Form 3160-3
(June 2015)

OCD – HOBBS
11/30/2020
RECEIVED

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.
NMNM119277

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.
COLUMBUS FEDERAL COM [317530]
701H

2. Name of Operator
COG OPERATING LLC [229137]

9. API Well No. 30-025-48113

3a. Address
600 West Illinois Ave, Midland, TX 79701

3b. Phone No. *(include area code)*
(432) 683-7443

10. Field and Pool, or Exploratory
WILDCAT/Wolfcamp [98094]

4. Location of Well *(Report location clearly and in accordance with any State requirements.*)*
At surface NESW / 2225 FSL / 1995 FWL / LAT 32.085875 / LONG -103.562295
At proposed prod. zone SESW / 50 FSL / 2310 FWL / LAT 32.065386 / LONG -103.56126

11. Sec., T. R. M. or Blk. and Survey or Area
SEC 34/T25S/R33E/NMP

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

12. County or Parish
LEA

13. State
NM

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

16. No of acres in lease

17. Spacing Unit dedicated to this well
480.0

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

19. Proposed Depth
12405 feet / 19832 feet

20. BLM/BIA Bond No. in file
FED: NMB000215

21. Elevations (Show whether DF, KDB, RT, GL, etc.)
3324 feet

22. Approximate date work will start*
12/01/2020

23. Estimated duration
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)	MAYTE REYES / Ph: (432) 683-7443	05/20/2020

Title
Regulatory Analyst

Approved by *(Signature)*	Name *(Printed/Typed)*	Date
(Electronic Submission)	Cody Layton / Ph: (575) 234-5959	11/10/2020

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.

GCP Rec 11/30/2020

SL

APPROVED WITH CONDITIONS

KZ
12/07/2020

Approval Date: 11/10/2020

(Continued on page 2)

*(Instructions on page 2)

APD ID: 10400057099 **Submission Date:** 05/20/2020

Operator Name: COG OPERATING LLC

Well Name: COLUMBUS FEDERAL COM **Well Number:** 701H

Well Type: OIL WELL **Well Work Type:** Drill

Highlighted data reflects the most recent changes

Show Final Text

Section 1 - General

APD ID: 10400057099 **Tie to previous NOS?** N **Submission Date:** 05/20/2020

BLM Office: CARLSBAD **User:** MAYTE REYES **Title:** Regulatory Analyst

Federal/Indian APD: FED **Is the first lease penetrated for production Federal or Indian?** FED

Lease number: NMNM119277 **Lease Acres:**

Surface access agreement in place? **Allotted?** **Reservation:**

Agreement in place? NO **Federal or Indian agreement:**

Agreement number:

Agreement name:

Keep application confidential? YES

Permitting Agent? NO **APD Operator:** COG OPERATING LLC

Operator letter of designation:

Operator Info

Operator Organization Name: COG OPERATING LLC

Operator Address: 600 West Illinois Ave **Zip:** 79701

Operator PO Box:

Operator City: Midland **State:** TX

Operator Phone: (432)683-7443

Operator Internet Address: RODOM@CONCHO.COM

Section 2 - Well Information

Well in Master Development Plan? NO **Master Development Plan name:**

Well in Master SUPO? NO **Master SUPO name:**

Well in Master Drilling Plan? NO **Master Drilling Plan name:**

Well Name: COLUMBUS FEDERAL COM **Well Number:** 701H **Well API Number:**

Field/Pool or Exploratory? Field and Pool **Field Name:** WILDCAT **Pool Name:** Wolfcamp

Is the proposed well in an area containing other mineral resources? POTASH

Operator Name: COG OPERATING LLC

Well Name: COLUMBUS FEDERAL COM **Well Number:** 701H

Is the proposed well in an area containing other mineral resources? POTASH

Is the proposed well in a Helium production area? N **Use Existing Well Pad?** N **New surface disturbance?**

Type of Well Pad: MULTIPLE WELL **Multiple Well Pad Name:** COLUMBUS FEDERAL COM **Number:** 701H and 702H

Well Class: HORIZONTAL **Number of Legs:** 1

Well Work Type: Drill

Well Type: OIL WELL

Describe Well Type:

Well sub-Type: EXPLORATORY (WILDCAT)

Describe sub-type:

Distance to town: 20 Miles **Distance to nearest well:** 30 FT **Distance to lease line:** 50 FT

Reservoir well spacing assigned acres Measurement: 480 Acres

Well plat: COG_Columbus_701H_C102_20200520211912.pdf

Well work start Date: 12/01/2020 **Duration:** 30 DAYS

Section 3 - Well Location Table

Survey Type: RECTANGULAR

Describe Survey Type:

Datum: NAD83 **Vertical Datum:** NAVD88

Survey number: **Reference Datum:** GROUND LEVEL

Wellbore	NS-Foot	NS Indicator	EW-Foot	EW Indicator	Twsp	Range	Section	Aliquot/Lot/Tract	Latitude	Longitude	County	State	Meridian	Lease Type	Lease Number	Elevation	MD	TVD	Will this well produce from this lease?
SHL Leg #1	2225	FSL	1995	FWL	25S	33E	34	Aliquot NESW	32.085875	-103.562295	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 119277	3324	0	0	Y
KOP Leg #1	2225	FSL	1995	FWL	25S	33E	34	Aliquot NESW	32.085875	-103.562295	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 119277	3324	0	0	Y
PPP Leg #1-1	2540	FSL	2310	FWL	25S	33E	34	Aliquot NESW	32.086739	-103.56128	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 119277	-9081	12700	12405	Y

Operator Name: COG OPERATING LLC

Well Name: COLUMBUS FEDERAL COM **Well Number:** 701H

Wellbore	NS-Foot	NS Indicator	EW-Foot	EW Indicator	Twsp	Range	Section	Aliquot/Lot/Tract	Latitude	Longitude	County	State	Meridian	Lease Type	Lease Number	Elevation	MD	TVD	Will this well produce from this lease?
EXIT Leg #1	100	FSL	2310	FWL	26S	33E	3	Aliquot SESW	32.065523	-103.561261	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 119278	-9056	19781	12380	Y
BHL Leg #1	50	FSL	2310	FWL	26S	33E	3	Aliquot SESW	32.065386	-103.56126	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 119278	-9081	19832	12405	Y

DISTRICT I
1625 N. FRENCH DR., HOBBS, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720

DISTRICT II
811 S. FIRST ST., ARTESIA, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720

DISTRICT III
1000 RIO BRAZOS RD., AZTEC, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170

DISTRICT IV
1220 S. ST. FRANCIS DR., SANTA FE, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
1220 SOUTH ST. FRANCIS DR.
Santa Fe, New Mexico 87505

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

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number	Pool Code	Pool Name
30-025		Wildcat; Wolfcamp

Property Code	Property Name	Well Number
	COLUMBUS FEDERAL COM	701H

OGRID No.	Operator Name	Elevation
229137	COG OPERATING, LLC	3323.6'

Surface Location

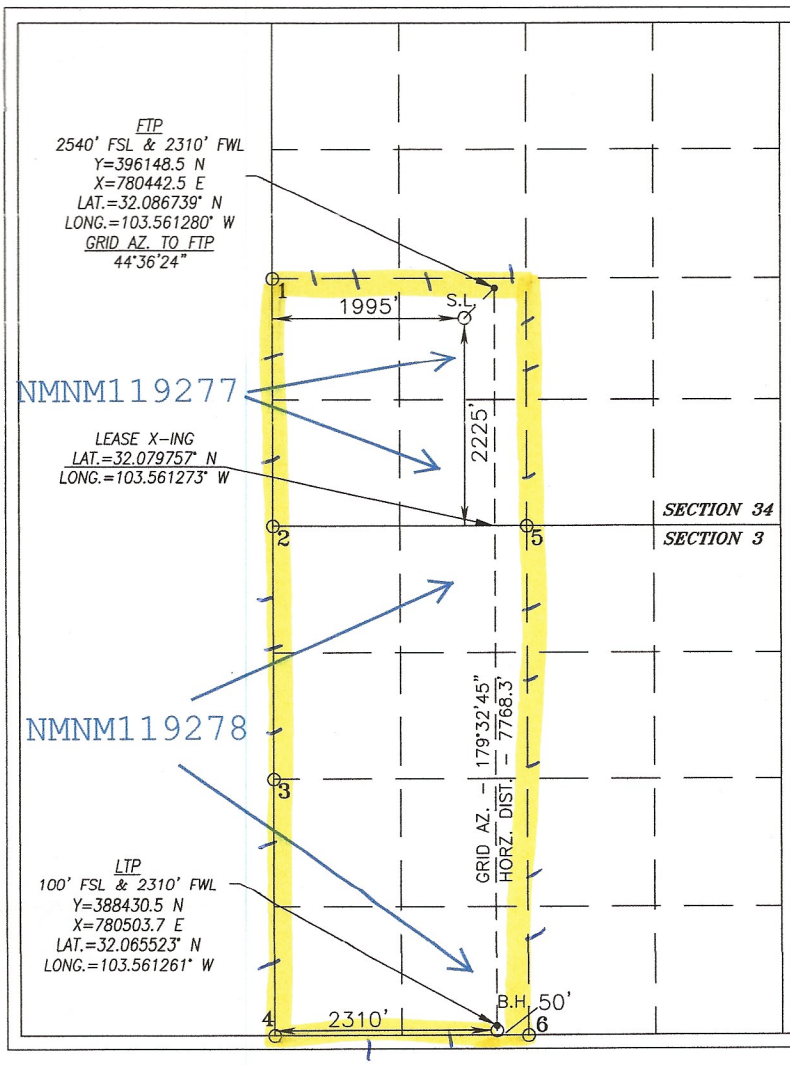
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
K	34	25-S	33-E		2225	SOUTH	1995	WEST	LEA

Bottom Hole Location If Different From Surface

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
N	3	26-S	33-E		50	SOUTH	2310	WEST	LEA

Dedicated Acres	Joint or Infill	Consolidation Code	Order No.
480			

NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION



NAD 83 NME
SURFACE LOCATION
Y=395832.0 N
X=780130.3 E
LAT.=32.085875° N
LONG.=103.562295° W

POINT LEGEND	
1	Y=396235.8 N X=778131.7 E
2	Y=393596.9 N X=778154.7 E
3	Y=390957.8 N X=778175.6 E
4	Y=388317.6 N X=778194.5 E
5	Y=393610.3 N X=780799.7 E
6	Y=388332.4 N X=780837.5 E

NAD 83 NME
PROPOSED BOTTOM
HOLE LOCATION
Y=388380.5 N
X=780504.1 E
LAT.=32.065386° N
LONG.=103.561260° W

OPERATOR CERTIFICATION

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

Mayte Reyes 5-20-2020
Signature Date

Mayte Reyes
Printed Name

mreyes1@concho.com
E-mail Address

SURVEYOR CERTIFICATION

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

APRIL 27, 2020
Date of Survey

Signature & Seal of Professional Surveyor

CHAD L. HARCROW
NEW MEXICO
17777
LICENSED PROFESSIONAL SURVEYOR

Chad Harcrow 5/5/20
Certificate No. CHAD HARCROW 17777

W.O. #20-652 DRAWN BY: WN

APD ID: 10400057099 **Submission Date:** 05/20/2020

Operator Name: COG OPERATING LLC

Well Name: COLUMBUS FEDERAL COM **Well Number:** 701H

Well Type: OIL WELL **Well Work Type:** Drill

Highlighted data reflects the most recent changes

Show Final Text

Section 1 - Geologic Formations

Formation ID	Formation Name	Elevation	True Vertical Depth	Measured Depth	Lithologies	Mineral Resources	Producing Formation
735735	UNKNOWN	3324	0	0	ALLUVIUM	NONE	N
735739	RUSTLER	2347	977	977	ALLUVIUM	NONE	N
735740	TOP SALT	1975	1349	1349	SALT	NONE	N
735741	BASE OF SALT	-1442	4766	4766	ANHYDRITE	NONE	N
735746	LAMAR	-1632	4956	4956	LIMESTONE	NONE	N
735747	BELL CANYON	-1683	5007	5007	LIMESTONE	NONE	N
735742	CHERRY CANYON	-2702	6026	6026	SANDSTONE	NATURAL GAS, OIL	N
735748	BRUSHY CANYON	-4278	7602	7602	SANDSTONE	NATURAL GAS, OIL	N
735743	BONE SPRING LIME	-5739	9063	9063	SHALE	NATURAL GAS, OIL	N
735744	BONE SPRING 1ST	-6749	10073	10073	SANDSTONE	NATURAL GAS, OIL	N
735745	BONE SPRING 2ND	-7315	10639	10639	SANDSTONE	NATURAL GAS, OIL	N
735738	BONE SPRING 3RD	-8389	11713	11713	SANDSTONE	NATURAL GAS, OIL	N
735749	WOLFCAMP	-8856	12180	12180	SILTSTONE	NATURAL GAS, OIL	Y

Section 2 - Blowout Prevention

Operator Name: COG OPERATING LLC

Well Name: COLUMBUS FEDERAL COM **Well Number:** 701H

Pressure Rating (PSI): 10M **Rating Depth:** 12405

Equipment: Annular. The BOP equipment will include a Kelly cock and floor safety valve (inside BOP) and choke lines and choke manifold.
Requesting Variance? YES

Variance request: Request a 5M variance on a 10M system. (5M variance attached in section 8). 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.
Testing Procedure: 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 of the components installed will be functional and tested.
Choke Diagram Attachment:

COG_Columbus_701H_10M_Choke_20200513152520.pdf

BOP Diagram Attachment:

COG_Columbus_701H_10M_BOP_20200513152531.pdf

COG_Columbus_701H_Flex_Hose_20200513152540.pdf

Pressure Rating (PSI): 5M **Rating Depth:** 11800

Equipment: Annular. The BOP equipment will include a Kelly cock and floor safety valve (inside BOP) and choke lines and choke manifold.
Requesting Variance? NO

Variance request: 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.
Testing Procedure: 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 of the components installed will be functional and tested.
Choke Diagram Attachment:

COG_Columbus_701H_5M_Choke_20200513152404.pdf

BOP Diagram Attachment:

COG_Columbus_701H_5M_BOP_20200513152419.pdf

COG_Columbus_701H_Flex_Hose_20200513152431.pdf

Operator Name: COG OPERATING LLC

Well Name: COLUMBUS FEDERAL COM **Well Number:** 701H

Section 3 - Casing

Casing ID	String Type	Hole Size	Csg Size	Condition	Standard	Tapered String	Top Set MD	Bottom Set MD	Top Set TVD	Bottom Set TVD	Top Set MSL	Bottom Set MSL	Calculated casing length MD	Grade	Weight	Joint Type	Collapse SF	Burst SF	Joint SF Type	Joint SF	Body SF Type	Body SF
1	SURFACE	14.75	10.75	NEW	API	N	0	1170	0	1170	3324	2154	1170	N-80	45.5	OTHER - BTC	4.61	1.67	DRY	20.61	DRY	19.54
2	INTERMEDIATE	8.75	7.625	NEW	API	Y	0	11800	0	8500	-6907	-5176	11800	HCP-110	29.7	OTHER - TL-FJ	1.28	1.11	DRY	1.88	DRY	2.68
3	PRODUCTION	6.75	5.0	NEW	API	Y	0	19832	0	12405	-6907	-9081	19832	P-110	18	OTHER - BTC	1.8	1.85	DRY	3.24	DRY	3.26

Casing Attachments

Casing ID: 1 **String Type:** SURFACE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

COG_Columbus_701H_Casing_Prog_20200513153642.pdf

Operator Name: COG OPERATING LLC

Well Name: COLUMBUS FEDERAL COM **Well Number:** 701H

Casing Attachments

Casing ID: 2 **String Type:** INTERMEDIATE

Inspection Document:

Spec Document:

Tapered String Spec:

COG_Columbus_701H_Casing_Prog_20200513153929.pdf

Casing Design Assumptions and Worksheet(s):

COG_Columbus_701H_Casing_Prog_20200513153919.pdf

Casing ID: 3 **String Type:** PRODUCTION

Inspection Document:

Spec Document:

Tapered String Spec:

COG_Columbus_701H_Casing_Prog_20200513154108.pdf

Casing Design Assumptions and Worksheet(s):

COG_Columbus_701H_Casing_Prog_20200513154118.pdf

Section 4 - Cement

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
SURFACE	Lead	1	0	1170	558	1.75	13.5	976	50	Class C	4% Gel + 1% CaCl2
SURFACE	Tail		0	1170	250	1.34	14.8	335	50	C	2% CaCl2
INTERMEDIATE	Lead	1	0	11800	840	3.3	10.3	2772	50	Halliburton Tunded Light	No additives
INTERMEDIATE	Tail		0	11800	250	1.35	14.8	337	50	Class H	No additives
PRODUCTION	Lead	1	8000	19832	538	2	12.7	1076	35	Lead: 50:50:10 H Blend	No additives

Operator Name: COG OPERATING LLC

Well Name: COLUMBUS FEDERAL COM **Well Number:** 701H

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
PRODUCTION	Tail		0	19832	1042	1.24	14.4	1292	35	Tail: 50:50:2 Class H Blend	No additives

Section 5 - Circulating Medium

Mud System Type: Closed

Will an air or gas system be Used? NO

Description of the equipment for the circulating system in accordance with Onshore Order #2:

Diagram of the equipment for the circulating system in accordance with Onshore Order #2:

Describe what will be on location to control well or mitigate other conditions: Sufficient mud materials to maintain mud properties and meet minimum lost circulation and weight increase requirements will be kept on location at all times

Describe the mud monitoring system utilized: PVT/Pason/Visual Monitoring

Circulating Medium Table

Top Depth	Bottom Depth	Mud Type	Min Weight (lbs/gal)	Max Weight (lbs/gal)	Density (lbs/cu ft)	Gel Strength (lbs/100 sqft)	PH	Viscosity (CP)	Salinity (ppm)	Filtration (cc)	Additional Characteristics
1170	11800	OTHER : Brine Diesel Emulsion	8.4	9							Brine Diesel Emulsion
11800	19832	OIL-BASED MUD	9.6	12.5							OBM
0	1170	OTHER : Fresh water gel	8.6	8.8							

Operator Name: COG OPERATING LLC

Well Name: COLUMBUS FEDERAL COM **Well Number:** 701H

Section 6 - Test, Logging, Coring

List of production tests including testing procedures, equipment and safety measures:

None planned

List of open and cased hole logs run in the well:

COMPENSATED NEUTRON LOG,GAMMA RAY LOG,

Coring operation description for the well:

None planned

Section 7 - Pressure

Anticipated Bottom Hole Pressure: 8065 **Anticipated Surface Pressure:** 5335

Anticipated Bottom Hole Temperature(F): 180

Anticipated abnormal pressures, temperatures, or potential geologic hazards? NO

Describe:

Contingency Plans geoharzards description:

Contingency Plans geohazards attachment:

Hydrogen Sulfide drilling operations plan required? YES

Hydrogen sulfide drilling operations plan:

COG_Columbus_701H_H2S_SUP_20200513160431.pdf
COG_Columbus_701H_H2S_Schem_20200513161141.pdf

Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

COG_Columbus_701H_AC__RPT_20200513161154.pdf
COG_Columbus_701H_Plot_20200513161202.pdf
COG_Columbus_701H_Directional_Plan_20200513161209.pdf

Other proposed operations facets description:

Drilling Program.
Cement Program.
GCP.

Other proposed operations facets attachment:

COG_Columbus_701H_GCP_20200513161304.pdf
COG_Columbus_701H_Drilling_Prog_20200513161317.pdf
COG_Columbus_701H_Cement_Prog_20200513161330.pdf

Other Variance attachment:

COG_5M_Variance_Well_Plan_20200513161353.pdf

CONCHO

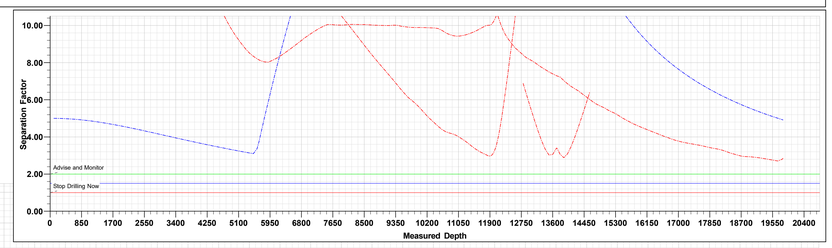
Project:	LEA COUNTY, NM (NM - E)
Site:	COLUMBUS FEDERAL COM PROJECT
Well:	COLUMBUS FEDERAL COM #701H
Wellbore:	OWB
Design:	PWP1
GL:	3323.6
KB=26' @ 3349.6usft (MCVAY 8)	

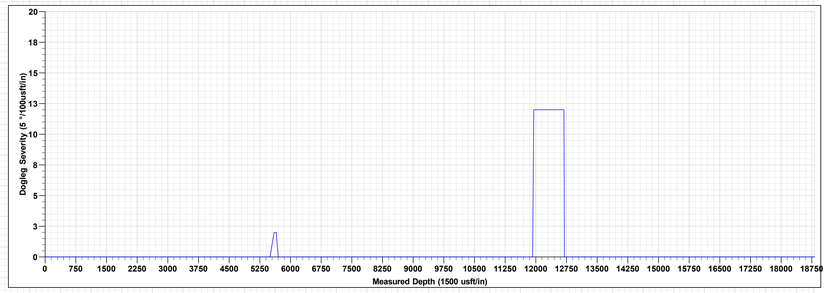
WELL DETAILS: COLUMBUS FEDERAL COM #701H

+N/-S	+E/-W	Northing	Easting	Latittude	Longitude
0.0	0.0	395774.50	738943.60	32° 5' 9.152 N	103° 33' 44.262 W

DESIGN TARGET DETAILS

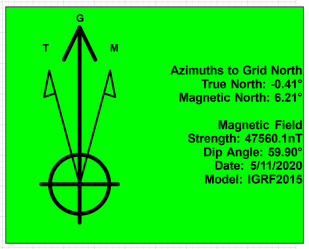
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
LTP (COLUMBUS FEDERAL COM #701H)	12380.0	-7401.3	373.0	388373.20	739316.60	32° 3' 55.885 N	103° 33' 40.538 W
PBHL (COLUMBUS FEDERAL COM #701H)	12380.0	-7451.3	373.4	388323.20	739317.00	32° 3' 55.390 N	103° 33' 40.538 W
FTP (COLUMBUS FEDERAL COM #701H)	12405.0	316.5	312.2	396091.00	739255.80	32° 5' 12.262 N	103° 33' 40.607 W

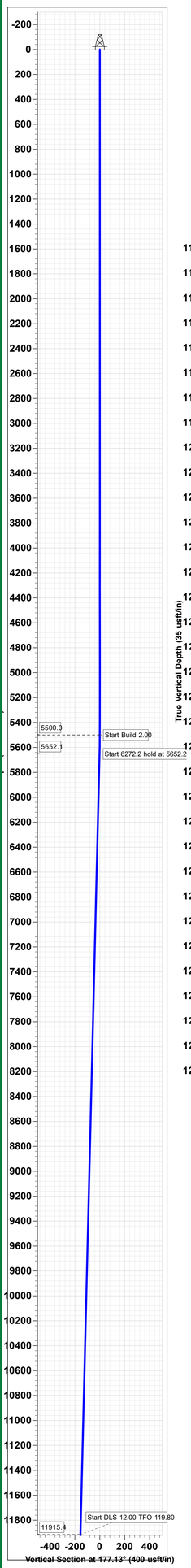


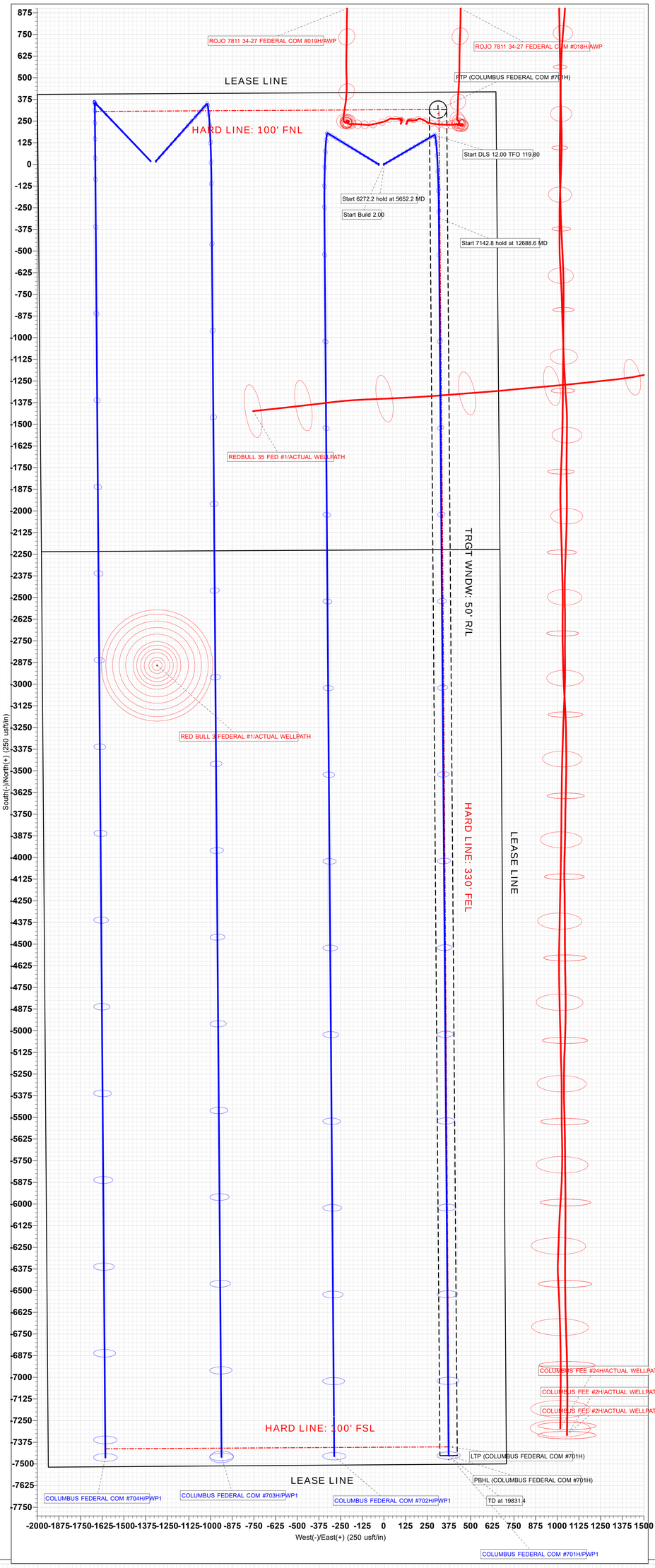


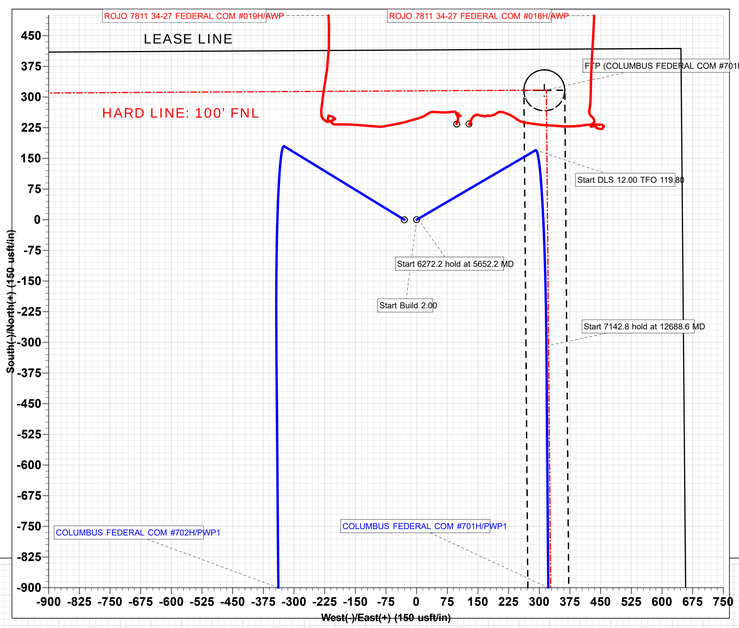
COLUMBUS FEDERAL COM #701H

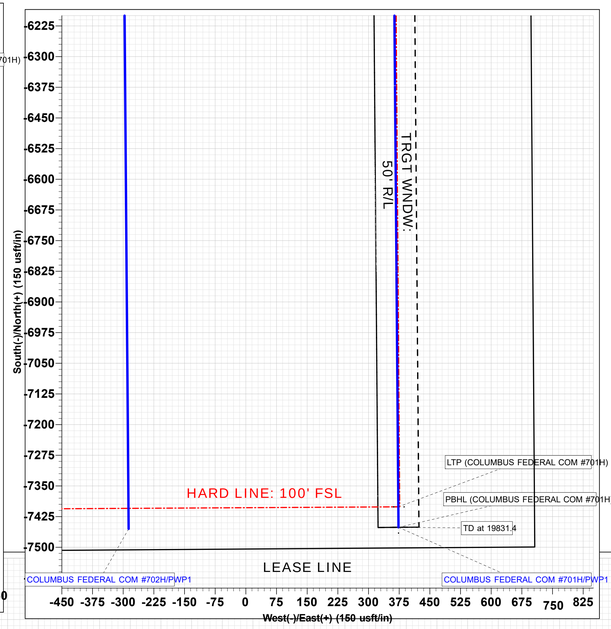
MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Annotation
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
5500.0	0.00	0.00	5500.0	0.0	0.0	0.00	0.00	0.0	Start Build 2.00
5652.2	3.04	59.71	5652.1	2.0	3.5	2.00	59.71	-1.9	Start 6272.2 hold at 5652.2 MD
11924.3	3.04	59.71	11915.4	170.0	291.0	0.00	0.00	-155.2	Start DLS 12.00 TFO 119.80
12688.6	90.20	179.55	12405.0	-308.8	317.4	12.00	119.80	324.3	Start 7142.8 hold at 12688.6 MD
19831.4	90.20	179.55	12380.0	-7451.3	373.4	0.00	0.00	7460.7	TD at 19831.4

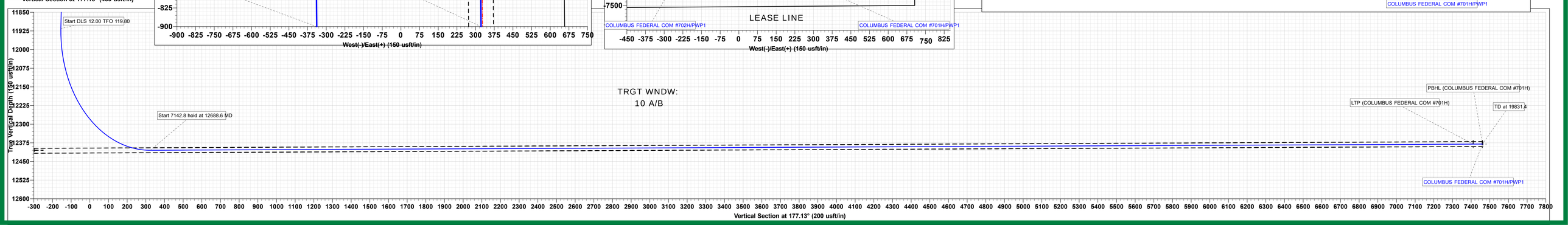












TRGT WNDW:
10 A/B

DELAWARE BASIN WEST

LEA COUNTY, NM (NM - E)
COLUMBUS FEDERAL COM PROJECT
COLUMBUS FEDERAL COM #701H

OWB

Plan: PWP1

Standard Survey Report

12 May, 2020

Concho Resources LLC

Survey Report

Company:	DELAWARE BASIN WEST	**Local Co-ordinate Reference:**	Well COLUMBUS FEDERAL COM #701H
Project:	LEA COUNTY, NM (NM - E)	**TVD Reference:**	KB=26' @ 3349.6usft (MCVAY 8)
Site:	COLUMBUS FEDERAL COM PROJECT	**MD Reference:**	KB=26' @ 3349.6usft (MCVAY 8)
Well:	COLUMBUS FEDERAL COM #701H	**North Reference:**	Grid
Wellbore:	OWB	**Survey Calculation Method:**	Minimum Curvature
Design:	PWP1	**Database:**	edm

Project LEA COUNTY, NM (NM - E)

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		

Well COLUMBUS FEDERAL COM #701H

Well Position	**+N/-S**	0.0 usft	**Northing:**	395,774.50 usft	**Latitude:**	32° 5' 9.152 N
	+E/-W	0.0 usft	**Easting:**	738,943.60 usft	**Longitude:**	103° 33' 44.262 W
Position Uncertainty		3.0 usft	**Wellhead Elevation:**	usft	**Ground Level:**	3,323.6 usft

Wellbore OWB

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	5/11/2020	6.62	59.90	47,560.11764421

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	177.13

Survey Tool Program **Date** 5/12/2020

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.0	11,909.4	PWP1 (OWB)	Standard Keeper 104	Standard Wireline Keeper ver 1.0.4
11,909.4	19,831.4	PWP1 (OWB)	MWD+IFR1+FDIR	OWSG MWD + IFR1 + FDIR Correction

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
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

Concho Resources LLC

Survey Report

Company:	DELAWARE BASIN WEST	**Local Co-ordinate Reference:**	Well COLUMBUS FEDERAL COM #701H
Project:	LEA COUNTY, NM (NM - E)	**TVD Reference:**	KB=26' @ 3349.6usft (MCVAY 8)
Site:	COLUMBUS FEDERAL COM PROJECT	**MD Reference:**	KB=26' @ 3349.6usft (MCVAY 8)
Well:	COLUMBUS FEDERAL COM #701H	**North Reference:**	Grid
Wellbore:	OWB	**Survey Calculation Method:**	Minimum Curvature
Design:	PWP1	**Database:**	edm

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)
1,500.0	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
2,600.0	0.00	0.00	2,600.0	0.0	0.0	0.0	0.00	0.00	0.00
2,700.0	0.00	0.00	2,700.0	0.0	0.0	0.0	0.00	0.00	0.00
2,800.0	0.00	0.00	2,800.0	0.0	0.0	0.0	0.00	0.00	0.00
2,900.0	0.00	0.00	2,900.0	0.0	0.0	0.0	0.00	0.00	0.00
3,000.0	0.00	0.00	3,000.0	0.0	0.0	0.0	0.00	0.00	0.00
3,100.0	0.00	0.00	3,100.0	0.0	0.0	0.0	0.00	0.00	0.00
3,200.0	0.00	0.00	3,200.0	0.0	0.0	0.0	0.00	0.00	0.00
3,300.0	0.00	0.00	3,300.0	0.0	0.0	0.0	0.00	0.00	0.00
3,400.0	0.00	0.00	3,400.0	0.0	0.0	0.0	0.00	0.00	0.00
3,500.0	0.00	0.00	3,500.0	0.0	0.0	0.0	0.00	0.00	0.00
3,600.0	0.00	0.00	3,600.0	0.0	0.0	0.0	0.00	0.00	0.00
3,700.0	0.00	0.00	3,700.0	0.0	0.0	0.0	0.00	0.00	0.00
3,800.0	0.00	0.00	3,800.0	0.0	0.0	0.0	0.00	0.00	0.00
3,900.0	0.00	0.00	3,900.0	0.0	0.0	0.0	0.00	0.00	0.00
4,000.0	0.00	0.00	4,000.0	0.0	0.0	0.0	0.00	0.00	0.00
4,100.0	0.00	0.00	4,100.0	0.0	0.0	0.0	0.00	0.00	0.00
4,200.0	0.00	0.00	4,200.0	0.0	0.0	0.0	0.00	0.00	0.00
4,300.0	0.00	0.00	4,300.0	0.0	0.0	0.0	0.00	0.00	0.00
4,400.0	0.00	0.00	4,400.0	0.0	0.0	0.0	0.00	0.00	0.00
4,500.0	0.00	0.00	4,500.0	0.0	0.0	0.0	0.00	0.00	0.00
4,600.0	0.00	0.00	4,600.0	0.0	0.0	0.0	0.00	0.00	0.00
4,700.0	0.00	0.00	4,700.0	0.0	0.0	0.0	0.00	0.00	0.00
4,800.0	0.00	0.00	4,800.0	0.0	0.0	0.0	0.00	0.00	0.00
4,900.0	0.00	0.00	4,900.0	0.0	0.0	0.0	0.00	0.00	0.00
5,000.0	0.00	0.00	5,000.0	0.0	0.0	0.0	0.00	0.00	0.00
5,100.0	0.00	0.00	5,100.0	0.0	0.0	0.0	0.00	0.00	0.00
5,200.0	0.00	0.00	5,200.0	0.0	0.0	0.0	0.00	0.00	0.00
5,300.0	0.00	0.00	5,300.0	0.0	0.0	0.0	0.00	0.00	0.00
5,400.0	0.00	0.00	5,400.0	0.0	0.0	0.0	0.00	0.00	0.00
5,500.0	0.00	0.00	5,500.0	0.0	0.0	0.0	0.00	0.00	0.00
Start Build 2.00									
5,600.0	2.00	59.71	5,600.0	0.9	1.5	-0.8	2.00	2.00	0.00

Concho Resources LLC

Survey Report

Company:	DELAWARE BASIN WEST	**Local Co-ordinate Reference:**	Well COLUMBUS FEDERAL COM #701H
Project:	LEA COUNTY, NM (NM - E)	**TVD Reference:**	KB=26' @ 3349.6usft (MCVAY 8)
Site:	COLUMBUS FEDERAL COM PROJECT	**MD Reference:**	KB=26' @ 3349.6usft (MCVAY 8)
Well:	COLUMBUS FEDERAL COM #701H	**North Reference:**	Grid
Wellbore:	OWB	**Survey Calculation Method:**	Minimum Curvature
Design:	PWP1	**Database:**	edm

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)
5,652.2	3.04	59.71	5,652.1	2.0	3.5	-1.9	2.00	2.00	0.00
Start 6272.2 hold at 5652.2 MD									
5,700.0	3.04	59.71	5,699.9	3.3	5.7	-3.0	0.00	0.00	0.00
5,800.0	3.04	59.71	5,799.7	6.0	10.3	-5.5	0.00	0.00	0.00
5,900.0	3.04	59.71	5,899.6	8.7	14.8	-7.9	0.00	0.00	0.00
6,000.0	3.04	59.71	5,999.4	11.4	19.4	-10.4	0.00	0.00	0.00
6,100.0	3.04	59.71	6,099.3	14.0	24.0	-12.8	0.00	0.00	0.00
6,200.0	3.04	59.71	6,199.2	16.7	28.6	-15.3	0.00	0.00	0.00
6,300.0	3.04	59.71	6,299.0	19.4	33.2	-17.7	0.00	0.00	0.00
6,400.0	3.04	59.71	6,398.9	22.1	37.8	-20.1	0.00	0.00	0.00
6,500.0	3.04	59.71	6,498.7	24.7	42.4	-22.6	0.00	0.00	0.00
6,600.0	3.04	59.71	6,598.6	27.4	46.9	-25.0	0.00	0.00	0.00
6,700.0	3.04	59.71	6,698.5	30.1	51.5	-27.5	0.00	0.00	0.00
6,800.0	3.04	59.71	6,798.3	32.8	56.1	-29.9	0.00	0.00	0.00
6,900.0	3.04	59.71	6,898.2	35.5	60.7	-32.4	0.00	0.00	0.00
7,000.0	3.04	59.71	6,998.0	38.1	65.3	-34.8	0.00	0.00	0.00
7,100.0	3.04	59.71	7,097.9	40.8	69.9	-37.3	0.00	0.00	0.00
7,200.0	3.04	59.71	7,197.7	43.5	74.4	-39.7	0.00	0.00	0.00
7,300.0	3.04	59.71	7,297.6	46.2	79.0	-42.2	0.00	0.00	0.00
7,400.0	3.04	59.71	7,397.5	48.8	83.6	-44.6	0.00	0.00	0.00
7,500.0	3.04	59.71	7,497.3	51.5	88.2	-47.0	0.00	0.00	0.00
7,600.0	3.04	59.71	7,597.2	54.2	92.8	-49.5	0.00	0.00	0.00
7,700.0	3.04	59.71	7,697.0	56.9	97.4	-51.9	0.00	0.00	0.00
7,800.0	3.04	59.71	7,796.9	59.6	101.9	-54.4	0.00	0.00	0.00
7,900.0	3.04	59.71	7,896.8	62.2	106.5	-56.8	0.00	0.00	0.00
8,000.0	3.04	59.71	7,996.6	64.9	111.1	-59.3	0.00	0.00	0.00
8,100.0	3.04	59.71	8,096.5	67.6	115.7	-61.7	0.00	0.00	0.00
8,200.0	3.04	59.71	8,196.3	70.3	120.3	-64.2	0.00	0.00	0.00
8,300.0	3.04	59.71	8,296.2	72.9	124.9	-66.6	0.00	0.00	0.00
8,400.0	3.04	59.71	8,396.1	75.6	129.4	-69.0	0.00	0.00	0.00
8,500.0	3.04	59.71	8,495.9	78.3	134.0	-71.5	0.00	0.00	0.00
8,600.0	3.04	59.71	8,595.8	81.0	138.6	-73.9	0.00	0.00	0.00
8,700.0	3.04	59.71	8,695.6	83.7	143.2	-76.4	0.00	0.00	0.00
8,800.0	3.04	59.71	8,795.5	86.3	147.8	-78.8	0.00	0.00	0.00
8,900.0	3.04	59.71	8,895.3	89.0	152.4	-81.3	0.00	0.00	0.00
9,000.0	3.04	59.71	8,995.2	91.7	157.0	-83.7	0.00	0.00	0.00
9,100.0	3.04	59.71	9,095.1	94.4	161.5	-86.2	0.00	0.00	0.00
9,200.0	3.04	59.71	9,194.9	97.0	166.1	-88.6	0.00	0.00	0.00
9,300.0	3.04	59.71	9,294.8	99.7	170.7	-91.1	0.00	0.00	0.00
9,400.0	3.04	59.71	9,394.6	102.4	175.3	-93.5	0.00	0.00	0.00
9,500.0	3.04	59.71	9,494.5	105.1	179.9	-95.9	0.00	0.00	0.00
9,600.0	3.04	59.71	9,594.4	107.8	184.5	-98.4	0.00	0.00	0.00
9,700.0	3.04	59.71	9,694.2	110.4	189.0	-100.8	0.00	0.00	0.00
9,800.0	3.04	59.71	9,794.1	113.1	193.6	-103.3	0.00	0.00	0.00

Concho Resources LLC

Survey Report

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Project:	LEA COUNTY, NM (NM - E)	**TVD Reference:**	KB=26' @ 3349.6usft (MCVAY 8)
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Well:	COLUMBUS FEDERAL COM #701H	**North Reference:**	Grid
Wellbore:	OWB	**Survey Calculation Method:**	Minimum Curvature
Design:	PWP1	**Database:**	edm

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)
9,900.0	3.04	59.71	9,893.9	115.8	198.2	-105.7	0.00	0.00	0.00
10,000.0	3.04	59.71	9,993.8	118.5	202.8	-108.2	0.00	0.00	0.00
10,100.0	3.04	59.71	10,093.7	121.1	207.4	-110.6	0.00	0.00	0.00
10,200.0	3.04	59.71	10,193.5	123.8	212.0	-113.1	0.00	0.00	0.00
10,300.0	3.04	59.71	10,293.4	126.5	216.5	-115.5	0.00	0.00	0.00
10,400.0	3.04	59.71	10,393.2	129.2	221.1	-118.0	0.00	0.00	0.00
10,500.0	3.04	59.71	10,493.1	131.9	225.7	-120.4	0.00	0.00	0.00
10,600.0	3.04	59.71	10,593.0	134.5	230.3	-122.8	0.00	0.00	0.00
10,700.0	3.04	59.71	10,692.8	137.2	234.9	-125.3	0.00	0.00	0.00
10,800.0	3.04	59.71	10,792.7	139.9	239.5	-127.7	0.00	0.00	0.00
10,900.0	3.04	59.71	10,892.5	142.6	244.0	-130.2	0.00	0.00	0.00
11,000.0	3.04	59.71	10,992.4	145.2	248.6	-132.6	0.00	0.00	0.00
11,100.0	3.04	59.71	11,092.2	147.9	253.2	-135.1	0.00	0.00	0.00
11,200.0	3.04	59.71	11,192.1	150.6	257.8	-137.5	0.00	0.00	0.00
11,300.0	3.04	59.71	11,292.0	153.3	262.4	-140.0	0.00	0.00	0.00
11,400.0	3.04	59.71	11,391.8	156.0	267.0	-142.4	0.00	0.00	0.00
11,500.0	3.04	59.71	11,491.7	158.6	271.5	-144.8	0.00	0.00	0.00
11,600.0	3.04	59.71	11,591.5	161.3	276.1	-147.3	0.00	0.00	0.00
11,700.0	3.04	59.71	11,691.4	164.0	280.7	-149.7	0.00	0.00	0.00
11,800.0	3.04	59.71	11,791.3	166.7	285.3	-152.2	0.00	0.00	0.00
11,900.0	3.04	59.71	11,891.1	169.3	289.9	-154.6	0.00	0.00	0.00
11,924.3	3.04	59.71	11,915.4	170.0	291.0	-155.2	0.00	0.00	0.00
Start DLS 12.00 TFO 119.80									
12,000.0	8.01	160.42	11,990.8	166.0	294.5	-151.1	12.00	6.57	133.07
12,100.0	19.74	172.16	12,087.7	142.7	299.2	-127.5	12.00	11.73	11.74
12,200.0	31.67	175.25	12,177.7	99.6	303.7	-84.3	12.00	11.93	3.10
12,300.0	43.63	176.77	12,256.7	38.8	307.8	-23.3	12.00	11.97	1.52
12,400.0	55.61	177.73	12,321.4	-37.2	311.4	52.7	12.00	11.98	0.96
12,500.0	67.59	178.45	12,368.9	-124.9	314.3	140.5	12.00	11.98	0.72
12,600.0	79.58	179.06	12,397.1	-220.7	316.3	236.2	12.00	11.99	0.60
12,688.6	90.20	179.55	12,405.0	-308.8	317.4	324.3	12.00	11.99	0.56
Start 7142.8 hold at 12688.6 MD									
12,700.0	90.20	179.55	12,404.9	-320.2	317.5	335.7	0.00	0.00	0.00
12,800.0	90.20	179.55	12,404.6	-420.2	318.3	435.6	0.00	0.00	0.00
12,900.0	90.20	179.55	12,404.2	-520.2	319.1	535.5	0.00	0.00	0.00
13,000.0	90.20	179.55	12,403.9	-620.2	319.8	635.4	0.00	0.00	0.00
13,100.0	90.20	179.55	12,403.5	-720.2	320.6	735.3	0.00	0.00	0.00
13,200.0	90.20	179.55	12,403.2	-820.2	321.4	835.2	0.00	0.00	0.00
13,300.0	90.20	179.55	12,402.8	-920.2	322.2	935.1	0.00	0.00	0.00
13,400.0	90.20	179.55	12,402.5	-1,020.1	323.0	1,035.0	0.00	0.00	0.00
13,500.0	90.20	179.55	12,402.1	-1,120.1	323.8	1,134.9	0.00	0.00	0.00
13,600.0	90.20	179.55	12,401.8	-1,220.1	324.6	1,234.9	0.00	0.00	0.00
13,700.0	90.20	179.55	12,401.4	-1,320.1	325.3	1,334.8	0.00	0.00	0.00

Concho Resources LLC

Survey Report

Company:	DELAWARE BASIN WEST	**Local Co-ordinate Reference:**	Well COLUMBUS FEDERAL COM #701H
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Well:	COLUMBUS FEDERAL COM #701H	**North Reference:**	Grid
Wellbore:	OWB	**Survey Calculation Method:**	Minimum Curvature
Design:	PWP1	**Database:**	edm

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)
13,800.0	90.20	179.55	12,401.1	-1,420.1	326.1	1,434.7	0.00	0.00	0.00
13,900.0	90.20	179.55	12,400.7	-1,520.1	326.9	1,534.6	0.00	0.00	0.00
14,000.0	90.20	179.55	12,400.4	-1,620.1	327.7	1,634.5	0.00	0.00	0.00
14,100.0	90.20	179.55	12,400.0	-1,720.1	328.5	1,734.4	0.00	0.00	0.00
14,200.0	90.20	179.55	12,399.7	-1,820.1	329.3	1,834.3	0.00	0.00	0.00
14,300.0	90.20	179.55	12,399.3	-1,920.1	330.0	1,934.2	0.00	0.00	0.00
14,400.0	90.20	179.55	12,399.0	-2,020.1	330.8	2,034.1	0.00	0.00	0.00
14,500.0	90.20	179.55	12,398.6	-2,120.1	331.6	2,134.0	0.00	0.00	0.00
14,600.0	90.20	179.55	12,398.3	-2,220.1	332.4	2,234.0	0.00	0.00	0.00
14,700.0	90.20	179.55	12,397.9	-2,320.1	333.2	2,333.9	0.00	0.00	0.00
14,800.0	90.20	179.55	12,397.6	-2,420.1	334.0	2,433.8	0.00	0.00	0.00
14,900.0	90.20	179.55	12,397.2	-2,520.1	334.7	2,533.7	0.00	0.00	0.00
15,000.0	90.20	179.55	12,396.9	-2,620.1	335.5	2,633.6	0.00	0.00	0.00
15,100.0	90.20	179.55	12,396.5	-2,720.1	336.3	2,733.5	0.00	0.00	0.00
15,200.0	90.20	179.55	12,396.2	-2,820.1	337.1	2,833.4	0.00	0.00	0.00
15,300.0	90.20	179.55	12,395.8	-2,920.1	337.9	2,933.3	0.00	0.00	0.00
15,400.0	90.20	179.55	12,395.5	-3,020.1	338.7	3,033.2	0.00	0.00	0.00
15,500.0	90.20	179.55	12,395.1	-3,120.1	339.4	3,133.1	0.00	0.00	0.00
15,600.0	90.20	179.55	12,394.8	-3,220.1	340.2	3,233.1	0.00	0.00	0.00
15,700.0	90.20	179.55	12,394.4	-3,320.1	341.0	3,333.0	0.00	0.00	0.00
15,800.0	90.20	179.55	12,394.1	-3,420.1	341.8	3,432.9	0.00	0.00	0.00
15,900.0	90.20	179.55	12,393.7	-3,520.1	342.6	3,532.8	0.00	0.00	0.00
16,000.0	90.20	179.55	12,393.4	-3,620.1	343.4	3,632.7	0.00	0.00	0.00
16,100.0	90.20	179.55	12,393.0	-3,720.0	344.1	3,732.6	0.00	0.00	0.00
16,200.0	90.20	179.55	12,392.7	-3,820.0	344.9	3,832.5	0.00	0.00	0.00
16,300.0	90.20	179.55	12,392.3	-3,920.0	345.7	3,932.4	0.00	0.00	0.00
16,400.0	90.20	179.55	12,392.0	-4,020.0	346.5	4,032.3	0.00	0.00	0.00
16,500.0	90.20	179.55	12,391.6	-4,120.0	347.3	4,132.3	0.00	0.00	0.00
16,600.0	90.20	179.55	12,391.3	-4,220.0	348.1	4,232.2	0.00	0.00	0.00
16,700.0	90.20	179.55	12,390.9	-4,320.0	348.9	4,332.1	0.00	0.00	0.00
16,800.0	90.20	179.55	12,390.6	-4,420.0	349.6	4,432.0	0.00	0.00	0.00
16,900.0	90.20	179.55	12,390.2	-4,520.0	350.4	4,531.9	0.00	0.00	0.00
17,000.0	90.20	179.55	12,389.9	-4,620.0	351.2	4,631.8	0.00	0.00	0.00
17,100.0	90.20	179.55	12,389.5	-4,720.0	352.0	4,731.7	0.00	0.00	0.00
17,200.0	90.20	179.55	12,389.2	-4,820.0	352.8	4,831.6	0.00	0.00	0.00
17,300.0	90.20	179.55	12,388.8	-4,920.0	353.6	4,931.5	0.00	0.00	0.00
17,400.0	90.20	179.55	12,388.5	-5,020.0	354.3	5,031.4	0.00	0.00	0.00
17,500.0	90.20	179.55	12,388.1	-5,120.0	355.1	5,131.4	0.00	0.00	0.00
17,600.0	90.20	179.55	12,387.8	-5,220.0	355.9	5,231.3	0.00	0.00	0.00
17,700.0	90.20	179.55	12,387.4	-5,320.0	356.7	5,331.2	0.00	0.00	0.00
17,800.0	90.20	179.55	12,387.1	-5,420.0	357.5	5,431.1	0.00	0.00	0.00
17,900.0	90.20	179.55	12,386.7	-5,520.0	358.3	5,531.0	0.00	0.00	0.00
18,000.0	90.20	179.55	12,386.4	-5,620.0	359.0	5,630.9	0.00	0.00	0.00
18,100.0	90.20	179.55	12,386.0	-5,720.0	359.8	5,730.8	0.00	0.00	0.00

Concho Resources LLC

Survey Report

Company:	DELAWARE BASIN WEST	**Local Co-ordinate Reference:**	Well COLUMBUS FEDERAL COM #701H
Project:	LEA COUNTY, NM (NM - E)	**TVD Reference:**	KB=26' @ 3349.6usft (MCVAY 8)
Site:	COLUMBUS FEDERAL COM PROJECT	**MD Reference:**	KB=26' @ 3349.6usft (MCVAY 8)
Well:	COLUMBUS FEDERAL COM #701H	**North Reference:**	Grid
Wellbore:	OWB	**Survey Calculation Method:**	Minimum Curvature
Design:	PWP1	**Database:**	edm

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)
18,200.0	90.20	179.55	12,385.7	-5,820.0	360.6	5,830.7	0.00	0.00	0.00
18,300.0	90.20	179.55	12,385.3	-5,920.0	361.4	5,930.6	0.00	0.00	0.00
18,400.0	90.20	179.55	12,385.0	-6,020.0	362.2	6,030.5	0.00	0.00	0.00
18,500.0	90.20	179.55	12,384.7	-6,120.0	363.0	6,130.5	0.00	0.00	0.00
18,600.0	90.20	179.55	12,384.3	-6,220.0	363.7	6,230.4	0.00	0.00	0.00
18,700.0	90.20	179.55	12,384.0	-6,320.0	364.5	6,330.3	0.00	0.00	0.00
18,800.0	90.20	179.55	12,383.6	-6,419.9	365.3	6,430.2	0.00	0.00	0.00
18,900.0	90.20	179.55	12,383.3	-6,519.9	366.1	6,530.1	0.00	0.00	0.00
19,000.0	90.20	179.55	12,382.9	-6,619.9	366.9	6,630.0	0.00	0.00	0.00
19,100.0	90.20	179.55	12,382.6	-6,719.9	367.7	6,729.9	0.00	0.00	0.00
19,200.0	90.20	179.55	12,382.2	-6,819.9	368.5	6,829.8	0.00	0.00	0.00
19,300.0	90.20	179.55	12,381.9	-6,919.9	369.2	6,929.7	0.00	0.00	0.00
19,400.0	90.20	179.55	12,381.5	-7,019.9	370.0	7,029.6	0.00	0.00	0.00
19,500.0	90.20	179.55	12,381.2	-7,119.9	370.8	7,129.6	0.00	0.00	0.00
19,600.0	90.20	179.55	12,380.8	-7,219.9	371.6	7,229.5	0.00	0.00	0.00
19,700.0	90.20	179.55	12,380.5	-7,319.9	372.4	7,329.4	0.00	0.00	0.00
19,800.0	90.20	179.55	12,380.1	-7,419.9	373.2	7,429.3	0.00	0.00	0.00
19,831.4	90.20	179.55	12,380.0	-7,451.3	373.4	7,460.6	0.00	0.00	0.00
TD at 19831.4									

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
LTP (COLUMBUS FE	0.00	0.00	12,380.0	-7,401.3	373.0	388,373.20	739,316.60	32° 3' 55.885 N	103° 33' 40.538 W
- plan misses target center by 0.2usft at 19781.4usft MD (12380.2 TVD, -7401.3 N, 373.0 E)									
- Point									
PBHL (COLUMBUS F	0.20	359.55	12,380.0	-7,451.3	373.4	388,323.20	739,317.00	32° 3' 55.390 N	103° 33' 40.538 W
- plan hits target center									
- Rectangle (sides W100.0 H7,768.1 D20.0)									
FTP (COLUMBUS FE	0.00	0.00	12,405.0	316.5	312.2	396,091.00	739,255.80	32° 5' 12.262 N	103° 33' 40.607 W
- plan misses target center by 308.0usft at 12248.2usft MD (12217.4 TVD, 72.3 N, 305.7 E)									
- Circle (radius 50.0)									

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
5500	5500	0	0	Start Build 2.00
5652	5652	2	3	Start 6272.2 hold at 5652.2 MD
11,924	11,915	170	291	Start DLS 12.00 TFO 119.80
12,689	12,405	-309	317	Start 7142.8 hold at 12688.6 MD
19,831	12,380	-7451	373	TD at 19831.4

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Well:	COLUMBUS FEDERAL COM #701H	**North Reference:**	Grid
Wellbore:	OWB	**Survey Calculation Method:**	Minimum Curvature
Design:	PWP1	**Database:**	edm

Checked By: _____ Approved By: _____ Date: _____

District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals and Natural Resources Department

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Submit Original
to Appropriate
District Office

GAS CAPTURE PLAN

Date: **5/13/2020**

☒ Original
☐ Amended - Reason for Amendment:

Operator & OGRID No.: **COG Operating LLC, OGRID 229137**

This Gas Capture Plan outlines actions to be taken by the Operator to reduce well/production facility flaring/venting for new completion (new drill, recomplete to new zone, re-frac) activity.

Note: Form C-129 must be submitted and approved prior to exceeding 60 days allowed by Rule (Subsection A of 19.15.18.12 NMAC).

Well(s)/Production Facility – Name of facility

The well(s) that will be located at the production facility are shown in the table below.

Well Name	API	Well Location (ULSTR)	Footages	Expected MCF/D	Flared or Vented	Comments
Columbus Federal Com 701H	**30-025-**	**K-34-25S-33E**	**2225' FSL & 1995' FWL**	**3,797 MCFD**		**Gas will connect on well pad.**

Gathering System and Pipeline Notification

Well(s) will be connected to a production facility after flowback operations are complete, if gas transporter system is in place. The gas produced from production facility is dedicated to **ETC** and will be connected to **Red Bluff** **low**/high pressure gathering system located in **Culberson County, Texas**. It will require approximately **0'** of pipeline on lease to connect the facility to **low**/high pressure gathering system. **COG Operating LLC** provides (periodically) to **ETC** a drilling, completion and estimated first production date for wells that are scheduled to be drilled in the foreseeable future. In addition, **COG Operating LLC** and **ETC** have periodic conference calls to discuss changes to drilling and completion schedules. Gas from these wells will be processed at **Red Bluff** Processing Plant located in **Sec 35-Blk 57-T2 Culberson, Texas**. The actual flow of the gas will be based on compression operating parameters and gathering system pressures.

Flowback Strategy

After the fracture treatment/completion operations, well(s) will be produced to temporary production tanks and gas will be flared or vented. During flowback, the fluids and sand content will be monitored. When the produced fluids contain minimal sand, the wells will be turned to production facilities. Gas sales should start as soon as the wells start flowing through the production facilities, unless there are operational issues on Gas Transporter system at that time. Based on current information, it is Operator's belief the system can take this gas upon completion of the well(s).

Safety requirements during cleanout operations from the use of underbalanced air cleanout systems may necessitate that sand and non-pipeline quality gas be vented and/or flared rather than sold on a temporary basis.

Alternatives to Reduce Flaring

Below are alternatives considered from a conceptual standpoint to reduce the amount of gas flared.

- Power Generation – On lease
  - Only a portion of gas is consumed operating the generator, remainder of gas will be flared
- Compressed Natural Gas – On lease
  - Gas flared would be minimal, but might be uneconomical to operate when gas volume declines
- NGL Removal – On lease
  - Plants are expensive, residue gas is still flared, and uneconomical to operate when gas volume declines

COG Operating, LLC - Columbus Federal Com 701H

1. Geologic Formations

TVD of target	12,405' EOL	Pilot hole depth	NA
MD at TD:	19,832'	Deepest expected fresh water:	185'

Formation	Depth (TVD) from KB	Water/Mineral Bearing/ Target Zone?	Hazards*
Quaternary Fill	Surface	Water	
Rustler	977	Water	
Top of Salt	1349	Salt	
Base of Salt	4766	Salt	
Lamar	4956	Salt Water	
Bell Canyon	5007	Salt Water	
Cherry Canyon	6026	Oil/Gas	
Brushy Canyon	7602	Oil/Gas	
Bone Spring Lime	9063	Oil/Gas	
1st Bone Spring Sand	10073	Oil/Gas	
2nd Bone Spring Sand	10639	Oil/Gas	
3rd Bone Spring Sand	11713	Oil/Gas	
Wolfcamp	12180	Target Oil/Gas	

2. Casing Program

Hole Size	Casing Interval		Csg. Size	Weight	Grade	Conn.	SF	SF Burst	SF	SF
	From	To		(lbs)			Collapse		Body	Joint
14.75"	0	1170	10.75"	45.5	N80	BTC	4.61	1.67	19.54	20.61
9.875"	0	8500	7.625"	29.7	HCL80	BTC	1.56	1.07	2.88	2.90
8.750"	8500	11800	7.625"	29.7	HCP110	TL-FJ	1.28	1.11	2.68	1.88
6.75"	0	11600	5.5"	23	P110	BTC	1.80	1.85	3.26	3.24
6.75"	11600	19,832	5"	18	P110	BTC	1.80	1.85	3.26	3.24
				BLM Minimum Safety Factor			1.125	1	1.6 Dry 1.8 Wet	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 200' into the intermediate casing to ensure the coupling OD clearance is greater than .422" for the cement bond tie in.

COG Operating, LLC - Columbus 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.	Y
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.	558	13.5	1.75	9	12	Lead: Class C + 4% Gel + 1% CaCl2
	250	14.8	1.34	6.34	8	Tail: Class C + 2% CaCl2
Inter. Stage 1	840	10.3	3.3	22	24	Halliburton tunded light
	250	14.8	1.35	6.6	8	Tail: Class H
Prod	538	12.7	2	10.7	72	Lead: 50:50:10 H Blend
	1042	14.4	1.24	5.7	19	Tail: 50:50:2 Class H Blend

If losses are encountered in the intermediate section a DV/ECP tool will be run ~50' above the Lamar Lime top, cement will be adjusted accordingly if this contingency is necessary.

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’	50%
1st Intermediate	0’	50%
Production	8,000'	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"	5M	Annular	x	2500psi
			Blind Ram	x	5000psi
			Pipe Ram	x	
			Double Ram	x	
			Other*		
6-3/4"	13-5/8"	10M	5M Annular	x	5000psi
			Blind Ram	x	10000psi
			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.

Y	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	9-5/8" Int shoe	Brine Diesel Emulsion	8.4 - 9	28-34	N/C
7-5/8" Int shoe	Lateral TD	OBM	9.6 - 12.5	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	8065 psi at 12405' TVD
Abnormal Temperature	NO 180 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

Cementing Program

Casing	# Sks	Wt. lb/ gal	Yld ft3/ sack	H_20 gal/sk	500# Comp. Strength (hours)	Slurry Description
Surf.	558	13.5	1.75	9	12	Lead: Class C + 4% Gel + 1% CaCl2
	250	14.8	1.34	6.34	8	Tail: Class C + 2% CaCl2
Inter.	840	10.3	3.3	22	24	Halliburton tunded light
Stage 1	250	14.8	1.35	6.6	8	Tail: Class H
Prod	538	12.7	2	10.7	72	Lead: 50:50:10 H Blend
	1042	14.4	1.24	5.7	19	Tail: 50:50:2 Class H Blend

If losses are encountered in the intermediate section a DV/ECP tool will be run ~50' above the Lamar Lime top, cement will be adjusted accordingly if this contingency is necessary.

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’	50%
1st Intermediate	0’	50%
Production	8,000'	35% OH in Lateral (KOP to EOL)

1. Component and Preventer Compatibility Table

The table below covers drilling and casing of the 10M MASP portion of the well and outlines the tubular and the compatible preventers in use. Combined with the mud program, the below documents that two barriers to flow can be maintained at all times, independent of the rating of the annular preventer.

Component	OD	Preventer	RWP
Drill pipe	5”	Upper 4.5-7” VBR Lower 4.5-7” VBR	10M
HWDP	5”		
Jars	5”		
Drill collars and MWD tools	6.25-6.75”		
Mud Motor	6.75”		
Production casing	5.5”		
ALL	0-13-5/8”	Annular	5M
Open-hole	-	Blind Rams	10M

VBR = Variable Bore Ram with compatible range listed in chart.

2. Well Control and Shut-In Procedures

Well control procedures are specific to the rig equipment and the operation at the time the kick occurs. Below are minimum tasks prescribed to assure a proper shut-in while drilling, tripping, running casing, pipe out of the hole (open hole), and moving the BHA through the BOPs. The maximum pressure at which well control is transferred from the annular to another compatible ram is 2500 psi.

Drilling:

1. Sound the alarm (alert rig crew)
2. Space out the drill string
3. Shut down pumps and stop the rotary
4. Shut-in the well with the annular with HCR and choke in closed position
5. Confirm the well is shut-in
6. Notify contractor and company representatives
7. Read and record the following data
    - Time of shut-in
    - SIDPP and SICP
    - Pit gain
8. If pressure has increased to or is anticipated to increase to 2500 psi, confirm spacing and close the upper pipe rams.
9. Prepare for well kill operation.

Tripping:

1. Sound alarm (alert rig crew)
2. Stab full opening safety valve and close the valve
3. Space out the drill string
4. Shut-in the well with the annular with HCR and choke in closed position
5. Confirm shut-in
6. Notify contractor and company representatives
7. Read and record the following data:

- Time of shut-in
- SIDPP and SICP
- Pit gain

8. If pressure has increased to or is anticipated to increase to 2500 psi, confirm spacing and close the upper pipe rams.
9. Prepare for well kill operation.

Running Casing

1. Sound alarm (alert rig crew)
2. Stab crossover and valve and close the valve
3. Shut-in the well with annular with HCR and choke in closed position
4. Confirm shut-in
5. Notify contractor and company representatives
6. Read and record the following data
    - Time of shut-in
    - SIDPP and SICP
    - Pit gain
7. If pressure has increased to or is anticipated to increase to 2500 psi, confirm spacing and close the upper pipe rams.
8. Prepare for well kill operation

No Pipe in Hole (Open Hole)

1. At any point when pipe or BHA are not in BOP stack, well will be shut in with blind rams, HCR will be open and choke will be closed. If pressure increase is observed:
2. Sound alarm (alert crew)
3. Confirm shut-in
4. Notify contractor and company representatives
5. Read and record the following data
    - Time of shut-in
    - Time of pressure increase
    - SICP
6. Prepare for well kill operation

Pulling BHA through BOP Stack

1. Prior to pulling last joint/stand of drillpipe through the stack, perform a flow check. If well is flowing:
    a. Sound alarm (alert crew)
    b. Stab full opening safety valve and close the valve
    c. Space out drill string with tool joint just beneath the upper pipe ram.
    d. Shut-in the well with upper pipe ram with HCR and choke in closed position
    e. Confirm shut-in
    f. Notify contractor and company representatives
    g. Read and record the following data
        - Time of shut-in
        - SIDPP and SICP
        - Pit gain
    h. Prepare for well kill operation.

2. With BHA in the stack:
    a. If possible to pick up high enough, pull BHA clear of the stack
        i. Follow "Open Hole" procedure above
    b. If impossible to pick up high enough to pull BHA clear of the stack:
        i. Stab crossover, make up one joint/stand of drill pipe, and full opening safety valve and close
        ii. Space out drill string with tool joint just beneath the upper pipe ram.
        iii. Shut-in the well with upper pipe ram with HCR and choke in closed position
        iv. Confirm shut-in
        v. Notify contractor and company representatives
        vi. Read and record the following:
            - Time of shut-in
            - SIDPP and SICP
            - Pit gain
        vii. Prepare for well kill operation.

3. Well Control Drills

Well control drills are specific to the rig equipment, personnel and operation at the time a kick occurs. Each crew will execute one drill weekly relevant to ongoing operations, but will make a reasonable attempt to vary the type of drills. The drills will be recorded in the daily drilling log. Below are minimum tasks for respective well control drills.

Drilling/Pit:

Action	Responsible Party
Initiate Drill • Lift Flow Sensor or Pit Float to indicate a kick • Immediately record start time	Company Representative / Rig Manager
Recognition • Driller and/or Crew recognizes indicator • Driller stop drilling, pick up off bottom and spaces out drill string, stop pumps and rotary • Conduct flow check	Driller
Initiate Action • Sound alarm, notify rig crew that the well is flowing	Company Representative / Rig Manager
Reaction • Driller moves BOP remote and stands by • Crew is at their assigned stations • Time is stopped • Record time and drill type in the Drilling Report	Driller / Crew

Tripping Pit Drills (either in the hole or out of the hole)

Action	Responsible Party
Initiate Drill • Lift Flow Sensor or Pit Float to indicate a kick • Immediately record start time	Company Representative / Rig Manager
Recognition • Driller recognizes indicator • Suspends tripping operations • Conduct Flow Check	Driller
Initiate Action • Sound alarm, notify rig crew that the well is flowing	Company Representative / Rig Manager
Reaction • Position tool joint above rotary and set slips • Stab FOSV and close valve • Driller moves to BOP remote and stands by • Crew is at their assigned stations • Time is stopped • Record time and drill type in the Drilling Report	Driller / Crew

Choke

Action	Responsible Party
• Have designated choke operator on station at the choke panel • Close annular preventer • Pressure annulus up 200-300 psi • Pump slowly to bump the float and obtain SIDPP • At choke operator instruction, slowly bring pumps online to slow pump rate while holding casing pressure constant at the SICP. • Allow time for the well to stabilize. Mark and record circulating drillpipe pressure. • Measure time lag on drillpipe gauge after choke adjustments. • Hold casing pressure constant as pumps are slowed down while choke is closed. • Record time and drill type in the Drilling Report	Company Man / Rig Manager & Rig Crew

APD ID: 10400057099 **Submission Date:** 05/20/2020

Operator Name: COG OPERATING LLC

Well Name: COLUMBUS FEDERAL COM **Well Number:** 701H

Well Type: OIL WELL **Well Work Type:** Drill

Highlighted data reflects the most recent changes

Show Final Text

Section 1 - Existing Roads

Will existing roads be used? YES

Existing Road Map:

COG_Columbus_701H_Existing_Road_20200513161434.pdf

Existing Road Purpose: ACCESS **Row(s) Exist?** YES

ROW ID(s)

ID:

Do the existing roads need to be improved? NO

Existing Road Improvement Description:

Existing Road Improvement Attachment:

Section 2 - New or Reconstructed Access Roads

Will new roads be needed? NO

Section 3 - Location of Existing Wells

Existing Wells Map? YES

Attach Well map:

COG_Columbus_701H_1_Mile_Data_20200513161519.pdf
COG_Columbus_701H_1_Mile_Map_20200513161530.pdf

Operator Name: COG OPERATING LLC

Well Name: COLUMBUS FEDERAL COM **Well Number:** 701H

Section 4 - Location of Existing and/or Proposed Production Facilities

Submit or defer a Proposed Production Facilities plan? SUBMIT

Production Facilities description: The Columbus Fed 34L CTB. This CTB will be built to accommodate the Columbus Fed Com #701H, #702, #703H, #704. We plan to install (1) buried 4 FP 601HT production flowline from each wellhead to the inlet manifold of the proposed CTB (4 lines total); the route for these flowlines will follow the flowlines route as shown in the diagram below. We will install (2) buried 4 gas lines for gas lift supply from the CTB to each well pad (2 lines total); the route for the gas lift lines will follow the gas lift route as shown in the attached layout.

Production Facilities map:

COG_Columbus_701H_Flowline_Gasline_20200513161621.pdf

COG_Columbus_701H_Powerline_20200513161632.pdf

COG_Columbus_701H_CTB_20200520134139.pdf

Section 5 - Location and Types of Water Supply

Water Source Table

Water source type: OTHER

Describe type: Fresh water. See below.

Water source use type: ICE PAD CONSTRUCTION & MAINTENANCE
SURFACE CASING
STIMULATION

Source latitude:

Source longitude:

Source datum:

Water source permit type: PRIVATE CONTRACT

Water source transport method: PIPELINE

Source land ownership: PRIVATE

Source transportation land ownership: PRIVATE

Water source volume (barrels): 450000

Source volume (acre-feet): 58.001892

Source volume (gal): 18900000

Operator Name: COG OPERATING LLC

Well Name: COLUMBUS FEDERAL COM **Well Number:** 701H

Water source type: OTHER

Describe type: Brine water. See below.

Water source use type: INTERMEDIATE/PRODUCTION CASING

Source latitude: **Source longitude:**

Source datum:

Water source permit type: PRIVATE CONTRACT

Water source transport method: TRUCKING

Source land ownership: COMMERCIAL

Source transportation land ownership: COMMERCIAL

Water source volume (barrels): 30000 **Source volume (acre-feet):** 3.866793

Source volume (gal): 1260000

Water source and transportation map:

COG_Columbus_701H_Fresh_H2O_20200514093604.pdf
COG_Columbus_701H_Brine_H2O_20200514093613.pdf

Water source comments: Fresh water will be obtained from the Battle Axe Frac Pond located in Section 3. T26S. R33E. Brine water will be obtained from the Malaga II Brine station in Section 12. T23S. R28E.
New water well? N

New Water Well Info

Well latitude: **Well Longitude:** **Well datum:**

Well target aquifer:

Est. depth to top of aquifer(ft): **Est thickness of aquifer:**

Aquifer comments:

Aquifer documentation:

Well depth (ft): **Well casing type:**

Well casing outside diameter (in.): **Well casing inside diameter (in.):**

New water well casing? **Used casing source:**

Drilling method: **Drill material:**

Grout material: **Grout depth:**

Casing length (ft.): **Casing top depth (ft.):**

Well Production type: **Completion Method:**

Water well additional information:

State appropriation permit:

Additional information attachment:

Section 6 - Construction Materials

Using any construction materials: YES

Construction Materials description: Caliche will be obtained from the actual well site if available. If not available onsite, caliche will be obtained from Intrepid's Cottonwood caliche pit located in Section 3, T26S, R33E.
Construction Materials source location attachment:

Section 7 - Methods for Handling Waste

Waste type: GARBAGE

Waste content description: Garbage and trash produced during drilling and completion operations.

Amount of waste: 500 pounds

Waste disposal frequency : One Time Only

Safe containment description: Garbage and trash produced during drilling and completion operations will be collected in a trash container and disposed of properly at a state approved disposal facility
Safe containmant attachment:

Waste disposal type: HAUL TO COMMERCIAL FACILITY **Disposal location ownership:** COMMERCIAL
Disposal type description:

Disposal location description: Trucked to an approved disposal facility.

Waste type: DRILLING

Waste content description: Drilling fluids and produced oil land water while drilling and completion operations

Amount of waste: 6000 barrels

Waste disposal frequency : One Time Only

Safe containment description: All drilling waste will be stored safely and disposed of properly

Safe containmant attachment:

Waste disposal type: HAUL TO COMMERCIAL FACILITY **Disposal location ownership:** COMMERCIAL
Disposal type description:

Disposal location description: Trucked to an approved disposal facility

Waste type: SEWAGE

Waste content description: Human waste and gray water

Amount of waste: 1000 gallons

Waste disposal frequency : One Time Only

Safe containment description: Waste will be properly contained and disposed of properly at a state approved disposal

facility.

Safe containmant attachment:

Waste disposal type: HAUL TO COMMERCIAL FACILITY **Disposal location ownership:** PRIVATE
Disposal type description:

Disposal location description: Trucked to an approved disposal facility

Reserve Pit

Reserve Pit being used? NO

Temporary disposal of produced water into reserve pit? NO

Reserve pit length (ft.) **Reserve pit width (ft.)**

Reserve pit depth (ft.) **Reserve pit volume (cu. yd.)**

Is at least 50% of the reserve pit in cut?

Reserve pit liner

Reserve pit liner specifications and installation description

Cuttings Area

Cuttings Area being used? NO

Are you storing cuttings on location? Y

Description of cuttings location Roll off cutting containers on tracks

Cuttings area length (ft.) **Cuttings area width (ft.)**

Cuttings area depth (ft.) **Cuttings area volume (cu. yd.)**

Is at least 50% of the cuttings area in cut?

WCuttings area liner

Cuttings area liner specifications and installation description

Section 8 - Ancillary Facilities

Are you requesting any Ancillary Facilities?: N

Ancillary Facilities attachment:

Comments:

Operator Name: COG OPERATING LLC

Well Name: COLUMBUS FEDERAL COM **Well Number:** 701H

Section 9 - Well Site Layout

Well Site Layout Diagram:

COG_Columbus_701H_Layout_20200513161920.pdf

Comments:

Section 10 - Plans for Surface Reclamation

Type of disturbance: New Surface Disturbance **Multiple Well Pad Name:** COLUMBUS FEDERAL COM

Multiple Well Pad Number: 701H and 702H

Recontouring attachment:

COG_Columbus_701H_Reclamation_20200513161938.pdf

Drainage/Erosion control construction: Immediately following construction, straw waddles will be placed as necessary at the well site to reduce sediment impacts to fragile/sensitive soils.
Drainage/Erosion control reclamation: South 50'. East 50'.

Well pad proposed disturbance (acres): 3.67
Road proposed disturbance (acres): 0.1
Powerline proposed disturbance (acres): 3.86
Pipeline proposed disturbance (acres): 1.26
Other proposed disturbance (acres): 3.67
Total proposed disturbance: 12.56

Well pad interim reclamation (acres): 0.06
Road interim reclamation (acres): 0
Powerline interim reclamation (acres): 3.86
Pipeline interim reclamation (acres): 1.26
Other interim reclamation (acres): 3.67
Total interim reclamation: 8.85

Well pad long term disturbance (acres): 2.81
Road long term disturbance (acres): 0
Powerline long term disturbance (acres): 3.86
Pipeline long term disturbance (acres): 1.26
Other long term disturbance (acres): 3.67
Total long term disturbance: 11.6

Disturbance Comments:

Reconstruction method: Portions of the pad 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. The stockpiled topsoil will be spread out over reclaimed area and reseeded with BLM approved seed mixture.
Topsoil redistribution: South 50'. East 50',

Soil treatment: None

Existing Vegetation at the well pad: Shinnery Oak/Mesquite grassland

Existing Vegetation at the well pad attachment:

Existing Vegetation Community at the road: Shinnery Oak/Mesquite grassland

Existing Vegetation Community at the road attachment:

Operator Name: COG OPERATING LLC

Well Name: COLUMBUS FEDERAL COM **Well Number:** 701H

Existing Vegetation Community at the pipeline: Shinnery Oak/Mesquite grassland

Existing Vegetation Community at the pipeline attachment:

Existing Vegetation Community at other disturbances: N/A

Existing Vegetation Community at other disturbances attachment:

Non native seed used? N

Non native seed description:

Seedling transplant description:

Will seedlings be transplanted for this project? N

Seedling transplant description attachment:

Will seed be harvested for use in site reclamation? N

Seed harvest description:

Seed harvest description attachment:

Seed Management

Seed Table

Seed Summary

Total pounds/Acre:

Seed Type	Pounds/Acre

Seed reclamation attachment:

Operator Contact/Responsible Official Contact Info

First Name: **Last Name:**

Phone: **Email:**

Seedbed prep:

Seed BMP:

Seed method:

Existing invasive species? N

Existing invasive species treatment description:

Existing invasive species treatment attachment:

Operator Name: COG OPERATING LLC

Well Name: COLUMBUS FEDERAL COM **Well Number:** 701H

Weed treatment plan description: N/A

Weed treatment plan attachment:

Monitoring plan description: N/A

Monitoring plan attachment:

Success standards: N/A

Pit closure description: N/A

Pit closure attachment:

COG_Columbus_701H__Closed_Loop_20200513162011.pdf

Section 11 - Surface Ownership

Disturbance type: WELL PAD

Describe:

Surface Owner: BUREAU OF LAND MANAGEMENT

Other surface owner description:

BIA Local Office:

BOR Local Office:

COE Local Office:

DOD Local Office:

NPS Local Office:

State Local Office:

Military Local Office:

USFWS Local Office:

Other Local Office:

USFS Region:

USFS Forest/Grassland: **USFS Ranger District:**

Section 12 - Other Information

Right of Way needed? N **Use APD as ROW?**

ROW Type(s):

ROW Applications

Operator Name: COG OPERATING LLC

Well Name: COLUMBUS FEDERAL COM **Well Number:** 701H

SUPO Additional Information: SUP Attached

Use a previously conducted onsite? Y

Previous Onsite information: Onsite completed on April 22nd, 2020 by Gerald Herrera (COG) and Zane Kirsch (BLM).

Other SUPO Attachment

COG_Columbus_701H_Flowline_Gasline_20200513162639.pdf
COG_Columbus_701H_Powerline_20200513162650.pdf
COG_Columbus_701H_Existing_Road_20200513162710.pdf
COG_Columbus_Access_Rd._20200513162828.pdf
COG_Columbus_701H_CTB_20200520135211.pdf
COG_Columbus_701H_SUP_20200520212433.pdf

APD ID: 10400057099 **Submission Date:** 05/20/2020

Operator Name: COG OPERATING LLC

Well Name: COLUMBUS FEDERAL COM **Well Number:** 701H

Well Type: OIL WELL **Well Work Type:** Drill

Section 1 - General

Would you like to address long-term produced water disposal? NO

Section 2 - Lined Pits

Would you like to utilize Lined Pit PWD options? N

Produced Water Disposal (PWD) Location:

PWD surface owner: **PWD disturbance (acres):**

Lined pit PWD on or off channel:

Lined pit PWD discharge volume (bbl/day):

Lined pit specifications:

Pit liner description:

Pit liner manufacturers information:

Precipitated solids disposal:

Decribe precipitated solids disposal:

Precipitated solids disposal permit:

Lined pit precipitated solids disposal schedule:

Lined pit precipitated solids disposal schedule attachment:

Lined pit reclamation description:

Lined pit reclamation attachment:

Leak detection system description:

Leak detection system attachment:

Operator Name: COG OPERATING LLC

Well Name: COLUMBUS FEDERAL COM **Well Number:** 701H

Lined pit Monitor description:

Lined pit Monitor attachment:

Lined pit: do you have a reclamation bond for the pit?

Is the reclamation bond a rider under the BLM bond?

Lined pit bond number:

Lined pit bond amount:

Additional bond information attachment:

Section 3 - Unlined Pits

Would you like to utilize Unlined Pit PWD options? N

Produced Water Disposal (PWD) Location:

PWD disturbance (acres): **PWD surface owner:**

Unlined pit PWD on or off channel:

Unlined pit PWD discharge volume (bbl/day):

Unlined pit specifications:

Precipitated solids disposal:

Decribe precipitated solids disposal:

Precipitated solids disposal permit:

Unlined pit precipitated solids disposal schedule:

Unlined pit precipitated solids disposal schedule attachment:

Unlined pit reclamation description:

Unlined pit reclamation attachment:

Unlined pit Monitor description:

Unlined pit Monitor attachment:

Do you propose to put the produced water to beneficial use?

Beneficial use user confirmation:

Estimated depth of the shallowest aquifer (feet):

Does the produced water have an annual average Total Dissolved Solids (TDS) concentration equal to or less than that of the existing water to be protected?

TDS lab results:

Geologic and hydrologic evidence:

State authorization:

Unlined Produced Water Pit Estimated percolation:

Unlined pit: do you have a reclamation bond for the pit?

Operator Name: COG OPERATING LLC

Well Name: COLUMBUS FEDERAL COM **Well Number:** 701H

Is the reclamation bond a rider under the BLM bond?

Unlined pit bond number:

Unlined pit bond amount:

Additional bond information attachment:

Section 4 - Injection

Would you like to utilize Injection PWD options? N

Produced Water Disposal (PWD) Location:

PWD surface owner: **PWD disturbance (acres):**

Injection PWD discharge volume (bbl/day):

Injection well mineral owner:

Injection well type:

Injection well number: **Injection well name:**

Assigned injection well API number? **Injection well API number:**

Injection well new surface disturbance (acres):

Minerals protection information:

Mineral protection attachment:

Underground Injection Control (UIC) Permit?

UIC Permit attachment:

Section 5 - Surface Discharge

Would you like to utilize Surface Discharge PWD options? N

Produced Water Disposal (PWD) Location:

PWD surface owner: **PWD disturbance (acres):**

Surface discharge PWD discharge volume (bbl/day):

Surface Discharge NPDES Permit?

Surface Discharge NPDES Permit attachment:

Surface Discharge site facilities information:

Surface discharge site facilities map:

Section 6 - Other

Would you like to utilize Other PWD options? N

Produced Water Disposal (PWD) Location:

PWD surface owner: **PWD disturbance (acres):**

Other PWD discharge volume (bbl/day):

Operator Name: COG OPERATING LLC

Well Name: COLUMBUS FEDERAL COM **Well Number:** 701H

Other PWD type description:

Other PWD type attachment:

Have other regulatory requirements been met?

Other regulatory requirements attachment:

AFMSS

U.S. Department of the Interior
BUREAU OF LAND MANAGEMENT

Bond Info Data Report

11/12/2020

APD ID: 10400057099

Submission Date: 05/20/2020

Operator Name: COG OPERATING LLC

Well Name: COLUMBUS FEDERAL COM

Well Number: 701H

Well Type: OIL WELL

Well Work Type: Drill

Highlighted data reflects the most recent changes

Show Final Text

Bond Information

Federal/Indian APD: FED

BLM Bond number: NMB000215

BIA Bond number:

Do you have a reclamation bond? NO

Is the reclamation bond a rider under the BLM bond?

Is the reclamation bond BLM or Forest Service?

BLM reclamation bond number:

Forest Service reclamation bond number:

Forest Service reclamation bond attachment:

Reclamation bond number:

Reclamation bond amount:

Reclamation bond rider amount:

Additional reclamation bond information attachment:

DISTRICT I
1625 N. FRENCH DR., HOBBS, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720

DISTRICT II
811 S. FIRST ST., ARTESIA, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720

DISTRICT III
1000 RIO BRAZOS RD., AZTEC, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170

DISTRICT IV
1220 S. ST. FRANCIS DR., SANTA FE, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
1220 SOUTH ST. FRANCIS DR.
Santa Fe, New Mexico 87505

OCD – HOBBS
11/30/2020
RECEIVED

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

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number	Pool Code	Pool Name
30-025 **30-025-48113**	**98094**	BOBCAT DRAW;UPPER WOLFCAMP

Property Code	Property Name	Well Number
317530	COLUMBUS FEDERAL COM	701H

OGRID No.	Operator Name	Elevation
229137	COG OPERATING, LLC	3323.6'

Surface Location

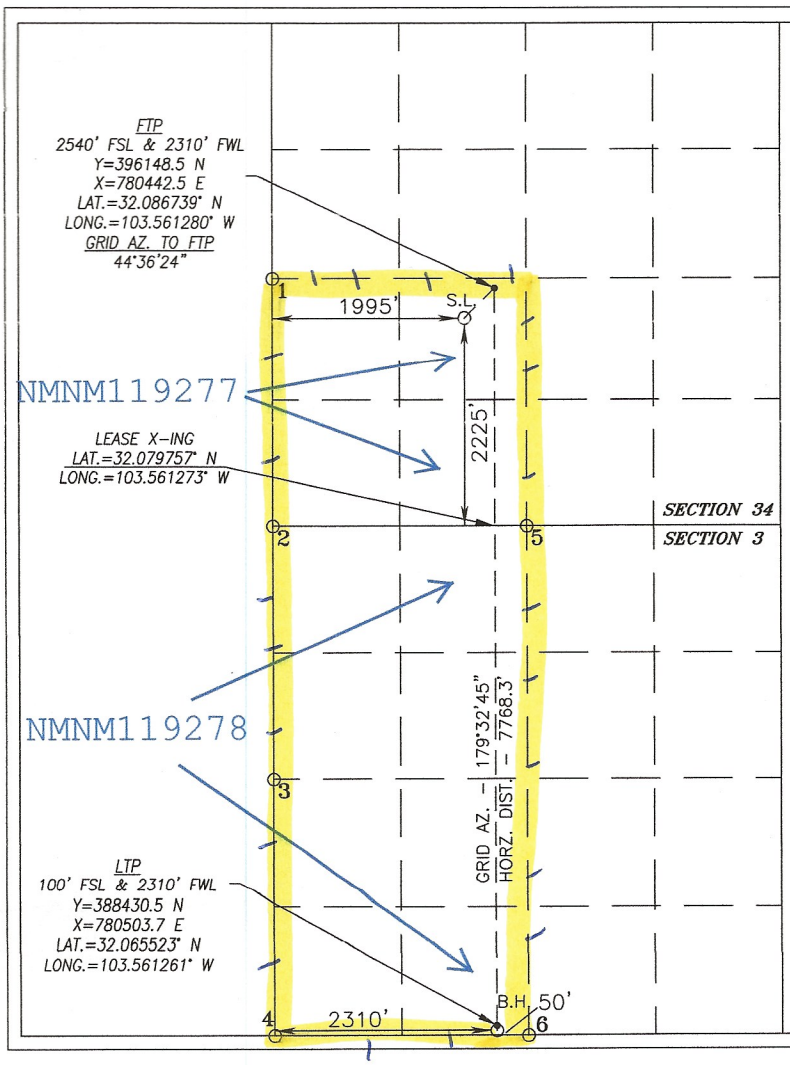
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
K	34	25-S	33-E		2225	SOUTH	1995	WEST	LEA

Bottom Hole Location If Different From Surface

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
N	3	26-S	33-E		50	SOUTH	2310	WEST	LEA

Dedicated Acres	Joint or Infill	Consolidation Code	Order No.
480			

NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION



NAD 83 NME
SURFACE LOCATION
Y=395832.0 N
X=780130.3 E
LAT.=32.085875° N
LONG.=103.562295° W

POINT LEGEND	
1	Y=396235.8 N X=778131.7 E
2	Y=393596.9 N X=778154.7 E
3	Y=390957.8 N X=778175.6 E
4	Y=388317.6 N X=778194.5 E
5	Y=393610.3 N X=780799.7 E
6	Y=388332.4 N X=780837.5 E

NAD 83 NME
PROPOSED BOTTOM
HOLE LOCATION
Y=388380.5 N
X=780504.1 E
LAT.=32.065386° N
LONG.=103.561260° W

OPERATOR CERTIFICATION

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

Mayte Reyes 5-20-2020
Signature Date

Mayte Reyes
Printed Name

mreyes1@concho.com
E-mail Address

SURVEYOR CERTIFICATION

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

APRIL 27, 2020
Date of Survey

Signature & Seal of Professional Surveyor

CHAD L. HARCROW
NEW MEXICO
17777
LICENSED PROFESSIONAL SURVEYOR

Chad Harcrow 5/5/20
Certificate No. CHAD HARCROW 17777

W.O. #20-652 DRAWN BY: WN

District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals and Natural Resources Department

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

OCD – HOBBS
11/30/2020
RECEIVED

Submit Original
to Appropriate
District Office

GAS CAPTURE PLAN

Date: 5/13/2020

☒ Original
☐ Amended - Reason for Amendment:

Operator & OGRID No.: **COG Operating LLC, OGRID 229137**

This Gas Capture Plan outlines actions to be taken by the Operator to reduce well/production facility flaring/venting for new completion (new drill, recomplete to new zone, re-frac) activity.

Note: Form C-129 must be submitted and approved prior to exceeding 60 days allowed by Rule (Subsection A of 19.15.18.12 NMAC).

Well(s)/Production Facility – Name of facility

The well(s) that will be located at the production facility are shown in the table below.

Well Name	API	Well Location (ULSTR)	Footages	Expected MCF/D	Flared or Vented	Comments
Columbus Federal Com 701H	30-025-30-025-48113	K-34-25S-33E	2225' FSL & 1995' FWL	3,797 MCFD		Gas will connect on well pad.

Gathering System and Pipeline Notification

Well(s) will be connected to a production facility after flowback operations are complete, if gas transporter system is in place. The gas produced from production facility is dedicated to ETC and will be connected to Red Bluff low/high pressure gathering system located in Culberson County, Texas. It will require approximately 0' of pipeline on lease to connect the facility to low/high pressure gathering system. COG Operating LLC provides (periodically) to ETC a drilling, completion and estimated first production date for wells that are scheduled to be drilled in the foreseeable future. In addition, COG Operating LLC and ETC have periodic conference calls to discuss changes to drilling and completion schedules. Gas from these wells will be processed at Red Bluff Processing Plant located in Sec 35-Blk 57-T2 Culberson, Texas. The actual flow of the gas will be based on compression operating parameters and gathering system pressures.

Flowback Strategy

After the fracture treatment/completion operations, well(s) will be produced to temporary production tanks and gas will be flared or vented. During flowback, the fluids and sand content will be monitored. When the produced fluids contain minimal sand, the wells will be turned to production facilities. Gas sales should start as soon as the wells start flowing through the production facilities, unless there are operational issues on Gas Transporter system at that time. Based on current information, it is Operator's belief the system can take this gas upon completion of the well(s).

Safety requirements during cleanout operations from the use of underbalanced air cleanout systems may necessitate that sand and non-pipeline quality gas be vented and/or flared rather than sold on a temporary basis.

Alternatives to Reduce Flaring

Below are alternatives considered from a conceptual standpoint to reduce the amount of gas flared.

- Power Generation – On lease
  - Only a portion of gas is consumed operating the generator, remainder of gas will be flared
- Compressed Natural Gas – On lease
  - Gas flared would be minimal, but might be uneconomical to operate when gas volume declines
- NGL Removal – On lease
  - Plants are expensive, residue gas is still flared, and uneconomical to operate when gas volume declines