Form 3160-3
(June 2015)

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FORM APPROVED
OMB No. 1004-0137
Expires: January 31, 2018

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No.
NMNM057261

6. If Indian, Allotee or Tribe Name

1a. Type of work: ☑ DRILL ☐ REENTER

1b. Type of Well: ☑ Oil Well ☐ Gas Well ☐ Other

1c. Type of Completion: ☐ Hydraulic Fracturing ☐ Single Zone ☑ Multiple Zone

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

8. Lease Name and Well No.
HAMBONE FEDERAL COM
701H 323072

2. Name of Operator
COG OPERATING LLC

9. API Well No.
30-015-46812

3a. Address	3b. Phone No. *(include area code)*	10. Field and Pool, or Exploratory
600 West Illinois Ave, Midland, TX 79701	(432) 683-7443	98220 Purple Sage Wolfcamp

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

At surface SESE / 222 FSL / 1168 FEL / LAT 32.050252 / LONG -104.001381

At proposed prod. zone NENE / 200 FNL / 330 FEL / LAT 32.078401 / LONG -103.998967

11. Sec., T. R. M. or Blk. and Survey or Area
SEC 8/T26S/R29E/NMP

14. Distance in miles and direction from nearest town or post office*	12. County or Parish	13. State
17 miles	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 feet	439.75	640.0

18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.	19. Proposed Depth	20. BLM/BIA Bond No. in file
924 feet	10010 feet / 20055 feet	FED: NMB000215

21. Elevations (Show whether DF, KDB, RT, GL, etc.)	22. Approximate date work will start*	23. Estimated duration
2914 feet	01/01/2020	30 days

24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No. 1, and the Hydraulic Fracturing rule per 43 CFR 3162.3-3 (as applicable)

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 must 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 requested by the BLM.

25. Signature	Name *(Printed/Typed)*	Date
(Electronic Submission)	Stan Wagner / Ph: (432) 683-7443	09/27/2019

Title
Regulatory Advisor

Approved by *(Signature)*	Name *(Printed/Typed)*	Date
(Electronic Submission)	Cody Layton / Ph: (575) 234-5959	02/26/2020

Title	Office
Assistant Field Manager Lands & Minerals	Carlsbad Field Office

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

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.

APPROVED WITH CONDITIONS

(Continued on page 2)

Approval Date: 02/26/2020

*(Instructions on page 2)

RMP 3-9-2020

Additional Operator Remarks

Location of Well

0. SHL: SESE / 222 FSL / 1168 FEL / TWSP: 26S / RANGE: 29E / SECTION: 8 / LAT: 32.050252 / LONG: -104.001381 (TVD: 0 feet, MD: 0 feet)

PPP: SESE / 1 FSL / 330 FEL / TWSP: 26S / RANGE: 29E / SECTION: 5 / LAT: 32.064362 / LONG: -103.998821 (TVD: 9992 feet, MD: 12321 feet)

PPP: SENE / 1321 FSL / 330 FEL / TWSP: 26S / RANGE: 29E / SECTION: 8 / LAT: 32.0507021 / LONG: -103.998745 (TVD: 9989 feet, MD: 11000 feet)

PPP: SESE / 330 FSL / 330 FEL / TWSP: 26S / RANGE: 29E / SECTION: 8 / LAT: 32.050545 / LONG: -103.998678 (TVD: 9898 feet, MD: 10009 feet)

BHL: NENE / 200 FNL / 330 FEL / TWSP: 26S / RANGE: 29E / SECTION: 5 / LAT: 32.078401 / LONG: -103.998967 (TVD: 10010 feet, MD: 20055 feet)

BLM Point of Contact

Name: Deborah Ham
Title: Legal Landlaw Examiner
Phone: (575) 234-5965
Email: dham@blm.gov

HAMBONE FEDERAL COM #701H 1 MILE DATA (12-1116)

ID	WELL_NAME	OPERATOR	API	SECTION	TOWNSHIP	RANGE	FTG_NS	NS_CD	FTG_EW	EW_CD	LATITUDE	LONGITUDE	COMPL_STAT
0	SUPERIOR ST 001	D B SCULLY	3001503721	32	25.0S	29E	1980	S	1980	E	32.084361	-104.004324	Plugged
1	FED GORMAN 001	PETERING LG-SCU	3001503725	4	26.0S	29E	660	S	660	W	32.066151	-103.995448	Plugged
2	SCULLY FED 001	SOUTHERN CALIFORNIA PETROLEUM CORP	3001503726	5	26.0S	29E	460	N	330	W	32.077654	-104.013954	Plugged
3	NORTHERN NATURAL GAS 001	DINERO OPERATING CO	3001523882	32	25.0S	29E	660	N	1980	E	32.091742	-104.00429	Plugged
4	RENAE FINLEY 001	DINERO OPERATING CO	3001523909	5	26.0S	29E	1780	S	660	W	32.069233	-104.01286	Plugged
5	MARIS FEDERAL 001	OXY USA INC	3001527011	9	26.0S	29E	870	N	1980	W	32.061939	-103.991186	Active
6	DIMAGGIO 002	OXY USA INC	3001527892	16	26.0S	29E	660	N	660	E	32.04787	-103.982607	Active
7	DIMAGGIO 003	OXY USA INC	3001528266	16	26.0S	29E	660	N	1980	E	32.047873	-103.986888	Active
8	ROBINSON 9 FEDERAL 001	OXY USA INC	3001529826	9	26.0S	29E	1980	N	1980	E	32.058878	-103.986751	Active
9	WEST BRUSHY 8 FEDERAL SWD 001	COG OPERATING LLC	3001531675	8	26.0S	29E	660	N	330	E	32.062525	-103.998675	Plugged
10	WEST BRUSHY 8 FEDERAL 2 SWD 002	MARBOB ENERGY CORP	3001531866	8	26.0S	29E	1750	N	990	E	32.059529	-104.000837	Plugged
11	WEST BRUSHY 8 FEDERAL 004	BP AMERICA PRODUCTION COMPANY	3001531868	8	26.0S	29E	2310	N	2060	W	32.05799	-104.008378	
12	WEST BRUSHY 5 FEDERAL SWD 005	COG OPERATING LLC	3001531869	5	26.0S	29E	800	S	850	E	32.066539	-104.000346	Plugged
13	PAPPYS PREFERENCE FEDERAL 001	COG OPERATING LLC	3001532196	4	26.0S	29E	495	N	1980	W	32.077561	-103.99143	Active
14	ROCKET FEDERAL 001	COG OPERATING LLC	3001534795	4	26.0S	29E	116	S	564	E	32.064337	-103.982023	Plugged
15	SHOCKER 32 STATE COM 003H	XTO ENERGY, INC	3001536220	32	25.0S	29E	330	N	330	E	32.092173	-103.998986	New (Not drilled or compl)
16	SHOCKER 32 STATE 004G	EOG Y RESOURCES, INC.	3001536224	32	25.0S	29E	1981	N	1981	E	32.087655	-104.004304	New (Not drilled or compl)
17	WEST BRUSHY FEDERAL 33 001	XTO ENERGY, INC	3001536971	33	25.0S	29E	580	S	1580	W	32.080258	-103.992687	New (Not drilled or compl)
18	SHOCKER 32 STATE 005I	EOG Y RESOURCES, INC.	3001536997	32	25.0S	29E	1981	S	331	E	32.0841	-103.99892	New (Not drilled or compl)
19	BOYLES FEE COM 001	COG OPERATING LLC	3001537394	8	26.0S	29E	330	N	330	W	32.063278	-104.013957	Plugged
20	OCHO CINCO FEDERAL COM 001H	COG OPERATING LLC	3001537614	8	26.0S	29E	760	N	330	E	32.06197	-103.998532	Plugged
21	BIG PAPI FEDERAL COM 001H	COG OPERATING LLC	3001537832	4	26.0S	29E	330	N	1980	E	32.077771	-103.987089	Plugged
22	BIG PAPI FEDERAL COM 002H	COG OPERATING LLC	3001537833	4	26.0S	29E	330	N	1980	W	32.07776	-103.991355	New (Not drilled or compl)
23	ROCKET FEDERAL 002	COG OPERATING LLC	3001537835	4	26.0S	29E	330	S	600	E	32.064926	-103.982161	New (Not drilled or compl)
24	HAMBONE FEE COM 002H	COG OPERATING LLC	3001538318	5	26.0S	29E	1980	S	330	W	32.069628	-104.014011	Plugged
25	HAMBONE FEE COM 001H	COG OPERATING LLC	3001538980	5	26.0S	29E	660	S	330	W	32.065999	-104.01398	Plugged
26	SHOCKER SWD 001	EOG RESOURCES INC	3001539470	32	25.0S	29E	1040	N	990	E	32.090191	-104.00111	New (Not drilled or compl)
27	BIG PAPI FEDERAL COM 012H	COG OPERATING LLC	3001543779	4	26.0S	29E	200	N	2060	E	32.078127	-103.987362	New (Not drilled or compl)
28	SILVER BULLET 16 W1DM STATE 001H	MEWBOURNE OIL CO	3001545211	16	26.0S	29E	225	N	330	W	32.048826	-103.996359	New (Not drilled or compl)
29	SILVER BULLET 16 W1DM STATE 002H	MEWBOURNE OIL CO	3001545212	16	26.0S	29E	225	N	360	W	32.048826	-103.996261	New (Not drilled or compl)
30	SILVER BULLET 16 W1CN STATE 003H	MEWBOURNE OIL CO	3001545213	16	26.0S	29E	205	N	2100	W	32.048888	-103.99061	New (Not drilled or compl)
31	SILVER BULLET 16 W1CN STATE 004H	MEWBOURNE OIL CO	3001545214	16	26.0S	29E	205	N	2130	W	32.048888	-103.990513	New (Not drilled or compl)
32	HAMBONE FEDERAL COM 025H	COG OPERATING LLC	3001545581	8	26.0S	29E	330	S	2410	W	32.050446	-104.007095	New (Not drilled or compl)
33	HAMBONE FEDERAL COM 026H	COG OPERATING LLC	3001545664	8	26.0S	29E	330	S	2440	W	32.050445	-104.006997	New (Not drilled or compl)
34	LONE WATIE 32 STATE 168H	XTO ENERGY, INC	3001545772	32	25.0S	29E	336	N	695	E	32.092125	-104.00017	

Intent [X] As Drilled [ ]

API #
30-015-

Operator Name:	Property Name:	Well Number
COG Operating LLC	Hambone Federal Com	701H

Kick Off Point (KOP)

UL	Section	Township	Range	Lot	Feet	From N/S	Feet	From E/W	County
P	8	26S	29E						Eddy

Latitude	Longitude	NAD
		NAD 83

First Take Point (FTP)

UL	Section	Township	Range	Lot	Feet	From N/S	Feet	From E/W	County
P	8	26S	29E		330	South	330	East	Eddy

Latitude	Longitude	NAD
32.050545	-103.998678	NAD 83

Last Take Point (LTP)

UL	Section	Township	Range	Lot	Feet	From N/S	Feet	From E/W	County
A	5	26S	29E		330	North	330	East	Eddy

Latitude	Longitude	NAD
32.078043	-103.998963	NAD 83

Is this well the defining well for the Horizontal Spacing Unit? [No]

Is this well an infill well? [Yes]

If infill is yes please provide API if available, Operator Name and well number for Defining well for Horizontal Spacing Unit.

API #
30-015-

Operator Name:	Property Name:	Well Number
COG Operating LLC	Hambone Federal Com	702H

KZ 06/29/2018

COG Operating, LLC - Hambone Federal Com #701H

1. Geologic Formations

TVD of target	9,989' EOL	Pilot hole depth	NA
MD at TD:	20,055'	Deepest expected fresh water:	50'

Formation	Depth (TVD) from KB	Water/Mineral Bearing/ Target Zone?	Hazards*
Quaternary Fill	Surface	Water	
Rustler	10	Water	
Top of Salt	420	Salt	
Base of Salt	2659	Salt	
Lamar	2887	Salt Water	
Bell Canyon	2973	Salt Water	
Cherry Canyon	3728	Oil/Gas	
Brushy Canyon	5036	Oil/Gas	
Bone Spring Lime	6587	Oil/Gas	
U. Avalon Shale	6921	Oil/Gas	
L. Avalon Shale	7195	Oil/Gas	
1st Bone Spring Sand	7503	Oil/Gas	
2nd Bone Spring Sand	8353	Oil/Gas	
3rd Bone Spring Sand	9379	Oil/Gas	
Wolfcamp	9747	Target Oil/Gas	
Strawn	12455	Not Penetrated	

2. Casing Program

Hole Size	Casing Interval From	Casing Interval To	Csg. Size	Weight (lbs)	Grade	Conn.	SF Collapse	SF Burst	SF Body
14.75	0	380	10.75"	45.5	J55	BTC	12.02	1.04	41.35
9.875"	0	9,330	7.625"	26.4	HCL80	BTC	1.44	1.15	2.44
6.75"	0	20,055	5.5"	20	P110	SF	1.96	2.41	3.21
			BLM Minimum Safety Factor				1.125	1	1.6 Dry 1.8 Wet

Intermediate casing will be kept at least 1/3 full while running casing.to mitigate collapse. Surface burst based on 0.7 frac gradient at the shoe with Gas Gradient 0.1 psi/ft to surface and
All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.h

The 5" casing will be run back 500' into the intermediate casing to ensure the coupling OD clearance is greater than .422" for the cement bond tie in.

COG Operating, LLC - Hambone Federal Com #701H

	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?	N
If yes, does production casing cement tie back a minimum of 50' above the Reef?	
Is well within the designated 4 string boundary?	
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?	
Is well located in R-111-P and SOPA?	N
If yes, are the first three strings cemented to surface?	
Is 2nd string set 100' to 600' below the base of salt?	
Is well located in high Cave/Karst?	N
If yes, are there two strings cemented to surface?	
(For 2 string wells) If yes, is there a contingency casing if lost circulation occurs?	
Is well located in critical Cave/Karst?	N
If yes, are there three strings cemented to surface?	

3. Cementing Program

Casing	# Sks	Wt. lb/ gal	Yld ft3/ sack	H_20 gal/sk	500# Comp. Strength (hours)	Slurry Description
Surf.	100	13.5	1.75	9	12	Lead: Class C + 4% Gel + 1% CaCl2
	100	14.8	1.34	6.34	8	Tail: Class C + 2% CaCl2
Inter.	770	10.3	3.6	21.48	16	Tuned Light Blend
	250	16.4	1.08	4.32	8	Tail: Class H
Prod	130	11.9	2.5	19	72	Lead: 50:50:10 H Blend
	1290	14.4	1.24	5.7	19	Tail: 50:50:2 Class H Blend

Volumes Subject to Observed Hole Conditions and/or Fluid Caliper Results
Lab reports with the 500 psi compressive strength time for the cement will be onsite for review.

Casing String	TOC	% Excess
Surface	0'	115%
1st Intermediate	0'	50%
Production	8,830'	35% OH in Lateral (KOP to EOL)

4. Pressure Control Equipment

N	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	x	Tested to:
9-7/8"	13-5/8"	3M	Annular	x	2500 psi
			Blind Ram		3M
			Pipe Ram	x	
			Double Ram	x	
			Other*		
6-3/4"	13-5/8"	5M	Annular	x	2500 psi
			Blind Ram		5M
			Pipe Ram	x	
			Double Ram	x	
			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.

X	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.
Y	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?
Y	A multibowl wellhead is being used. The BOP will be tested per Onshore Order #2 after installation on the surface casing which will cover testing requirements for a maximum of 30 days. If any seal subject to test pressure is broken the system must be tested.

5. Mud Program

Depth		Type	Weight (ppg)	Viscosity	Water Loss
From	To				
0	Surf. Shoe	FW Gel	8.6 - 8.8	28-34	N/C
Surf csg	7-5/8" Int shoe	Brine Diesel Emulsion	8.4 - 9	28-34	N/C
7-5/8" Int shoe	Lateral TD	OBM	9.6 - 12	35-45	<20

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

Additional logs planned		Interval
N	Resistivity	Pilot Hole TD to ICP
N	Density	Pilot Hole TD to ICP
Y	CBL	Production casing (If cement not circulated to surface)
Y	Mud log	Intermediate shoe to TD
N	PEX	

7. Drilling Conditions

Condition	Specify what type and where?
BH Pressure at deepest TVD	6235 psi at 9989' TVD
Abnormal Temperature	NO 155 Deg. F.

No abnormal pressure or temperature conditions are anticipated. Sufficient mud materials to maintain mud properties and weight increase requirements will be kept on location at all times.

Sufficient supplies of Paper/LCM for periodic sweeps to control seepage and losses will be maintained on location.

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.	
N	H2S is present
Y	H2S Plan attached

8. Other Facets of Operation

Y	Is it a walking operation?
Y	Is casing pre-set?

x	H2S Plan.
x	BOP & Choke Schematics.
x	Directional Plan

NORTHERN DELAWARE BASIN

EDDY COUNTY, NM
ATLAS
HAMBONE FEDERAL COM #701H

OWB

Plan: PWP1

Standard Survey Report

23 September, 2019

Survey Report

Company:	NORTHERN DELAWARE BASIN	**Local Co-ordinate Reference:**	Well HAMBONE FEDERAL COM #701H
Project:	EDDY COUNTY, NM	**TVD Reference:**	KB=27 @ 2941.4usft (Scan Freedom)
Site:	ATLAS	**MD Reference:**	KB=27 @ 2941.4usft (Scan Freedom)
Well:	HAMBONE FEDERAL COM #701H	**North Reference:**	Grid
Wellbore:	OWB	**Survey Calculation Method:**	Minimum Curvature
Design:	PWP1	**Database:**	EDM_Users

Project EDDY COUNTY, NM

Map System:	US State Plane 1927 (Exact solution)	**System Datum:**	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site ATLAS

Site Position:		**Northing:**	371,480.80 usft	**Latitude:**	32° 1' 15.933 N
From:	Map	**Easting:**	573,599.60 usft	**Longitude:**	104° 5' 45.086 W
Position Uncertainty:	0.0 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	0.13 °

Well HAMBONE FEDERAL COM #701H

Well Position	**+N/-S**	0.0 usft	**Northing:**	382,120.00 usft	**Latitude:**	32° 3' 0.457 N
	+E/-W	0.0 usft	**Easting:**	602,997.40 usft	**Longitude:**	104° 0' 3.232 W
Position Uncertainty		3.0 usft	**Wellhead Elevation:**	usft	**Ground Level:**	2,914.4 usft

Wellbore OWB

Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	IGRF2015	6/18/2019	6.92	59.81	47,587.84120361

Design PWP1

Audit Notes:

Version:	**Phase:**	PLAN	**Tie On Depth:** 0.0

Vertical Section:	**Depth From (TVD) (usft)**	**+N/-S (usft)**	**+E/-W (usft)**	**Direction (°)**
	0.0	0.0	0.0	4.06

Survey Tool Program **Date** 9/19/2019

From (usft)	**To (usft)**	**Survey (Wellbore)**	**Tool Name**	**Description**
0.0	9,451.3	PWP1 (OWB)	Standard Keeper 104	Standard Wireline Keeper ver 1.0.4
9,451.3	20,055.2	PWP1 (OWB)	MWD+IGRF+FDIR	OWSG MWD + IGRF or WMM + FDIR Correctior

Planned Survey

Measured Depth (usft)	**Inclination (°)**	**Azimuth (°)**	**Vertical Depth (usft)**	**+N/-S (usft)**	**+E/-W (usft)**	**Vertical Section (usft)**	**Dogleg Rate (°/100usft)**	**Build Rate (°/100usft)**	**Turn Rate (°/100usft)**
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00

Survey Report

Company:	NORTHERN DELAWARE BASIN	**Local Co-ordinate Reference:**	Well HAMBONE FEDERAL COM #701H
Project:	EDDY COUNTY, NM	**TVD Reference:**	KB=27 @ 2941.4usft (Scan Freedom)
Site:	ATLAS	**MD Reference:**	KB=27 @ 2941.4usft (Scan Freedom)
Well:	HAMBONE FEDERAL COM #701H	**North Reference:**	Grid
Wellbore:	OWB	**Survey Calculation Method:**	Minimum Curvature
Design:	PWP1	**Database:**	EDM_Users

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	0.00
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	0.00
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	0.00
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	0.00
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	0.00
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	0.00
1,700.0	0.00	0.00	1,700.0	0.0	0.0	0.0	0.00	0.00	0.00
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	0.00
1,900.0	0.00	0.00	1,900.0	0.0	0.0	0.0	0.00	0.00	0.00
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.0	0.00	0.00	0.00
2,100.0	0.00	0.00	2,100.0	0.0	0.0	0.0	0.00	0.00	0.00
2,200.0	0.00	0.00	2,200.0	0.0	0.0	0.0	0.00	0.00	0.00
2,300.0	0.00	0.00	2,300.0	0.0	0.0	0.0	0.00	0.00	0.00
2,400.0	0.00	0.00	2,400.0	0.0	0.0	0.0	0.00	0.00	0.00
2,500.0	0.00	0.00	2,500.0	0.0	0.0	0.0	0.00	0.00	0.00
Start Build 2.00									
2,600.0	2.00	90.00	2,600.0	0.0	1.7	0.1	2.00	2.00	0.00
2,650.0	3.00	90.00	2,649.9	0.0	3.9	0.3	2.00	2.00	0.00
Start 2850.0 hold at 2650.0 MD									
2,700.0	3.00	90.00	2,699.9	0.0	6.5	0.5	0.00	0.00	0.00
2,800.0	3.00	90.00	2,799.7	0.0	11.8	0.8	0.00	0.00	0.00
2,900.0	3.00	90.00	2,899.6	0.0	17.0	1.2	0.00	0.00	0.00
3,000.0	3.00	90.00	2,999.5	0.0	22.2	1.6	0.00	0.00	0.00
3,100.0	3.00	90.00	3,099.3	0.0	27.5	1.9	0.00	0.00	0.00
3,200.0	3.00	90.00	3,199.2	0.0	32.7	2.3	0.00	0.00	0.00
3,300.0	3.00	90.00	3,299.0	0.0	37.9	2.7	0.00	0.00	0.00
3,400.0	3.00	90.00	3,398.9	0.0	43.2	3.1	0.00	0.00	0.00
3,500.0	3.00	90.00	3,498.8	0.0	48.4	3.4	0.00	0.00	0.00
3,600.0	3.00	90.00	3,598.6	0.0	53.6	3.8	0.00	0.00	0.00
3,700.0	3.00	90.00	3,698.5	0.0	58.9	4.2	0.00	0.00	0.00
3,800.0	3.00	90.00	3,798.4	0.0	64.1	4.5	0.00	0.00	0.00
3,900.0	3.00	90.00	3,898.2	0.0	69.3	4.9	0.00	0.00	0.00
4,000.0	3.00	90.00	3,998.1	0.0	74.6	5.3	0.00	0.00	0.00
4,100.0	3.00	90.00	4,097.9	0.0	79.8	5.7	0.00	0.00	0.00
4,200.0	3.00	90.00	4,197.8	0.0	85.0	6.0	0.00	0.00	0.00
4,300.0	3.00	90.00	4,297.7	0.0	90.3	6.4	0.00	0.00	0.00
4,400.0	3.00	90.00	4,397.5	0.0	95.5	6.8	0.00	0.00	0.00
4,500.0	3.00	90.00	4,497.4	0.0	100.7	7.1	0.00	0.00	0.00
4,600.0	3.00	90.00	4,597.3	0.0	106.0	7.5	0.00	0.00	0.00
4,700.0	3.00	90.00	4,697.1	0.0	111.2	7.9	0.00	0.00	0.00
4,800.0	3.00	90.00	4,797.0	0.0	116.4	8.2	0.00	0.00	0.00
4,900.0	3.00	90.00	4,896.8	0.0	121.7	8.6	0.00	0.00	0.00

Survey Report

Company:	NORTHERN DELAWARE BASIN	**Local Co-ordinate Reference:**	Well HAMBONE FEDERAL COM #701H
Project:	EDDY COUNTY, NM	**TVD Reference:**	KB=27 @ 2941.4usft (Scan Freedom)
Site:	ATLAS	**MD Reference:**	KB=27 @ 2941.4usft (Scan Freedom)
Well:	HAMBONE FEDERAL COM #701H	**North Reference:**	Grid
Wellbore:	OWB	**Survey Calculation Method:**	Minimum Curvature
Design:	PWP1	**Database:**	EDM_Users

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
5,000.0	3.00	90.00	4,996.7	0.0	126.9	9.0	0.00	0.00	0.00
5,100.0	3.00	90.00	5,096.6	0.0	132.1	9.4	0.00	0.00	0.00
5,200.0	3.00	90.00	5,196.4	0.0	137.4	9.7	0.00	0.00	0.00
5,300.0	3.00	90.00	5,296.3	0.0	142.6	10.1	0.00	0.00	0.00
5,400.0	3.00	90.00	5,396.2	0.0	147.8	10.5	0.00	0.00	0.00
5,500.0	3.00	90.00	5,496.0	0.0	153.1	10.8	0.00	0.00	0.00
Start DLS 2.00 TFO 0.00									
5,600.0	5.00	90.00	5,595.8	0.0	160.1	11.3	2.00	2.00	0.00
Start 3851.1 hold at 5600.0 MD									
5,700.0	5.00	90.00	5,695.4	0.0	168.8	12.0	0.00	0.00	0.00
5,800.0	5.00	90.00	5,795.0	0.0	177.5	12.6	0.00	0.00	0.00
5,900.0	5.00	90.00	5,894.6	0.0	186.2	13.2	0.00	0.00	0.00
6,000.0	5.00	90.00	5,994.3	0.0	194.9	13.8	0.00	0.00	0.00
6,100.0	5.00	90.00	6,093.9	0.0	203.6	14.4	0.00	0.00	0.00
6,200.0	5.00	90.00	6,193.5	0.0	212.4	15.0	0.00	0.00	0.00
6,300.0	5.00	90.00	6,293.1	0.0	221.1	15.7	0.00	0.00	0.00
6,400.0	5.00	90.00	6,392.7	0.0	229.8	16.3	0.00	0.00	0.00
6,500.0	5.00	90.00	6,492.4	0.0	238.5	16.9	0.00	0.00	0.00
6,600.0	5.00	90.00	6,592.0	0.0	247.2	17.5	0.00	0.00	0.00
6,700.0	5.00	90.00	6,691.6	0.0	255.9	18.1	0.00	0.00	0.00
6,800.0	5.00	90.00	6,791.2	0.0	264.6	18.7	0.00	0.00	0.00
6,900.0	5.00	90.00	6,890.8	0.0	273.4	19.4	0.00	0.00	0.00
7,000.0	5.00	90.00	6,990.4	0.0	282.1	20.0	0.00	0.00	0.00
7,100.0	5.00	90.00	7,090.1	0.0	290.8	20.6	0.00	0.00	0.00
7,200.0	5.00	90.00	7,189.7	0.0	299.5	21.2	0.00	0.00	0.00
7,300.0	5.00	90.00	7,289.3	0.0	308.2	21.8	0.00	0.00	0.00
7,400.0	5.00	90.00	7,388.9	0.0	316.9	22.5	0.00	0.00	0.00
7,500.0	5.00	90.00	7,488.5	0.0	325.7	23.1	0.00	0.00	0.00
7,600.0	5.00	90.00	7,588.2	0.0	334.4	23.7	0.00	0.00	0.00
7,700.0	5.00	90.00	7,687.8	0.0	343.1	24.3	0.00	0.00	0.00
7,800.0	5.00	90.00	7,787.4	0.0	351.8	24.9	0.00	0.00	0.00
7,900.0	5.00	90.00	7,887.0	0.0	360.5	25.5	0.00	0.00	0.00
8,000.0	5.00	90.00	7,986.6	0.0	369.2	26.2	0.00	0.00	0.00
8,100.0	5.00	90.00	8,086.3	0.0	377.9	26.8	0.00	0.00	0.00
8,200.0	5.00	90.00	8,185.9	0.0	386.7	27.4	0.00	0.00	0.00
8,300.0	5.00	90.00	8,285.5	0.0	395.4	28.0	0.00	0.00	0.00
8,400.0	5.00	90.00	8,385.1	0.0	404.1	28.6	0.00	0.00	0.00
8,500.0	5.00	90.00	8,484.7	0.0	412.8	29.2	0.00	0.00	0.00
8,600.0	5.00	90.00	8,584.4	0.0	421.5	29.9	0.00	0.00	0.00
8,700.0	5.00	90.00	8,684.0	0.0	430.2	30.5	0.00	0.00	0.00
8,800.0	5.00	90.00	8,783.6	0.0	439.0	31.1	0.00	0.00	0.00
8,900.0	5.00	90.00	8,883.2	0.0	447.7	31.7	0.00	0.00	0.00
9,000.0	5.00	90.00	8,982.8	0.0	456.4	32.3	0.00	0.00	0.00
9,100.0	5.00	90.00	9,082.5	0.0	465.1	32.9	0.00	0.00	0.00

Survey Report

Company:	NORTHERN DELAWARE BASIN	**Local Co-ordinate Reference:**	Well HAMBONE FEDERAL COM #701H
Project:	EDDY COUNTY, NM	**TVD Reference:**	KB=27 @ 2941.4usft (Scan Freedom)
Site:	ATLAS	**MD Reference:**	KB=27 @ 2941.4usft (Scan Freedom)
Well:	HAMBONE FEDERAL COM #701H	**North Reference:**	Grid
Wellbore:	OWB	**Survey Calculation Method:**	Minimum Curvature
Design:	PWP1	**Database:**	EDM_Users

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
9,200.0	5.00	90.00	9,182.1	0.0	473.8	33.6	0.00	0.00	0.00
9,300.0	5.00	90.00	9,281.7	0.0	482.5	34.2	0.00	0.00	0.00
9,400.0	5.00	90.00	9,381.3	0.0	491.3	34.8	0.00	0.00	0.00
9,451.1	5.00	90.00	9,432.2	0.0	495.7	35.1	0.00	0.00	0.00
Start DLS 10.00 TFO -73.51									
9,500.0	7.92	53.61	9,480.8	2.0	500.6	37.5	10.00	5.97	-74.38
9,600.0	16.99	32.48	9,578.4	18.5	514.0	54.8	10.00	9.06	-21.12
9,700.0	26.72	26.14	9,671.1	51.0	531.8	88.6	10.00	9.73	-6.34
9,800.0	36.59	23.04	9,756.2	98.8	553.4	137.7	10.00	9.87	-3.10
9,900.0	46.51	21.11	9,830.9	160.2	578.2	200.7	10.00	9.92	-1.92
10,000.0	56.45	19.74	9,893.1	233.4	605.4	275.7	10.00	9.94	-1.38
10,100.0	66.40	18.65	9,940.9	316.3	634.2	360.4	10.00	9.95	-1.09
10,200.0	76.36	17.72	9,972.8	406.2	663.7	452.2	10.00	9.96	-0.93
10,300.0	86.33	16.86	9,987.8	500.5	693.0	548.3	10.00	9.96	-0.86
10,336.9	90.00	16.55	9,989.0	535.8	703.6	584.2	10.00	9.96	-0.84
Start DLS 2.00 TFO -90.44									
10,400.0	89.99	15.29	9,989.0	596.5	720.9	646.0	2.00	-0.02	-2.00
10,500.0	89.98	13.29	9,989.0	693.4	745.6	744.5	2.00	-0.02	-2.00
10,600.0	89.96	11.29	9,989.1	791.1	766.9	843.4	2.00	-0.02	-2.00
10,700.0	89.94	9.29	9,989.2	889.5	784.8	942.8	2.00	-0.02	-2.00
10,800.0	89.93	7.29	9,989.3	988.4	799.2	1,042.5	2.00	-0.02	-2.00
10,900.0	89.91	5.29	9,989.4	1,087.8	810.1	1,142.5	2.00	-0.02	-2.00
11,000.0	89.90	3.29	9,989.6	1,187.5	817.6	1,242.5	2.00	-0.01	-2.00
11,100.0	89.88	1.29	9,989.8	1,287.4	821.6	1,342.4	2.00	-0.01	-2.00
11,198.5	89.87	359.32	9,990.0	1,385.9	822.1	1,440.7	2.00	-0.01	-2.00
Start 8856.7 hold at 11198.5 MD									
11,200.0	89.87	359.32	9,990.0	1,387.4	822.1	1,442.2	0.00	0.00	0.00
11,300.0	89.87	359.32	9,990.2	1,487.4	820.9	1,541.8	0.00	0.00	0.00
11,400.0	89.87	359.32	9,990.4	1,587.4	819.7	1,641.5	0.00	0.00	0.00
11,500.0	89.87	359.32	9,990.6	1,687.4	818.5	1,741.2	0.00	0.00	0.00
11,600.0	89.87	359.32	9,990.9	1,787.4	817.3	1,840.8	0.00	0.00	0.00
11,700.0	89.87	359.32	9,991.1	1,887.4	816.1	1,940.5	0.00	0.00	0.00
11,800.0	89.87	359.32	9,991.3	1,987.4	814.9	2,040.1	0.00	0.00	0.00
11,900.0	89.87	359.32	9,991.5	2,087.4	813.7	2,139.8	0.00	0.00	0.00
12,000.0	89.87	359.32	9,991.8	2,187.4	812.6	2,239.4	0.00	0.00	0.00
12,100.0	89.87	359.32	9,992.0	2,287.4	811.4	2,339.1	0.00	0.00	0.00
12,200.0	89.87	359.32	9,992.2	2,387.4	810.2	2,438.8	0.00	0.00	0.00
12,300.0	89.87	359.32	9,992.5	2,487.4	809.0	2,538.4	0.00	0.00	0.00
12,400.0	89.87	359.32	9,992.7	2,587.3	807.8	2,638.1	0.00	0.00	0.00
12,500.0	89.87	359.32	9,992.9	2,687.3	806.6	2,737.7	0.00	0.00	0.00
12,600.0	89.87	359.32	9,993.1	2,787.3	805.4	2,837.4	0.00	0.00	0.00
12,700.0	89.87	359.32	9,993.4	2,887.3	804.2	2,937.0	0.00	0.00	0.00
12,800.0	89.87	359.32	9,993.6	2,987.3	803.0	3,036.7	0.00	0.00	0.00
12,900.0	89.87	359.32	9,993.8	3,087.3	801.8	3,136.4	0.00	0.00	0.00

Survey Report

Company:	NORTHERN DELAWARE BASIN	**Local Co-ordinate Reference:**	Well HAMBONE FEDERAL COM #701H
Project:	EDDY COUNTY, NM	**TVD Reference:**	KB=27 @ 2941.4usft (Scan Freedom)
Site:	ATLAS	**MD Reference:**	KB=27 @ 2941.4usft (Scan Freedom)
Well:	HAMBONE FEDERAL COM #701H	**North Reference:**	Grid
Wellbore:	OWB	**Survey Calculation Method:**	Minimum Curvature
Design:	PWP1	**Database:**	EDM_Users

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
13,000.0	89.87	359.32	9,994.0	3,187.3	800.6	3,236.0	0.00	0.00	0.00
13,100.0	89.87	359.32	9,994.3	3,287.3	799.5	3,335.7	0.00	0.00	0.00
13,200.0	89.87	359.32	9,994.5	3,387.3	798.3	3,435.3	0.00	0.00	0.00
13,300.0	89.87	359.32	9,994.7	3,487.3	797.1	3,535.0	0.00	0.00	0.00
13,400.0	89.87	359.32	9,994.9	3,587.3	795.9	3,634.6	0.00	0.00	0.00
13,500.0	89.87	359.32	9,995.2	3,687.3	794.7	3,734.3	0.00	0.00	0.00
13,600.0	89.87	359.32	9,995.4	3,787.3	793.5	3,834.0	0.00	0.00	0.00
13,700.0	89.87	359.32	9,995.6	3,887.3	792.3	3,933.6	0.00	0.00	0.00
13,800.0	89.87	359.32	9,995.8	3,987.2	791.1	4,033.3	0.00	0.00	0.00
13,900.0	89.87	359.32	9,996.1	4,087.2	789.9	4,132.9	0.00	0.00	0.00
14,000.0	89.87	359.32	9,996.3	4,187.2	788.7	4,232.6	0.00	0.00	0.00
14,100.0	89.87	359.32	9,996.5	4,287.2	787.5	4,332.2	0.00	0.00	0.00
14,200.0	89.87	359.32	9,996.8	4,387.2	786.3	4,431.9	0.00	0.00	0.00
14,300.0	89.87	359.32	9,997.0	4,487.2	785.2	4,531.6	0.00	0.00	0.00
14,400.0	89.87	359.32	9,997.2	4,587.2	784.0	4,631.2	0.00	0.00	0.00
14,500.0	89.87	359.32	9,997.4	4,687.2	782.8	4,730.9	0.00	0.00	0.00
14,600.0	89.87	359.32	9,997.7	4,787.2	781.6	4,830.5	0.00	0.00	0.00
14,700.0	89.87	359.32	9,997.9	4,887.2	780.4	4,930.2	0.00	0.00	0.00
14,800.0	89.87	359.32	9,998.1	4,987.2	779.2	5,029.8	0.00	0.00	0.00
14,900.0	89.87	359.32	9,998.3	5,087.2	778.0	5,129.5	0.00	0.00	0.00
15,000.0	89.87	359.32	9,998.6	5,187.2	776.8	5,229.2	0.00	0.00	0.00
15,100.0	89.87	359.32	9,998.8	5,287.2	775.6	5,328.8	0.00	0.00	0.00
15,200.0	89.87	359.32	9,999.0	5,387.1	774.4	5,428.5	0.00	0.00	0.00
15,300.0	89.87	359.32	9,999.2	5,487.1	773.2	5,528.1	0.00	0.00	0.00
15,400.0	89.87	359.32	9,999.5	5,587.1	772.1	5,627.8	0.00	0.00	0.00
15,500.0	89.87	359.32	9,999.7	5,687.1	770.9	5,727.4	0.00	0.00	0.00
15,600.0	89.87	359.32	9,999.9	5,787.1	769.7	5,827.1	0.00	0.00	0.00
15,700.0	89.87	359.32	10,000.1	5,887.1	768.5	5,926.8	0.00	0.00	0.00
15,800.0	89.87	359.32	10,000.4	5,987.1	767.3	6,026.4	0.00	0.00	0.00
15,900.0	89.87	359.32	10,000.6	6,087.1	766.1	6,126.1	0.00	0.00	0.00
16,000.0	89.87	359.32	10,000.8	6,187.1	764.9	6,225.7	0.00	0.00	0.00
16,100.0	89.87	359.32	10,001.1	6,287.1	763.7	6,325.4	0.00	0.00	0.00
16,200.0	89.87	359.32	10,001.3	6,387.1	762.5	6,425.0	0.00	0.00	0.00
16,300.0	89.87	359.32	10,001.5	6,487.1	761.3	6,524.7	0.00	0.00	0.00
16,400.0	89.87	359.32	10,001.7	6,587.1	760.1	6,624.4	0.00	0.00	0.00
16,500.0	89.87	359.32	10,002.0	6,687.0	759.0	6,724.0	0.00	0.00	0.00
16,600.0	89.87	359.32	10,002.2	6,787.0	757.8	6,823.7	0.00	0.00	0.00
16,700.0	89.87	359.32	10,002.4	6,887.0	756.6	6,923.3	0.00	0.00	0.00
16,800.0	89.87	359.32	10,002.6	6,987.0	755.4	7,023.0	0.00	0.00	0.00
16,900.0	89.87	359.32	10,002.9	7,087.0	754.2	7,122.6	0.00	0.00	0.00
17,000.0	89.87	359.32	10,003.1	7,187.0	753.0	7,222.3	0.00	0.00	0.00
17,100.0	89.87	359.32	10,003.3	7,287.0	751.8	7,322.0	0.00	0.00	0.00
17,200.0	89.87	359.32	10,003.5	7,387.0	750.6	7,421.6	0.00	0.00	0.00

Survey Report

Company:	NORTHERN DELAWARE BASIN	**Local Co-ordinate Reference:**	Well HAMBONE FEDERAL COM #701H
Project:	EDDY COUNTY, NM	**TVD Reference:**	KB=27 @ 2941.4usft (Scan Freedom)
Site:	ATLAS	**MD Reference:**	KB=27 @ 2941.4usft (Scan Freedom)
Well:	HAMBONE FEDERAL COM #701H	**North Reference:**	Grid
Wellbore:	OWB	**Survey Calculation Method:**	Minimum Curvature
Design:	PWP1	**Database:**	EDM_Users

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
17,300.0	89.87	359.32	10,003.8	7,487.0	749.4	7,521.3	0.00	0.00	0.00
17,400.0	89.87	359.32	10,004.0	7,587.0	748.2	7,620.9	0.00	0.00	0.00
17,500.0	89.87	359.32	10,004.2	7,687.0	747.0	7,720.6	0.00	0.00	0.00
17,600.0	89.87	359.32	10,004.4	7,787.0	745.8	7,820.2	0.00	0.00	0.00
17,700.0	89.87	359.32	10,004.7	7,887.0	744.7	7,919.9	0.00	0.00	0.00
17,800.0	89.87	359.32	10,004.9	7,987.0	743.5	8,019.6	0.00	0.00	0.00
17,900.0	89.87	359.32	10,005.1	8,086.9	742.3	8,119.2	0.00	0.00	0.00
18,000.0	89.87	359.32	10,005.3	8,186.9	741.1	8,218.9	0.00	0.00	0.00
18,100.0	89.87	359.32	10,005.6	8,286.9	739.9	8,318.5	0.00	0.00	0.00
18,200.0	89.87	359.32	10,005.8	8,386.9	738.7	8,418.2	0.00	0.00	0.00
18,300.0	89.87	359.32	10,006.0	8,486.9	737.5	8,517.8	0.00	0.00	0.00
18,400.0	89.87	359.32	10,006.3	8,586.9	736.3	8,617.5	0.00	0.00	0.00
18,500.0	89.87	359.32	10,006.5	8,686.9	735.1	8,717.2	0.00	0.00	0.00
18,600.0	89.87	359.32	10,006.7	8,786.9	733.9	8,816.8	0.00	0.00	0.00
18,700.0	89.87	359.32	10,006.9	8,886.9	732.7	8,916.5	0.00	0.00	0.00
18,800.0	89.87	359.32	10,007.2	8,986.9	731.6	9,016.1	0.00	0.00	0.00
18,900.0	89.87	359.32	10,007.4	9,086.9	730.4	9,115.8	0.00	0.00	0.00
19,000.0	89.87	359.32	10,007.6	9,186.9	729.2	9,215.4	0.00	0.00	0.00
19,100.0	89.87	359.32	10,007.8	9,286.9	728.0	9,315.1	0.00	0.00	0.00
19,200.0	89.87	359.32	10,008.1	9,386.8	726.8	9,414.8	0.00	0.00	0.00
19,300.0	89.87	359.32	10,008.3	9,486.8	725.6	9,514.4	0.00	0.00	0.00
19,400.0	89.87	359.32	10,008.5	9,586.8	724.4	9,614.1	0.00	0.00	0.00
19,500.0	89.87	359.32	10,008.7	9,686.8	723.2	9,713.7	0.00	0.00	0.00
19,600.0	89.87	359.32	10,009.0	9,786.8	722.0	9,813.4	0.00	0.00	0.00
19,700.0	89.87	359.32	10,009.2	9,886.8	720.8	9,913.0	0.00	0.00	0.00
19,800.0	89.87	359.32	10,009.4	9,986.8	719.6	10,012.7	0.00	0.00	0.00
19,900.0	89.87	359.32	10,009.6	10,086.8	718.4	10,112.4	0.00	0.00	0.00
20,000.0	89.87	359.32	10,009.9	10,186.8	717.3	10,212.0	0.00	0.00	0.00
20,055.2	89.87	359.32	10,010.0	10,242.0	716.6	10,267.0	0.00	0.00	0.00
TD at 20055.2									

Survey Report

Company:	NORTHERN DELAWARE BASIN	**Local Co-ordinate Reference:**	Well HAMBONE FEDERAL COM #701H
Project:	EDDY COUNTY, NM	**TVD Reference:**	KB=27 @ 2941.4usft (Scan Freedom)
Site:	ATLAS	**MD Reference:**	KB=27 @ 2941.4usft (Scan Freedom)
Well:	HAMBONE FEDERAL COM #701H	**North Reference:**	Grid
Wellbore:	OWB	**Survey Calculation Method:**	Minimum Curvature
Design:	PWP1	**Database:**	EDM_Users

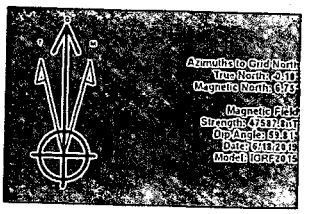
Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
FTP (HAMBONE FEC - plan misses target center by 279.3usft at 10009.8usft MD (9898.5 TVD, 241.2 N, 608.2 E) - Point	0.00	0.00	9,989.0	109.4	837.2	382,229.40	603,834.60	32° 3' 1.514 N	103° 59' 53.500 W
LTP (HAMBONE FED - plan hits target center - Point	0.00	0.00	10,009.7	10,112.0	718.1	392,232.00	603,715.50	32° 4' 40.508 N	103° 59' 54.524 W
PBHL (HAMBONE FE - plan hits target center - Rectangle (sides W100.0 H9,707.0 D20.0)	-0.13	179.32	10,010.0	10,242.0	716.6	392,362.00	603,714.00	32° 4' 41.795 N	103° 59' 54.536 W

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
2500	2500	0	0	Start Build 2.00
2650	2650	0	4	Start 2850.0 hold at 2650.0 MD
5500	5496	0	153	Start DLS 2.00 TFO 0.00
5600	5596	0	160	Start 3851.1 hold at 5600.0 MD
9451	9432	0	496	Start DLS 10.00 TFO -73.51
10,337	9989	536	704	Start DLS 2.00 TFO -90.44
11,199	9990	1386	822	Start 8856.7 hold at 11198.5 MD
20,055	10,010	10,242	717	TD at 20055.2

Checked By: _____ Approved By: _____ Date: _____



Project: EDDY COUNTY, NM
Site: ATLAS
Well: HAMBONE FEDERAL COM #701H
Wellbore: OWB
Design: PWP1
GL: 2914.4
KB=27 @ 2941.4usft (Scout Freedom)

CONCHO

WELL DETAILS: HAMBONE FEDERAL COM #701H

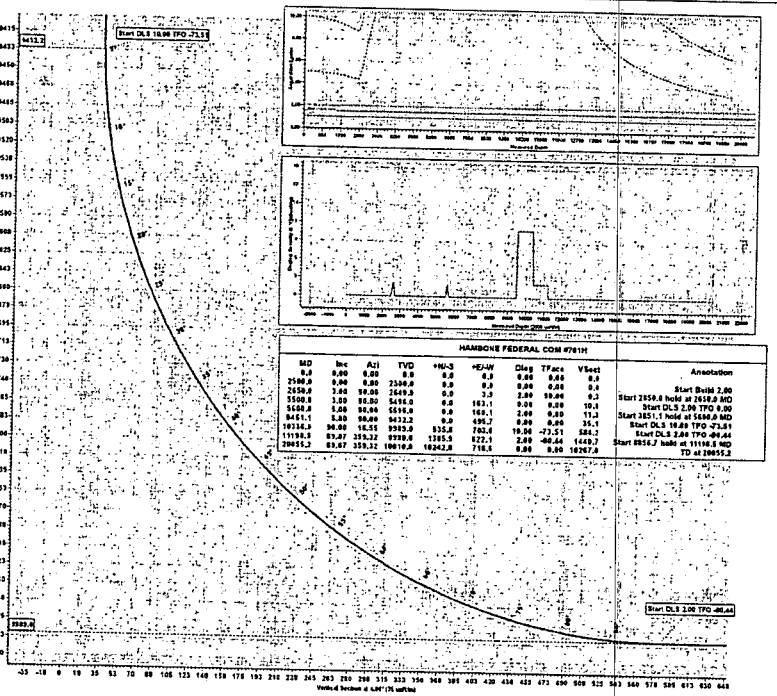
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.0	0.0	382120.00	402297.40	32° 3' 8.457 N	104° 9' 3.252 W

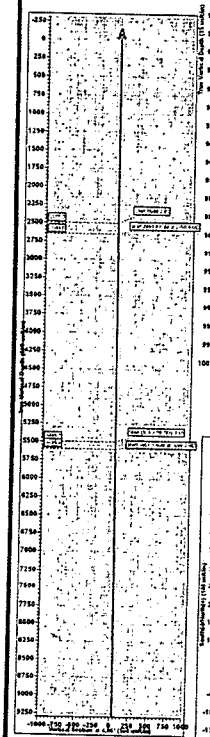
DESIGN TARGET DETAILS

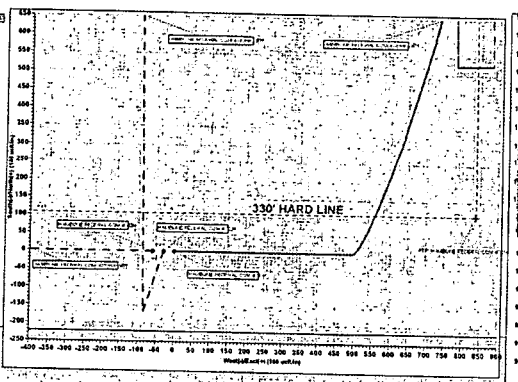
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
FTP (HAMBONE FEDERAL COM #701H)	9965.0	189.4	817.2	382279.40	403034.60	32° 3' 1.514 N	103° 59' 53.590 W
LTP (HAMBONE FEDERAL COM #701H)	10097.7	10117.0	718.1	392212.00	403715.50	32° 4' 40.569 N	103° 59' 54.526 W
PBHL (HAMBONE FEDERAL COM #701H)	10010.0	10242.0	716.6	392362.00	403714.00	32° 4' 41.795 N	103° 59' 54.516 W

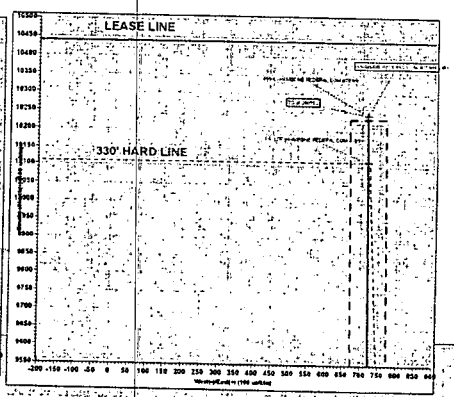
HAMBONE FEDERAL COM #701H

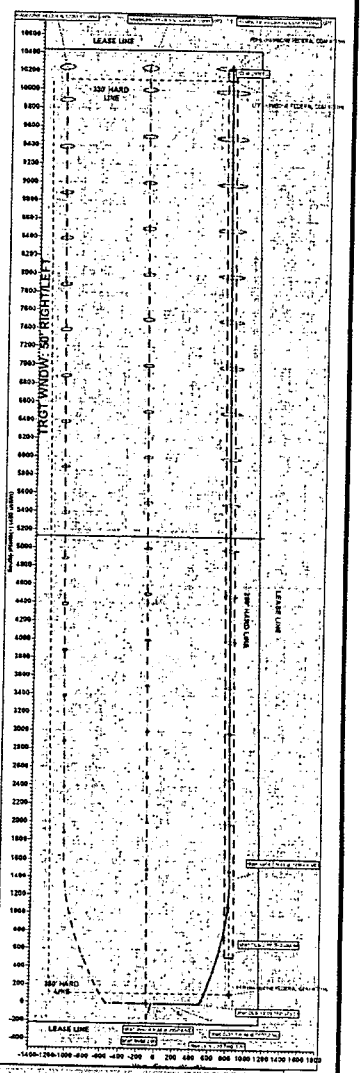
MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Annotation
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2580.0	0.00	0.00	2580.0	0.0	0.0	0.00	0.00	0.0	Start Build 2.00
2650.0	1.40	90.00	2649.9	0.0	1.0	2.00	90.00	0.2	Start 2850.0 hold at 2650.0 MD
5500.0	1.40	90.00	5496.0	0.0	103.1	0.00	0.00	19.1	Start DLS 2.00 TFO 0.00
5600.0	0.00	90.00	5596.0	0.0	104.1	2.00	0.00	19.2	Start 1851.1 hold at 5600.0 MD
8451.1	0.00	90.00	8412.2	0.0	495.2	0.00	0.00	95.1	Start DLS 10.00 TFO -73.51
10136.9	90.00	16.55	9965.0	535.8	703.4	10.00	-73.51	584.7	Start DLS 2.00 TFO -90.44
11190.5	89.87	359.32	9970.0	1385.5	722.1	2.00	-90.44	1449.7	Start 8856.7 hold at 11190.5 MD
20955.2	89.87	359.32	10010.0	10242.0	716.6	0.00	0.00	10267.0	TD at 20955.2

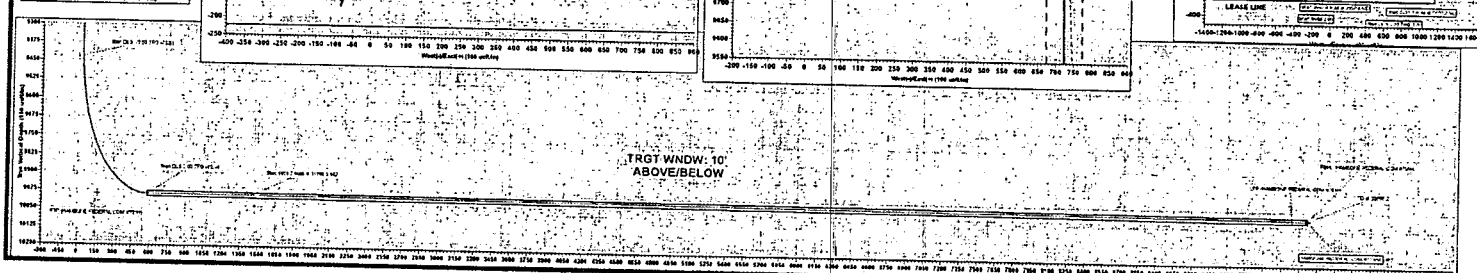












COG OPERATING LLC
HYDROGEN SULFIDE DRILLING OPERATIONS PLAN

1. 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 (H_2S).
b. The proper use and maintenance of personal protective equipment and life support systems.
c. The proper use of H_2S 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 H_2S 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.

2. H_2S SAFETY EQUIPMENT AND SYSTEMS

Note: All H_2S safety equipment and systems will be installed, tested, and operational when drilling reaches a depth of 500 feet above, or three days prior to penetrating the first zone containing or reasonably expected to contain H2S. If H2S greater than 100 ppm is encountered in the gas stream we will shut in and install H2S equipment.

a. Well Control Equipment:
   Flare line.
   Choke manifold with remotely operated choke.
   Blind rams and pipe rams to accommodate all pipe sizes with properly sized closing unit.
   Auxiliary equipment to include: annular preventer, mud-gas separator, rotating head.

b. Protective equipment for essential personnel:
Mark II Surviveair 30-minute units located in the dog house and at briefing areas.

c. H2S detection and monitoring equipment:
2 - portable H2S monitor positioned on location for best coverage and response. These units have warning lights and audible sirens when H2S levels of 20 ppm are reached.

d. Visual warning systems:
Caution/Danger signs shall be posted on roads providing direct access to location. Signs will be painted a high visibility yellow with black lettering of sufficient size to be readable at a reasonable distance from the immediate location. Bilingual signs will be used, when appropriate. See example attached.

e. Mud Program:
The mud program has been designed to minimize the volume of H2S circulated to the surface.

f. Metallurgy:
All drill strings, casings, tubing, wellhead, blowout preventers, drilling spool, kill lines, choke manifold and lines, and valves shall be suitable for H2S service.

g. Communication:
Company vehicles equipped with cellular telephone.

COG OPERATING LLC has conducted a review to determine if an H2S contingency plan is required for the above referenced well. We were able to conclude that any potential hazardous volume would be minimal. H2S concentrations of wells in this area from surface to TD are low enough; therefore, we do not believe that an H2S contingency plan is necessary.

WARNING

YOU ARE ENTERING AN H_2S AREA
AUTHORIZED PERSONNEL ONLY

1. ***BEARDS OR CONTACT LENSES NOT ALLOWED***
2. ***HARD HATS REQUIRED***
3. ***SMOKING IN DESIGNATED AREAS ONLY***
4. ***BE WIND CONSCIOUS AT ALL TIMES***
5. ***CK WITH COG OPERATING LLC FOREMAN AT MAIN OFFICE***

COG OPERATING LLC

1-575-748-6940

EMERGENCY CALL LIST

	OFFICE	MOBILE
COG OPERATING LLC OFFICE	575-748-6940	
SETH WILD	432-683-7443	432-528-3633
JOHN COFFMAN	432-685-4310	432-631-9762

EMERGENCY RESPONSE NUMBERS

	OFFICE
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

Surface Use & Operating Plan

Hambone Federal Com #701H

- Surface Owner: Bureau of Land Management
- New Road: 316.2' east main road to tie-in of existing road, services 501H and 701H well pad, and "P" CTB.
- Flow Line: Buried onsite
- Tank Battery Facilities: 222' FSL & 510' FEL, Sec. 8-T26S-R29E
- Well Pad: Multiple. Hambone Federal Com 701H, 702H, and 703H share a well pad.

Well Site Information

- V Door: East
- Topsoil: South
- Interim Reclamation: South

Attachments

- C102
- Closed Loop System
- Layout
- Brine H20
- Fresh H2O
- Existing Roads
- 1Mile Map and Data
- Maps and Plats

- Well Site Layout
- Reclamation

Notes

Onsite: On-site was done by Gerald Herrera (COG) and Matias Telles (BLM) on July 1, 2019.

SURFACE USE AND OPERATING PLAN

1. Existing & Proposed Access Roads

A. The well site survey and elevation plat for the proposed well is attached with this application. It was staked by Harcrow Surveying, Artesia, NM.

B. All roads to the location are shown on the maps and road plats. The existing lease roads are illustrated and are adequate for travel during drilling and production operations. Upgrading existing roads prior to drilling the well will be done where necessary. The road route to the well site is depicted in well layout map. The road shown in the well layout will be used to access the well.

C. Directions to location: See 600 x 600 plat.

FROM THE INTERSECTION OF HIGHWAY 285 AND LONGHORN RD. (CR-725), GO NORTHEAST ON CR-725 FOR APPROX. 3.8 MILES; THEN TURN RIGHT (SOUTHEAST) AND GO APPROX. 0.8 MILES; THEN TURN RIGHT (SOUTHWEST) AND GO APPROX. 0.6 MILES, THEN TURN LEFT (SOUTH) AND GO APPROX. 0.3 MILES TO THE PROPOSED ROAD. WELLS LIE APPROX. 515 FEET SOUTHEASTERLY.

D. Based on current road maintenance performed on other roads serving existing wells, we anticipate maintaining the lease roads leading to the proposed well pad at least once a year on dry conditions and twice a year in wetter conditions.

2. Proposed Access Road:

The Location Verification Map shows that 316.2 ft. of new main road servicing the well pad and "P" CTB will be required for this location. The required roads will be constructed as follows:

The maximum width of the running surface will be 14'. The road will be crowned, ditched and constructed of 6" rolled and compacted caliche. Ditches will be at 3:1 slope and 4 feet wide. Water will be diverted where necessary to avoid ponding, prevent erosion, maintain good drainage, and to be consistent with local drainage patterns.

A. The average grade will be less than 1%.

B. No turnouts are planned.

C. No cattleguard, culvert, gates, or fence cuts are necessary.

D. Surfacing material will consist of native caliche. Caliche will be obtained from the actual well site if available. If not available onsite, caliche will be obtained from a Federal Caliche Pit located in Section 24, T26S, R29E.

3. Location of Existing Well:

The One-Mile Radius Map shows existing wells within a one-mile radius of the proposed wellbore.

4. Location of Existing and/or Proposed Facilities:

A. A Central Tank Battery will be constructed 222' FSL & 510' FEL of Section 8, T26S, R29E. Topsoil will be on the eastside of the "P" CTB pad.

i. Production from 6 producing Hambone Federal Com wells will be routed to the "P" CTB.

ii. Planned Pipeline Installation across adjoining pads:

1. 1 buried 4-inch FP 601HT production flowline on pad from the wellhead to "P" CTB
2. 1 buried 4-inch FP line for gas-lift supply on pad from "P" CTB to well site servicing all wells.
3. 1 buried 6-inch Poly water transfer line **2068.3'** from "P" CTB to existing Hambone Fed Com 25H battery as shown on layout plat.

iii. Above pipeline routes shown on attached facility layout plat.

B. The tank battery and facilities including all flow lines and piping will be installed according to API specifications.

C. Any additional caliche will be obtained from the actual well site. If caliche does not exist or is not plentiful from the well site, caliche

D. will be obtained from the Federal Caliche Pit located in Section 24, T26S, R29E. Any additional construction materials will be purchased from contractors.

E. It will be necessary to run electric power if this well is productive. 1732 ft of east main power line will be constructed servicing the "P" CTB pad and 501/701 well pad to an existing tie-in point as shown on the power line plat. Power will connect to an Xcel Energy existing line.

F. If the well is productive, rehabilitation plans will include the following:

G. The original topsoil from the well site will be returned to the location, and the site will be re-contoured as close as possible to the original site.

5. Location and Type of Water Supply:

The well will be drilled with combination brine and fresh water mud system as outlined in the drilling program. Fresh water will be obtained from the Big Papi Frac Pond located in Section 10, T26S, R29E. Brine water will be obtained from the Malaga I Brine Station in Sec 2, T21S, R25E, or if necessary other commercial water stations in the area and hauled to location by transport truck over the existing and proposed access roads shown in road maps. If a commercial fresh water source is nearby, fast line may be laid along existing road ROW's and fresh water pumped to the well. No water well will be drilled on the location.

6. Source of Construction Materials and Location "Turn-Over" Procedure:

Obtaining caliche: One primary way of obtaining caliche to build locations and roads will be by "turning over" the location. This means, caliche will be obtained from the actual well site. Amount will vary for each pad. The procedure below has been approved by BLM personnel:

A. The top 6 inches of topsoil is pushed off and stockpiled along the side of the location.

B. An approximate 160' X 160' area is used within the proposed well site to remove caliche.

C. Subsoil is removed and stockpiled within the surveyed well pad.

D. When caliche is found, material will be stock piled within the pad site to build the location and road.

E. Then subsoil is pushed back in the hole and caliche is spread accordingly across entire location and road.

F. Once well is drilled, the stock piled top soil will be used for interim reclamation and spread along areas where caliche is picked up and the location size is reduced.

G. Neither caliche, nor subsoil will be stock piled outside of the well pad. Topsoil will be stockpiled along the edge of the pad as depicted in the Well Site Layout or survey plat.

7. Methods for Handling Waste:

A. The well will be drilled utilizing a closed loop mud system. Drill cuttings will be held in roll-off style mud boxes and taken to R360's disposal site.

B. Drilling fluids will be contained in steel mud pits.

C. Water produced from the well during completion will be held temporarily in steel tanks and then taken to an NMOCD approved commercial disposal facility.

D. Garbage and trash produced during drilling or completion operations will be collected in a trash bin and hauled to an approved landfill. No toxic waste or hazardous chemicals will be produced by this operation.

E. Human waste and grey water will need to be properly contained and disposed of. Proper disposal and elimination of waste and grey water may include but are not limited to portable septic systems and/or portable waste gathering systems (i.e. portable toilets).

F. After the rig is moved out and the well is either completed or abandoned, all waste materials will be cleaned up within 30 days. In the event of a dry hole only a dry hole marker will remain.

8. Ancillary Facilities:

No airstrip, campsite or other facilities will be built, as a result of operations on this well.

9. Well Site Layout:

A. The drill pad layout, with elevations staked by Harcrow Surveying, is shown in the Elevation Plat. Dimensions of the pad and pits are shown on the Rig Layout. V door direction is East. Topsoil, if available, will be stockpiled per BLM specifications. Because the pad is almost level no major cuts will be required.

B. The Rig Layout Closed-Loop exhibit shows the proposed orientation of closed loop system and access road. No permanent living facilities are planned, but a temporary foreman/toolpusher's trailer will be on location during the drilling operations.

10. Plans for Restoration of the Surface:

A. Interim Reclamation will take place after the well has been completed. The pad will be downsized by reclaiming the areas not needed for production operations. The portions of the pad that are not needed for production operations will be re-contoured to its original state as much as possible. The caliche that is removed will be reused to either build another pad site or for road repairs within the lease. The stockpiled topsoil will then be spread out reclaimed area and reseeded with a BLM approved seed mixture. In the event that the well must be worked over or maintained, it may be necessary to drive, park, and/or operate machinery on reclaimed land. This area will be repaired or reclaimed after work is complete.

Sedimentation and Erosion Control

Straw Waddles will be used as necessary at the well site to reduce sediment impacts to fragile/sensitive soils.

B. Final Reclamation: Upon plugging and abandoning the well all caliche for well pad and lease road will be removed and surface will be recountoured to reflect its surroundings as much as possible. Caliche will be recycled for road repair or reused for another well pad within the lease. If any topsoil remains, it will be spread out and the area will be re-seeded with a BLM approved mixture and re-vegetated as per BLM orders. When required by BLM, the well pad site will be restored to match pre-construction grades.

11. Surface Ownership:

A. The surface is owned by The United States Government, Bureau of Land Management. The surface is multiple uses with the primary uses of the region for grazing of livestock and the production of oil and gas. The surface owner was notified before staking this well.

B. The proposed road routes and surface location will be restored as directed by the BLM.

+

12. Other Information:

A. The area around the well site is grassland and the topsoil is sandy. The vegetation is moderately sparse with native prairie grasses, some mesquite and shinnery oak. No wildlife was observed but it is likely that mule deer, rabbits, coyotes and rodents traverse the area.

B. There is no permanent or live water in the immediate area.

C. There are no dwellings within 2 miles of this location.

D. If needed, a Cultural Resources Examination is being prepared by Boone Arch Services of NM, LLC., 2030 North Canal, Carlsbad, New Mexico, 88220, phone number 575-885-1352 and the results will be forwarded to your office in the near future. Otherwise, **COG will be participating in the Permian Basin MOA Program.**

13. Bond Coverage:

Bond Coverage is Statewide Bond NMB000215

14. Lessee's and Operator's Representative:

The COG Operating LLC representative responsible for assuring compliance with the surface use plan is as follows:

Seth Wild
Drilling Superintendent
COG Operating LLC
One Concho Center
600 W Illinois Ave
Midland, TX 79701
(432) 221-0414 (office)
(432) 525-3633(cell)

Ray Peterson
Drilling Manager
COG Operating LLC
One Concho Center
600 W Illinois Ave
Midland, TX 79701
(432) 685-4304 (office)
(432) 818-2254 (business)

PECOS DISTRICT
SURFACE USE
CONDITIONS OF APPROVAL

COG Operating LLC
Lease Number NMNM123925
Eddy County, New Mexico

Hambone Federal Com 701H
Surface Hole Location: 222' FSL & 1168' FEL, Section 8, T. 26 S., R. 29 E.
Bottom Hole Location: 200' FNL & 330' FEL, Section 5, T. 26 S, R 29 E.

Hambone Federal Com 702H
Surface Hole Location: 222' FSL & 1198' FEL, Section 8, T. 26 S., R. 29 E.
Bottom Hole Location: 200' FNL & 1254' FEL, Section 5, T. 26 S, R 29 E.

Hambone Federal Com 703H
Surface Hole Location: 222' FSL & 1228' FEL, Section 8, T. 26 S., R. 29 E.
Bottom Hole Location: 200' FNL & 2178' FEL, Section 5, T. 26 S, R 29 E.

Approval Date: 02/26/2020

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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.

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)

Texas Hornshell

- Provide CEHMM with the permit, lease grant, or other authorization form BLM, if applicable.
- Provide CEHMM with plats or other electronic media describing the new surface disturbance for the project.
- The company shall comply with Spill Prevention, Control and Countermeasure (SPCC) requirements in accordance with 40 CFR Part 112.

Cave/Karst Surface Mitigation

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

Construction:

General Construction:

- No blasting
- The BLM, Carlsbad Field Office, will be informed immediately if any subsurface drainage channels, cave passages, or voids are penetrated during construction, and no additional construction shall occur until clearance has been issued by the Authorized Officer.
- All linear surface disturbance activities will avoid sinkholes and other karst features to lessen the possibility of encountering near surface voids during construction, minimize changes to runoff, and prevent untimely leaks and spills from entering the karst drainage system.
- All spills or leaks will be reported to the BLM immediately for their immediate and proper treatment.

Pad Construction:

- The pad will be constructed and leveled by adding the necessary fill and caliche – no blasting.
- The entire perimeter of the well pad will be bermed to prevent oil, salt, and other chemical contaminants from leaving the well pad.
- The compacted berm shall be constructed at a minimum of 12 inches high with impermeable mineral material (e.g., caliche).
- No water flow from the uphill side(s) of the pad shall be allowed to enter the well pad.
- The topsoil stockpile shall be located outside the bermed well pad.
- Topsoil, either from the well pad or surrounding area, shall not be used to construct the berm.

- No storm drains, tubing or openings shall be placed in the berm.
- If fluid collects within the bermed area, the fluid must be vacuumed into a safe container and disposed of properly at a state approved facility.
- The integrity of the berm shall be maintained around the surfaced pad throughout the life of the well and around the downsized pad after interim reclamation has been completed.
- Any access road entering the well pad shall be constructed so that the integrity of the berm height surrounding the well pad is not compromised (i.e. an access road crossing the berm cannot be lower than the berm height).
- Following a rain event, all fluids will vacuumed off of the pad and hauled off-site and disposed at a proper disposal facility.

Tank Battery Construction:

- The pad will be constructed and leveled by adding the necessary fill and caliche – no blasting.
- All tank battery locations and facilities will be lined and bermed.
- The liner should be at least 20 mil in thickness and installed with a 4 oz. felt backing, or equivalent, to prevent tears or punctures.
- Tank battery berms must be large enough to contain 1 ½ times the content of the largest tank.

Road Construction:

- Turnout ditches and drainage leadoffs will not be constructed in such a manner as to alter the natural flow of water into or out of cave or karst features.
- Special restoration stipulations or realignment may be required if subsurface features are discovered during construction.

Buried Pipeline/Cable Construction:

- Rerouting of the buried line(s) may be required if a subsurface void is encountered during construction to minimize the potential subsidence/collapse of the feature(s) as well as the possibility of leaks/spills entering the karst drainage system.

Powerline Construction:

- Smaller powerlines will be routed around sinkholes and other karst features to avoid or lessen the possibility of encountering near surface voids and to minimize changes to runoff or possible leaks and spills from entering karst systems.
- Larger powerlines will adjust their pole spacing to avoid cave and karst features.
- Special restoration stipulations or realignment may be required if subsurface voids are encountered.

Surface Flowlines Installation:

- Flowlines will be routed around sinkholes and other karst features to minimize the possibility of leaks/spills from entering the karst drainage system.

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.
- A leak detection plan will be submitted to BLM that incorporates an automatic shut off system (see below) to minimize the effects of an undesirable event that could negatively sensitive cave/karst resources.
- Well heads, pipelines (surface and buried), storage tanks, and all supporting equipment should be monitored regularly after installation to promptly identify and fix leaks.

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.

Hydrology:

The entire well pad(s) will be bermed to prevent oil, salt, and other chemical contaminants from leaving the well pad. The compacted berm shall be constructed at a minimum of 12 inches with impermeable mineral material (e.g. caliche). Topsoil shall not be used to construct the berm. No water flow from the uphill side(s) of the pad shall be allowed to enter the well pad. The integrity of the berm shall be maintained around the surfaced pad throughout the life of the well and around the downsized pad after interim reclamation has been completed. Any water erosion that may occur due to the construction of the well pad during the life of the well will be quickly corrected and proper measures will be taken to prevent future erosion. Stockpiling of topsoil is required. The topsoil shall be stockpiled in an appropriate location to prevent loss of soil due to water or wind erosion and not used for berming or erosion control. If fluid collects within the bermed area, the fluid must be vacuumed into a safe container and disposed of properly at a state approved facility. The berm would be maintained through the life of the wells and after interim reclamation has been completed.

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 or 24 hour production, whichever is greater. Automatic shut off, check valves, or similar systems will be installed for tanks to minimize the effects of catastrophic line failures used in production or drilling.

When crossing ephemeral drainages the pipeline(s) will be buried to a minimum depth of 48 inches from the top of pipe to ground level. Erosion control methods such as gabions and/or rock aprons should be placed on both up and downstream sides of the pipeline

crossing. In addition, curled (weed free) wood/straw fiber wattles/logs and/or silt fences should be placed on the downstream side for sediment control during construction and maintained until soils and vegetation have stabilized. Water bars should be placed within the ROW to divert and dissipate surface runoff. A pipeline access road is not permitted to cross these ephemeral drainages. Traffic should be diverted to a preexisting route. Additional seeding may be required in floodplains and drainages to restore energy dissipating vegetation.

Prior to pipeline installation/construction a leak detection plan will be developed. The method(s) could incorporate gauges to detect pressure drops, situating valves and lines so they can be visually inspected periodically or installing electronic sensors to alarm when a leak is present. The leak detection plan will incorporate an automatic shut off system that will be installed for proposed pipelines to minimize the effects of an undesirable event.

Any water erosion that may occur due to the construction of overhead electric line and during the life of the power line will be quickly corrected and proper measures will be taken to prevent future erosion. A power pole should not be placed in drainages, playas, wetlands, riparian areas, or floodplains and must span across the features at a distance away that would not promote further erosion.

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.

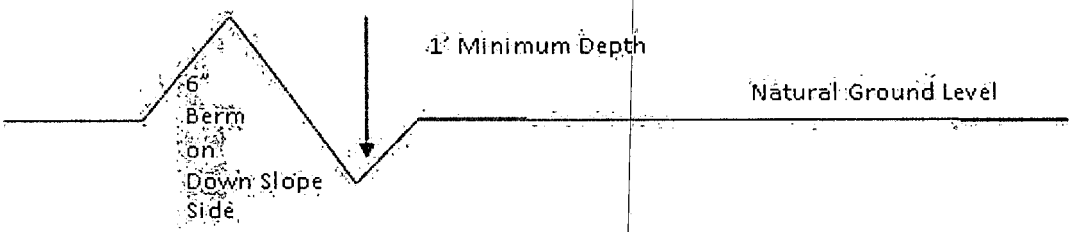
Ditching
Ditching shall be required on both sides of the road.

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:

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

Cattle guards
An appropriately sized cattle guard sufficient to carry out the project shall be installed and maintained at fence/road crossings. Any existing cattle guards 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 cattle guards 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

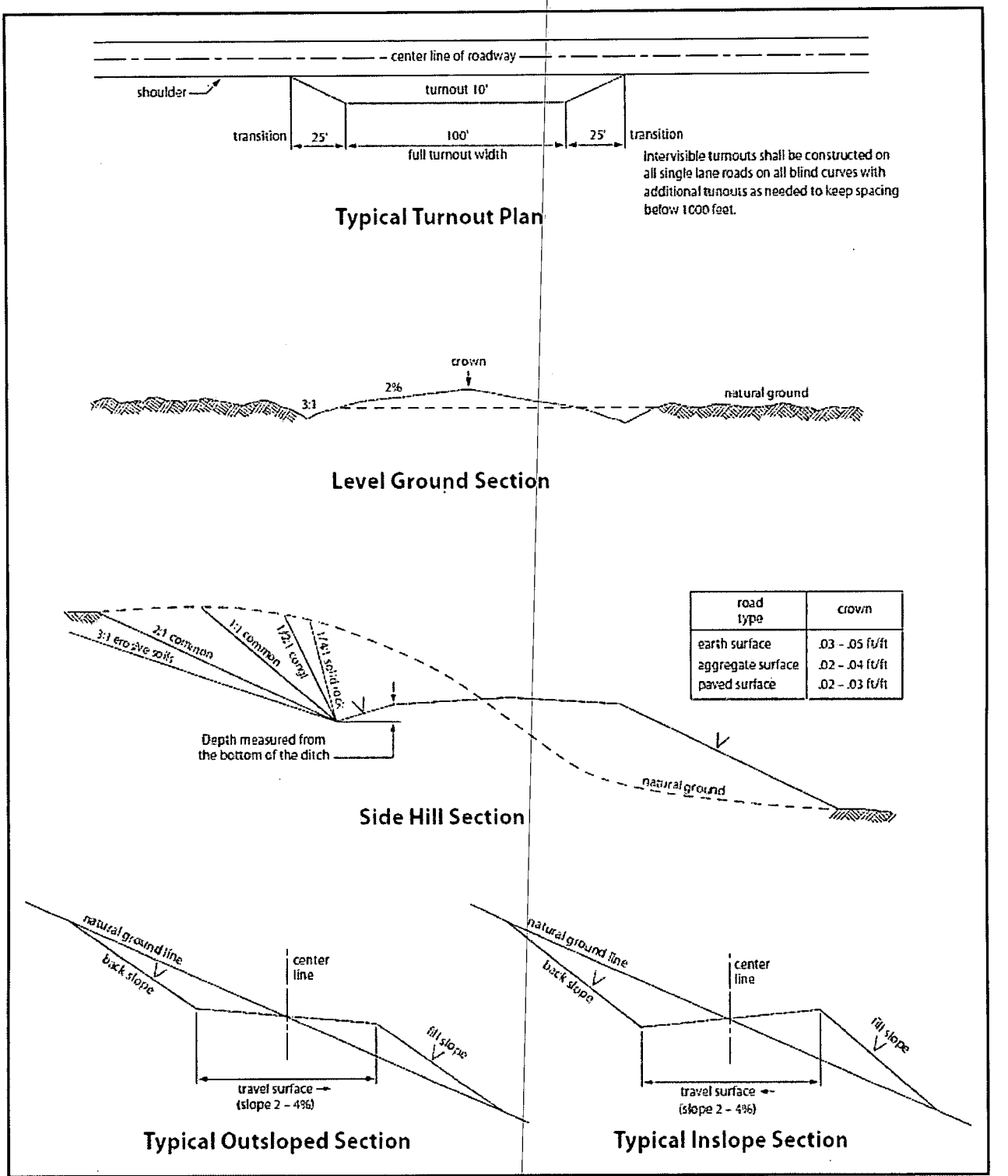


Figure 1. Cross-sections and plans for typical road sections representative of BLM resource or FS local and higher-class roads.

VII. 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

(X) seed mixture 2 ( ) 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 resource (historic or prehistoric site or object) discovered by the holder, or any person working on the holder's behalf, on public or Federal land shall be immediately reported to the Authorized Officer. The 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 the proper mitigation measures will be made by the Authorized Officer after consulting with the holder.

OR

If the entire project is covered under the Permian Basin Programmatic Agreement (cultural resources only):

The proponent has contributed funds commensurate to the undertaking into an account for offsite mitigation. Participation in the PA serves as mitigation for the effects of this project on cultural resources. If any human skeletal remains, funerary objects, sacred objects, or objects of cultural patrimony are discovered at any time during construction, all construction activities shall halt and the BLM will be notified as soon as possible within 24 hours. Work shall not resume until a Notice to Proceed is issued by the BLM. See Stipulation 17 for more information.

If the proposed project is split between a Class III inventory and a Permian Basin Programmatic Agreement contribution, the portion of the project covered under Class III inventory should default to the first paragraph stipulations.

17. The holder is hereby obligated to comply with procedures established in the Native American Graves Protection and Repatriation Act (NAGPRA) to protect such cultural items as human remains, associated funerary objects, sacred objects, and objects of cultural patrimony discovered inadvertently during the course of project implementation. In the event that any of the cultural items listed above are discovered during the course of project work, the proponent shall immediately halt the disturbance and contact the BLM within 24 hours for instructions. The proponent or initiator of any project shall be held responsible for protecting, evaluating, reporting, excavating, treating, and disposing of these cultural items according to the procedures established by the BLM in consultation with Indian Tribes."

18. Any paleontological resource (historic or prehistoric site or object) discovered by the holder, or any person working on the holder's behalf, on public or Federal land shall be immediately reported to the Authorized Officer. The 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 the proper mitigation measures will be made by the Authorized Officer after consulting with the holder.

19. 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.

20. 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.
b. 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.

21. Special Stipulations:

Karst:

- The BLM, Carlsbad Field Office, will be informed immediately if any subsurface drainage channels, passages, or voids are intersected by trenching, and no pipe will be laid in the trench at that point until clearance has been issued by the Authorized Officer.
- If a void is encountered alignments may be rerouted to avoid the karst feature and lessen; the potential of subsidence or collapse of karst features, buildup of toxic or combustible gas, or other possible impacts to cave and karst resources from the buried pipeline.
- Special restoration stipulations or realignment may be required at such intersections, if any.
- A leak detection plan **will be submitted to the BLM Carlsbad Field Office for approval** prior to pipeline installation. The method could incorporate gauges to detect pressure drops, situating values and lines so they can be visually inspected periodically or installing electronic sensors to alarm when a leak is present. The leak detection plan will incorporate an automatic shut off system that will be installed for proposed pipelines to minimize the effects of an undesirable event.
- Regular monitoring is required to quickly identify leaks for their immediate and proper treatment.
- All spills or leaks will be reported to the BLM immediately for their immediate and proper treatment.

C. ELECTRIC LINES

STANDARD STIPULATIONS FOR OVERHEAD ELECTRIC DISTRIBUTION LINES

A copy of the grant and attachments, including stipulations, 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. There will be no clearing or blading of the right-of-way unless otherwise agreed to in writing by the Authorized Officer.

5. Power lines shall be constructed and designed in accordance to standards outlined in "Suggested Practices for Avian Protection on Power lines: The State of the Art in 2006" Edison Electric Institute, APLIC, and the California Energy Commission 2006 . The holder shall assume the burden and expense of proving that pole designs not shown in the above publication deter raptor perching, roosting, and nesting. Such proof shall be provided by a raptor expert approved by the Authorized Officer. The BLM reserves the right to require modification or additions to all powerline structures placed on this right-of-way, should they be necessary to ensure the safety of large perching birds. Such modifications and/or additions shall be made by the holder without liability or expense to the United States.

Raptor deterrence will consist of but not limited to the following: triangle perch discouragers shall be placed on each side of the cross arms and a nonconductive perching deterrence shall be placed on all vertical poles that extend past the cross arms.

6. 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 the fence. No permanent gates will be allowed unless approved by the Authorized Officer.

7. The BLM serial number assigned to this authorization shall be posted in a permanent, conspicuous manner where the power line crosses roads and at all serviced facilities. Numbers will be at least two inches high and will be affixed to the pole nearest the road

crossing and at the facilities served.

8. Upon cancellation, relinquishment, or expiration of this grant, the holder shall comply with those abandonment procedures as prescribed by the Authorized Officer.

9. All surface structures (poles, lines, transformers, etc.) shall be removed within 180 days of abandonment, relinquishment, or termination of use of the serviced facility or facilities or within 180 days of abandonment, relinquishment, cancellation, or expiration of this grant, whichever comes first. This will not apply where the power line extends service to an active, adjoining facility or facilities.

10. Any cultural resource (historic or prehistoric site or object) discovered by the holder, or any person working on the holder's behalf, on public or Federal land shall be immediately reported to the Authorized Officer. The 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 the proper mitigation measures will be made by the Authorized Officer after consulting with the holder.

OR

If the entire project is covered under the Permian Basin Programmatic Agreement (cultural resources only):

The proponent has contributed funds commensurate to the undertaking into an account for offsite mitigation. Participation in the PA serves as mitigation for the effects of this project on cultural resources. If any human skeletal remains, funerary objects, sacred objects, or objects of cultural patrimony are discovered at any time during construction, all construction activities shall halt and the BLM will be notified as soon as possible within 24 hours. Work shall not resume until a Notice to Proceed is issued by the BLM. See Stipulation 11 for more information.

If the proposed project is split between a Class III inventory and a Permian Basin Programmatic Agreement contribution, the portion of the project covered under Class III inventory should default to the first paragraph stipulations.

11. The holder is hereby obligated to comply with procedures established in the Native American Graves Protection and Repatriation Act (NAGPRA) to protect such cultural items as human remains, associated funerary objects, sacred objects, and objects of cultural patrimony discovered inadvertently during the course of project implementation.

In the event that any of the cultural items listed above are discovered during the course of project work, the proponent shall immediately halt the disturbance and contact the BLM within 24 hours for instructions. The proponent or initiator of any project shall be held responsible for protecting, evaluating, reporting, excavating, treating, and disposing of these cultural items according to the procedures established by the BLM in consultation with Indian Tribes."

12. Any paleontological resource (historic or prehistoric site or object) discovered by the holder, or any person working on the holder's behalf, on public or Federal land shall be immediately reported to the Authorized Officer. The 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 the proper mitigation measures will be made by the Authorized Officer after consulting with the holder.

13. Special Stipulations:
For reclamation remove poles, lines, transformer, etc. and dispose of properly.
Fill in any holes from the poles removed.

VIII. 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).

IX. 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 2, for Sandy 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
Sand dropseed (Sporobolus cryptandrus)	1.0
Sand love grass (Eragrostis trichodes)	1.0
Plains bristlegrass (Setaria macrostachya)	2.0

*Pounds of pure live seed:

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

PECOS DISTRICT
DRILLING OPERATIONS
CONDITIONS OF APPROVAL

OPERATOR'S NAME:	**COG Operating LLC**
LEASE NO.:	**NMNM057261**
WELL NAME & NO.:	**Hambone Federal Com 701H**
SURFACE HOLE FOOTAGE:	**222' FSL & 1168' FEL**
BOTTOM HOLE FOOTAGE	**200' FNL & 330' FEL**
LOCATION:	**Section 8, T 26S, R 29E, NMPM**
COUNTY:	**Eddy County, New Mexico**

H2S	○ Yes	◉ No	
Potash	◉ None	○ Secretary	○ R-111-P
Cave/Karst Potential	○ Low	◉ Medium	○ High
Variance	○ None	◉ Flex Hose	○ Other
Wellhead	○ Conventional	◉ Multibowl	○ Both
Other	☐ 4 String Area	☐ Capitan Reef	☐ WIPP
Other	☐ Fluid Filled	☐ Cement Squeeze	☐ Pilot Hole
Special Requirements	☐ Water Disposal	☑ COM	☐ Unit

A. HYDROGEN SULFIDE

1. Hydrogen Sulfide (H2S) monitors shall be installed prior to drilling out the surface shoe. If H2S is detected in concentrations greater than 100 ppm, the Hydrogen Sulfide area shall meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, provide measured values and formations to the BLM.

B. CASING

1. The **10-3/4"** surface casing shall be set at approximately **380'** (a minimum of 75' into the Rustler Anhydrite and above the salt) and cemented to surface.
   a. **If cement does not circulate to 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 **6 hours** after pumping cement, ideally between 8-10 hours after.
   b. WOC time for a primary cement job will be a minimum of **8 hours** or **500 psi** compressive strength, whichever is greater. This is to include the lead cement.
   c. If cement falls back, remedial cementing will be done prior to drilling out the shoe.
   d. WOC time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 psi compressive strength, whichever is greater.

2. The **7-5/8"** intermediate casing shall be set in the 3rd BS Lime and cemented to surface.
   a. **If cement does not circulate to surface,** see B.1.a, c & d.
   b. This casing must be kept at least 1/3 full at all times in order to meet BLM collapse requirements.
3. The **5-1/2"** production casing shall be cemented with at least **200' tie-back** into the previous casing. Operator shall provide method of verification.
   a. In Medium Cave/Karst Areas, if cement does not circulate to surface on the first two casing strings, the cement on the 3rd casing string must come to surface.

C. PRESSURE CONTROL

1. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **3000 (3M)** psi.
2. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the intermediate casing shoe shall be **5000 (5M)** psi.

D. SPECIAL REQUIREMENTS

1. Submit a Communitization Agreement to the Carlsbad Field Office, 620 E Greene St. Carlsbad, New Mexico 88220, at least 90 days before the anticipated date of first production from a well subject to a spacing order issued by the New Mexico Oil Conservation Division. The Communitization Agreement will include the signatures of all working interest owners in all Federal and Indian leases subject to the Communitization Agreement (i.e., operating rights owners and lessees of record), or certification that the operator has obtained the written signatures of all such owners and will make those signatures available to the BLM immediately upon request.
   a. The well sign on location shall include the surface and bottom hole lease numbers. <u>When the Communitization Agreement number is known, it shall also be on the sign.</u>

DR 1/23/2020

GENERAL REQUIREMENTS

1. The BLM is to be notified in advance for a representative to witness:
   a. Spudding the well (minimum of 24 hours)
   b. Setting and/or Cementing of all casing strings (minimum of 4 hours)
   c. BOP/BOPE tests (minimum of 4 hours)
      ☒ Eddy County: Call the Carlsbad Field Office, (575) 361-2822
      ☒ Lea County: Call the Hobbs Field Station, (575) 393-3612
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.
   a. In the event the operator has proposed to drill multiple wells utilizing a skid/walking rig. Operator shall secure the wellbore on the current well, after installing and testing the wellhead, by installing a blind flange of like pressure rating to the wellhead and a pressure gauge that can be monitored while drilling is performed on the other well(s).
   b. When the operator proposes to set surface casing with Spudder Rig:
      i. Notify the BLM when moving in and removing the Spudder Rig.
      ii. Notify the BLM when moving in the 2nd Rig. Rig to be moved in within 90 days of notification that Spudder Rig has left the location.
      iii. BOP/BOPE test to be conducted per Onshore Oil and Gas Order No. 2 as soon as 2nd Rig is rigged up on well.
3. Floor controls are required for 3M or Greater systems. These controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works are located, this does not include the dog house or stairway area.
4. The record of the drilling rate along with the GR/N well log run from TD to surface (horizontal well – vertical portion of hole) shall be available upon request. The Rustler top and top and bottom of Salt are to be recorded on the Completion Report.

A. CASING

1. Changes to the approved APD casing program need prior approval if the items substituted are of lesser grade or different casing size or are Non-API. The Operator can exchange the components of the proposal with that of superior strength (i.e. changing from J-55 to N-80, or from 36# to 40#). Changes to the approved cement program need prior approval if the altered cement plan has less volume or strength or if the changes are substantial (i.e. Multistage tool, ECP, etc.). The initial wellhead installed on the well will remain on the well with spools used as needed.
2. Wait on cement (WOC) for Potash Areas: 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 for all cement blends, 2) until cement has been in place at least 24 hours. WOC time will be recorded in the driller's log. The casing intergrity test can be done (prior to the cement setting up) immediately after bumping the plug.

3. 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. The casing intergrity test can be done (prior to the cement setting up) immediately after bumping the plug.
4. Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. Have well-specific cement details onsite prior to pumping the cement for each casing string.
5. No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.
6. On the portion of well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Formation at the shoe shall be tested to a minimum of the mud weight equivalent anticipated to control the formation pressure to the next casing depth or at total depth of the well. This test shall be performed before drilling more than 20 feet of new hole.
7. 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.
8. Whenever a casing string is cemented in the R-111-P potash area, the NMOCD requirements shall be followed.

B. 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. If a variance is approved for a flexible hose to be installed from the BOP to the choke manifold, the following requirements apply: The flex line must meet the requirements of API 16C. 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. These documents shall be posted in the company man's trailer and on the rig floor.
3. If the operator has proposed a multi-bowl wellhead assembly in the APD. The following requirements must be met:

a. Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.

b. If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.

c. Manufacturer representative shall install the test plug for the initial BOP test.

d. If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.

e. Whenever any seal subject to test pressure is broken, all the tests in Onshore Order 2 III.A.2.i must be followed.

5. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the BOP/BOPE 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. In potash areas, 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. For all casing strings, casing cut-off and BOP installation can be initiated at twelve hours after bumping the plug. However, **no tests** shall commence until the cement has had a minimum of 24 hours setup time, except the casing pressure test which can be initiated immediately after bumping the plug (only applies to single-stage cement jobs).

c. The tests shall be done by an independent service company utilizing a test plug. The results of the test shall be made available upon request.

d. 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.

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

f. BOP/BOPE must be tested within 500 feet of the top of the Wolfcamp formation if the time between the setting of the intermediate casing and reaching this depth

exceeds 20 days. This test does not exclude the test prior to drilling out the casing shoe as per Onshore Order No. 2.

C. DRILLING MUD

1. Mud system monitoring equipment, with derrick floor indicators and visual and audio alarms, shall be operating before drilling into the Wolfcamp formation, and shall be used until production casing is run and cemented.

D. WASTE MATERIAL AND FLUIDS

1. 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.
2. Porto-johns and trash containers will be on-location during fracturing operations or any other crew-intensive operations.