of the drilling rate along with the GR/N well log run from TD to surface (horizontal well – vertical portion of hole) shall be submitted to the BLM office as well as all other logs run on the borehole 30 days from completion. If available, a digital copy of the logs is to be submitted in addition to the paper copies. The Rustler top and top and bottom of Salt are to be recorded on the Completion Report.**

B. CASING

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

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

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

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

**Possible water and brine flows in the Salado and Artesia groups.
Possible lost circulation in the Artesia group and Capitan Reef.**

1. The **13-3/8 inch** surface casing shall be set at **approximately 720 feet (a minimum of 25 feet into the Rustler Anhydrite and above the salt)** and cemented to the surface.
 - a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.
 - b. **Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry.**
 - c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.
 - d. If cement falls back, remedial cementing will be done prior to drilling out that string.
2. The minimum required fill of cement behind the **9-5/8 inch** intermediate casing is:
☒ Cement to surface. If cement does not circulate see B.1.a, c-d above.
3. The minimum required fill of cement behind the **5-1/2 inch** production casing is:
☒ Cement should tie-back a minimum of 500 feet into previous casing. Operator shall provide method of verification.

4. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.

C. PRESSURE CONTROL

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API RP 53 Sec. 17.
2. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **2000 (2M)** psi.
 - a. **For surface casing only:** If the BOP/BOPE is to be tested against casing, the wait on cement (WOC) time for that casing is to be met (see WOC statement at start of casing section). Independent service company required.
3. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the **9-5/8** inch intermediate casing shoe shall be **3000 (3M)** psi.
4. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.
 - a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the plug. For those casing strings not using slips, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin after cut-off or once cement reaches 500 psi compressive strength (including lead when specified), whichever is greater. However, if the float does not hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).
 - b. The tests shall be done by an independent service company utilizing a test plug **not a cup or J-packer**. The operator also has the option of utilizing an independent tester to test without a plug (i.e. against the casing) pursuant to Onshore Order 2 with the pressure not to exceed 70% of the burst rating for the casing. Any test against the casing must meet the WOC time for water basin (18 hours) or potash (24 hours) or 500 pounds compressive strength, whichever is greater, prior to initiating the test (see casing segment as lead cement may be critical item).

- c. The results of the test shall be reported to the appropriate BLM office.
- d. All tests are required to be recorded on a calibrated test chart. **A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.**
- e. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug.

D. DRILL STEM TEST

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

E. WASTE MATERIAL AND FLUIDS

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

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

CRW 112912

VIII. PRODUCTION (POST DRILLING)

A. WELL STRUCTURES & FACILITIES

Placement of Production Facilities

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

Containment Structures

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

Painting Requirement

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

B. PIPELINES (not applied for in APD)

C. ELECTRIC LINES (not applied for in APD)

IX. INTERIM RECLAMATION

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

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

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

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

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

X. FINAL ABANDONMENT & RECLAMATION

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

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

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

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

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

Seed Mixture for LPC Sand/Shinnery Sites

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

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

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

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

*Pounds of pure live seed:

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