2 months hard copy.

OCD Hobbs

Form 3160-5
(August, 2007)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
OMB No. 1004-0137
Expires July 31, 2010

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to re-enter an abandoned well. Use Form 3160-3 (APD) for such proposals.

***SUBMIT IN TRIPLICATE** - Other Instructions on page 2*

HOBBS OCD
MAR 30 2015
RECEIVED

5. Lease Serial No: NMNM124664
6. If Indian, Allottee, or Tribe Name:
7. If Unit or CA. Agreement Name and/or No.
8. Well Name and No.: Gunner 8 Federal Com #4H (39912)
9. API Well No.: 30-025-41187
10. Field and Pool, or Exploratory Area: Wildcat; Bone Spring
11. County or Parish, State: Lea County NM

1. Type of Well: [X] Oil Well [ ] Gas Well [ ] Other
2. Name of Operator: COG Operating LLC
3a. Address: 2208 W. Main Street, Artesia, NM 88210
3b. Phone No. (include area code): 575-748-6940
4. Location of Well (Footage, Sec., T., R., M., or Survey Description)
190' FSL & 380' FEL Unit Letter P (SESE) Sec 8-26S-34E
330' FNL & 420' FEL Unit Letter A (NENE) Sec 5-26S-34E
Lat.
Long.

12. CHECK APPROPRIATE BOX(S) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION			
[X] Notice of Intent	[ ] Acidize	[ ] Deepen	[ ] Production (Start/ Resume)	[ ] Water Shut-off
	[ ] Altering Casing	[ ] Fracture Treat	[ ] Reclamation	[ ] Well Integrity
[ ] Subsequent Report	[ ] Casing Repair	[ ] New Construction	[ ] Recomplete	[X] Other
	[X] Change Plans	[ ] Plug and abandon	[ ] Temporarily Abandon	Name Change, Participating Area
[ ] Final Abandonment Notice	[ ] Convert to Injection	[ ] Plug back	[ ] Water Disposal	& Drilling Changes

13. Describe Proposed or Completed Operation (clearly state all pertinent details including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recomplete horizontally, give subsurface locations and measured and true vertical depths or pertinent markers and sands. Attach the Bond under which the work will performed or provide the Bond No. on file with the BLM/ BIA. Required subsequent reports shall be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompletion in a new interval, a Form 3160-4 shall be filed once testing has been completed. Final Abandonment Notice shall be filed only after all requirements, including reclamantion, have been completed, and the operator has determined that the site is ready for final inspection.)

COG Operating LLC respectfully requests approval for the following changes to the original approved APD.

Name Change:
From Gunner 8 Federal #4H
To: Gunner 8 Federal Com #4H

See Attached C-102

SEE ATTACHED FOR CONDITIONS OF APPROVAL

See attached directional plan
Drill 8-3/4" vertical, curve and lateral to approx 19,542' MD / 9625' TVD
Run 5-1/2" 17# P110 LTC csg
Cmt in 1 stg with:
Lead: 1000 sx Tuned Light Blend Class H blend + Salt + Gilsonite + CF + CFR-3 @ 10.4 ppg/3.32 yield
Tail: 2400 sx 50:50:2 H + Salt + GasStop + CFR-3 @ 14.4/1.25 yield
Minimum tie back 200' inside 9-5/8"
35% excess on OH

14. I hereby certify that the foregoing is true and correct.
Name (Printed/ Typed): Mayte Reyes
Title: Regulatory Analyst
Signature: [signature]
Date: 11/19/14

APPROVED
MAR 18 2015
BUREAU OF LAND MANAGEMENT
CARLSBAD FIELD OFFICE

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved by: | Title: | Date:

Conditions of approval, if any are attached. Approval of this notice 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. | Office:

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 any department or agency of the United States any false, fictitiousor fraudulent statements or representations as to any matter within its jurisdiction.

(Instructions on page 2)

MAR 31 2015

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

State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

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

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

1 API Number	2 Pool Code	3 Pool Name
30-025-41187		Wildcat; Bone Spring

4 Property Code	5 Property Name	6 Well Number
39912	Gunner 8 Federal Com	4H

7 OGRID No.	8 Operator Name	9 Elevation
229137	COG OPERATING, LLC	3335'

10 Surface Location

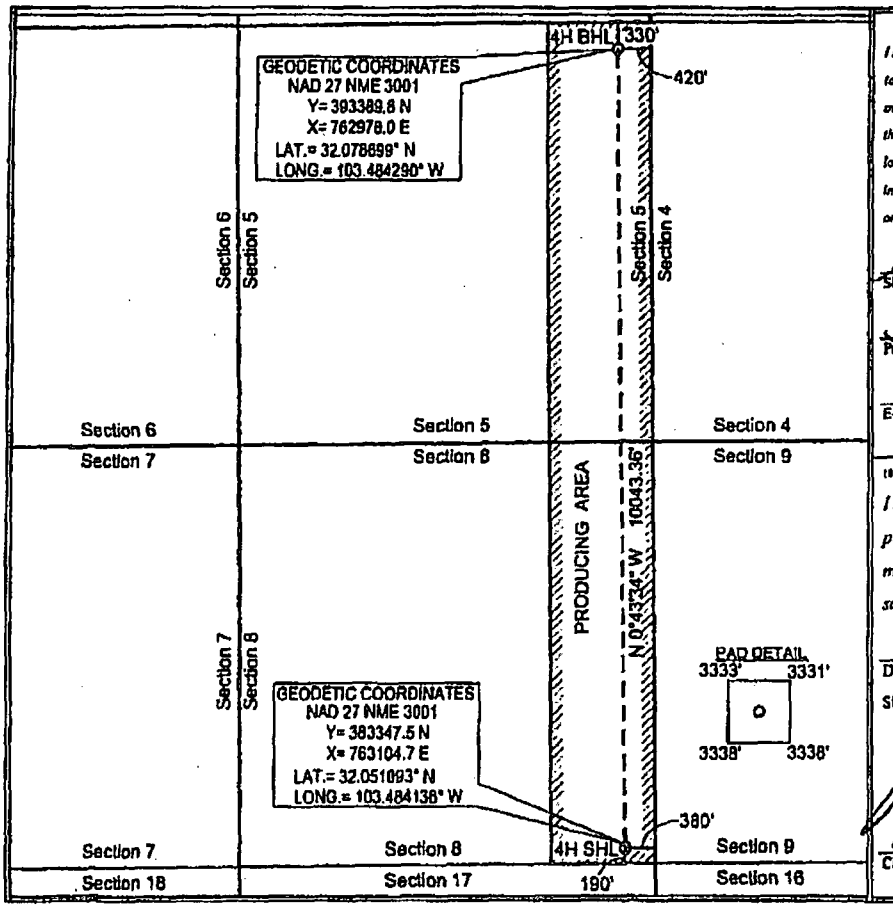
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
P	8	26S	34E		190'	SOUTH	380'	EAST	LEA

11 Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
A	5	26S	34E		330'	NORTH	420'	EAST	LEA

12 Dedicated Acres	13 Joint or Infill	14 Consolidation Code	15 Order No.
320			

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.



17 OPERATOR CERTIFICATION

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

Signature — Date: 10/1/12

Melanie J. Parker
Printed Name

mparker@concho.com
E-mail Address

18 SURVEYOR CERTIFICATION

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

12 JUNE E. HERRERA
Date of Survey

Signature and Seal of Professional Surveyor:

NEW MEXICO 20559 PROFESSIONAL SURVEYOR

Certificate Number 20559

CRESCENT DIRECTIONAL DRILLING

COG Operating LLC
#4H
Lea County, NM
Plan #2

CONCHO

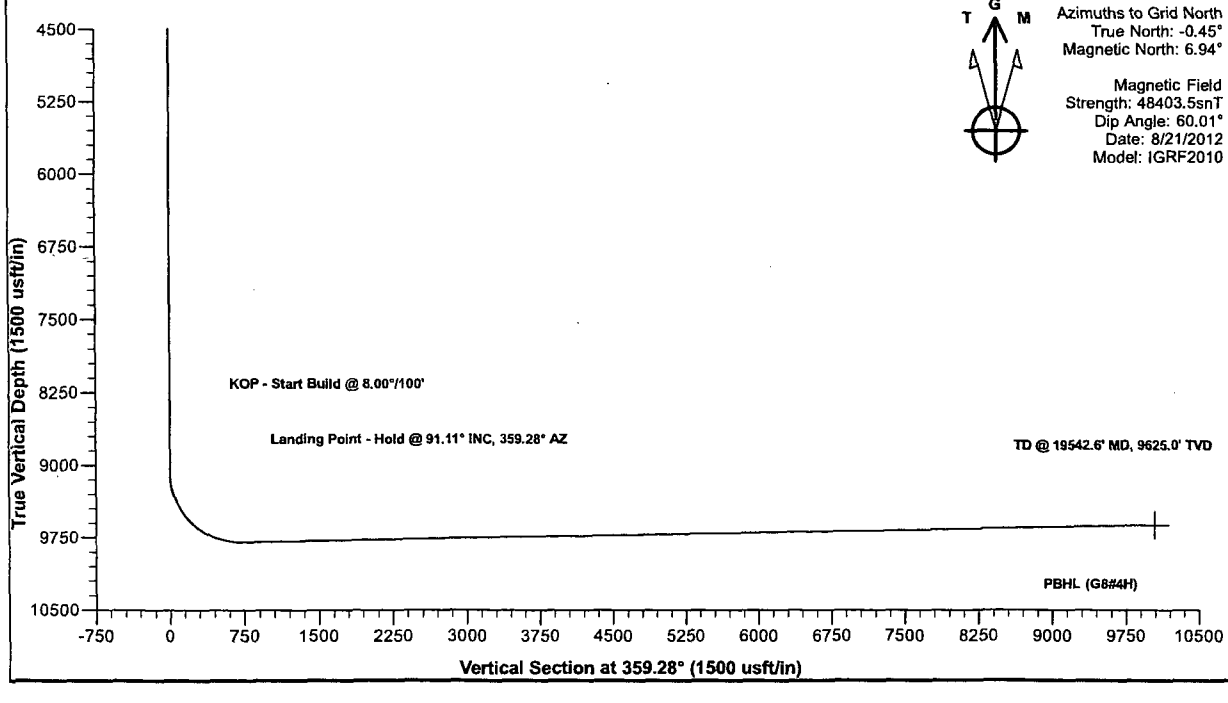
Surface Location		Ground Elev: 3335.0 WELL @ 3365.0usft (Precision #77 - 30' KB)			
+N/-S	+E/-W	Northing	Easting	Latittude	Longitude
0.0	0.0	383347.50	763104.70	32° 3' 3.934 N	103° 29' 2.891 W

TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
PBHL (G8#4H)	9625.0	10042.3	-126.7	393389.80	762978.00	32° 4' 43.318 N	103° 29' 3.445 W

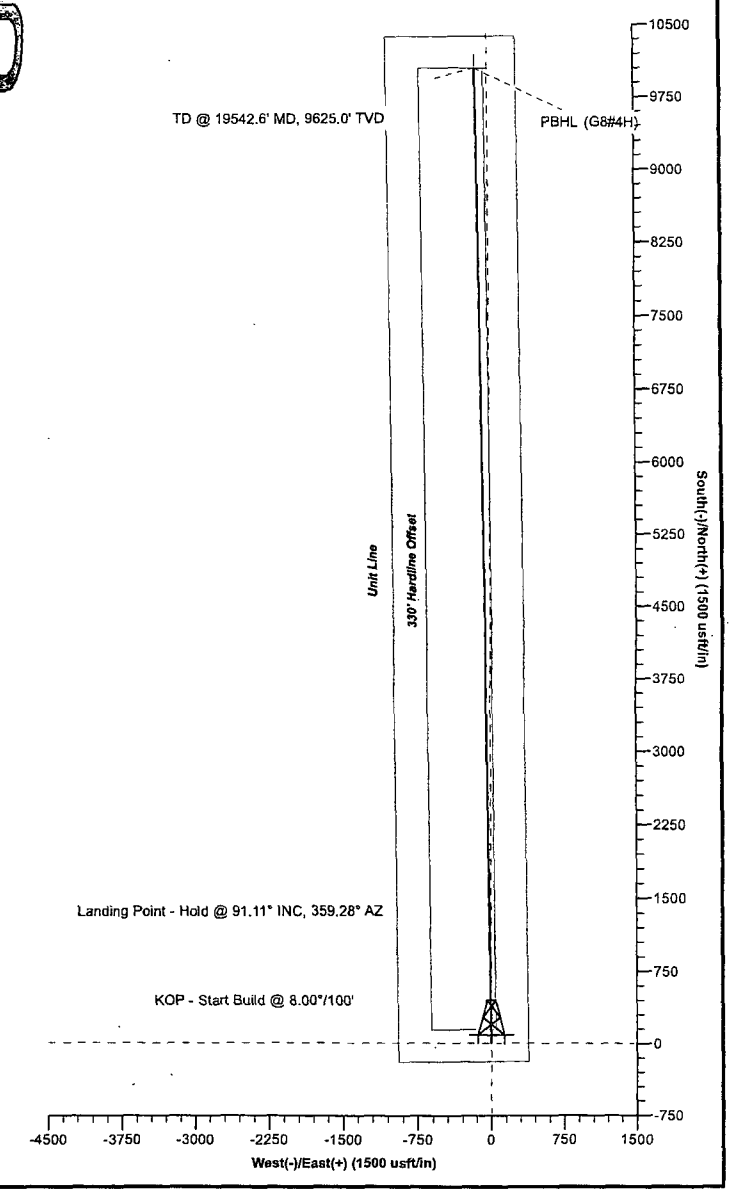
SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Annotation
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	9088.9	0.00	0.00	9088.9	0.0	0.0	0.00	0.00	0.0	KOP - Start Build @ 8.00°/100'
3	10227.8	91.11	359.28	9805.0	730.0	-9.2	8.00	359.28	730.0	Landing Point - Hold @ 91.11° INC, 359.28° AZ
4	19542.6	91.11	359.28	9625.0	10042.3	-126.7	0.00	0.00	10043.1	TD @ 19542.6' MD, 9625.0' TVD



Azimuths to Grid North
True North: -0.45°
Magnetic North: 6.94°

Magnetic Field
Strength: 48403.5snT
Dip Angle: 60.01°
Date: 8/21/2012
Model: IGRF2010



COG Operating LLC

Lea County, NM
Gunner 8 Federal
#4H

OH

Plan: Plan #2

Standard Planning Report

11 January, 2013

Planning Report

Database:	Houston R5000 Database	**Local Co-ordinate Reference:**	Well #4H
Company:	COG Operating LLC	**TVD Reference:**	WELL @ 3365.0usft (Precision #77 - 30' KB)
Project:	Lea County, NM	**MD Reference:**	WELL @ 3365.0usft (Precision #77 - 30' KB)
Site:	Gunner 8 Federal	**North Reference:**	Grid
Well:	#4H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #2		

Project Lea 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 Gunner 8 Federal

Site Position:		**Northing:**	383,338.69 usft	**Latitude:**	32° 3' 3.935 N
From:	Map	**Easting:**	761,964.80 usft	**Longitude:**	103° 29' 16.135 W
Position Uncertainty:	2.0 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	0.45 °

Well #4H

Well Position	**+N/-S**	8.8 usft	**Northing:**	383,347.50 usft	**Latitude:**	32° 3' 3.934 N
	+E/-W	1,139.9 usft	**Easting:**	763,104.70 usft	**Longitude:**	103° 29' 2.891 W
Position Uncertainty		2.0 usft	**Wellhead Elevation:**		**Ground Level:**	3,335.0 usft

Wellbore OH

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	8/21/2012	7.39	60.01	48,404

Design Plan #2

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	359.28

Plan Sections

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
9,088.9	0.00	0.00	9,088.9	0.0	0.0	0.00	0.00	0.00	0.00	
10,227.8	91.11	359.28	9,805.0	730.0	-9.2	8.00	8.00	0.00	359.28	
19,542.6	91.11	359.28	9,625.0	10,042.3	-126.7	0.00	0.00	0.00	0.00	PBHL (G8#4H)

Database:	Houston R5000 Database	**Local Co-ordinate Reference:**	Well #4H
Company:	COG Operating LLC	**TVD Reference:**	WELL @ 3365.0usft (Precision #77 - 30' KB)
Project:	Lea County, NM	**MD Reference:**	WELL @ 3365.0usft (Precision #77 - 30' KB)
Site:	Gunner 8 Federal	**North Reference:**	Grid
Well:	#4H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #2		

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)
9,088.9	0.00	0.00	9,088.9	0.0	0.0	0.0	0.00	0.00	0.00
KOP - Start Build @ 8.00°/100'									
9,100.0	0.88	359.28	9,100.0	0.1	0.0	0.1	8.00	8.00	0.00
9,200.0	8.88	359.28	9,199.5	8.6	-0.1	8.6	8.00	8.00	0.00
9,300.0	16.88	359.28	9,296.9	30.9	-0.4	30.9	8.00	8.00	0.00
9,400.0	24.88	359.28	9,390.3	66.5	-0.8	66.5	8.00	8.00	0.00
9,500.0	32.88	359.28	9,477.8	114.7	-1.4	114.8	8.00	8.00	0.00
9,600.0	40.88	359.28	9,557.7	174.7	-2.2	174.7	8.00	8.00	0.00
9,700.0	48.88	359.28	9,628.5	245.2	-3.1	245.2	8.00	8.00	0.00
9,800.0	56.88	359.28	9,688.8	324.9	-4.1	324.9	8.00	8.00	0.00
9,900.0	64.88	359.28	9,737.4	412.2	-5.2	412.2	8.00	8.00	0.00
10,000.0	72.88	359.28	9,773.4	505.4	-6.4	505.4	8.00	8.00	0.00
10,100.0	80.88	359.28	9,796.1	602.7	-7.6	602.7	8.00	8.00	0.00
10,200.0	88.88	359.28	9,805.0	702.2	-8.9	702.3	8.00	8.00	0.00
10,227.8	91.11	359.28	9,805.0	730.0	-9.2	730.0	8.00	8.00	0.00
Landing Point - Hold @ 91.11° INC, 359.28° AZ									
10,300.0	91.11	359.28	9,803.6	802.2	-10.1	802.2	0.00	0.00	0.00
10,400.0	91.11	359.28	9,801.7	902.1	-11.4	902.2	0.00	0.00	0.00
10,500.0	91.11	359.28	9,799.7	1,002.1	-12.6	1,002.2	0.00	0.00	0.00
10,600.0	91.11	359.28	9,797.8	1,102.1	-13.9	1,102.2	0.00	0.00	0.00
10,700.0	91.11	359.28	9,795.9	1,202.1	-15.2	1,202.2	0.00	0.00	0.00
10,800.0	91.11	359.28	9,793.9	1,302.0	-16.4	1,302.1	0.00	0.00	0.00
10,900.0	91.11	359.28	9,792.0	1,402.0	-17.7	1,402.1	0.00	0.00	0.00
11,000.0	91.11	359.28	9,790.1	1,502.0	-19.0	1,502.1	0.00	0.00	0.00
11,100.0	91.11	359.28	9,788.1	1,602.0	-20.2	1,602.1	0.00	0.00	0.00
11,200.0	91.11	359.28	9,786.2	1,701.9	-21.5	1,702.1	0.00	0.00	0.00
11,300.0	91.11	359.28	9,784.3	1,801.9	-22.7	1,802.0	0.00	0.00	0.00
11,400.0	91.11	359.28	9,782.3	1,901.9	-24.0	1,902.0	0.00	0.00	0.00
11,500.0	91.11	359.28	9,780.4	2,001.9	-25.3	2,002.0	0.00	0.00	0.00
11,600.0	91.11	359.28	9,778.5	2,101.8	-26.5	2,102.0	0.00	0.00	0.00
11,700.0	91.11	359.28	9,776.5	2,201.8	-27.8	2,202.0	0.00	0.00	0.00
11,800.0	91.11	359.28	9,774.6	2,301.8	-29.0	2,302.0	0.00	0.00	0.00
11,900.0	91.11	359.28	9,772.7	2,401.7	-30.3	2,401.9	0.00	0.00	0.00
12,000.0	91.11	359.28	9,770.7	2,501.7	-31.6	2,501.9	0.00	0.00	0.00
12,100.0	91.11	359.28	9,768.8	2,601.7	-32.8	2,601.9	0.00	0.00	0.00
12,200.0	91.11	359.28	9,766.9	2,701.7	-34.1	2,701.9	0.00	0.00	0.00
12,300.0	91.11	359.28	9,764.9	2,801.6	-35.3	2,801.9	0.00	0.00	0.00
12,400.0	91.11	359.28	9,763.0	2,901.6	-36.6	2,901.8	0.00	0.00	0.00
12,500.0	91.11	359.28	9,761.1	3,001.6	-37.9	3,001.8	0.00	0.00	0.00
12,600.0	91.11	359.28	9,759.1	3,101.6	-39.1	3,101.8	0.00	0.00	0.00
12,700.0	91.11	359.28	9,757.2	3,201.5	-40.4	3,201.8	0.00	0.00	0.00
12,800.0	91.11	359.28	9,755.3	3,301.5	-41.7	3,301.8	0.00	0.00	0.00
12,900.0	91.11	359.28	9,753.3	3,401.5	-42.9	3,401.7	0.00	0.00	0.00
13,000.0	91.11	359.28	9,751.4	3,501.4	-44.2	3,501.7	0.00	0.00	0.00
13,100.0	91.11	359.28	9,749.5	3,601.4	-45.4	3,601.7	0.00	0.00	0.00
13,200.0	91.11	359.28	9,747.6	3,701.4	-46.7	3,701.7	0.00	0.00	0.00
13,300.0	91.11	359.28	9,745.6	3,801.4	-48.0	3,801.7	0.00	0.00	0.00
13,400.0	91.11	359.28	9,743.7	3,901.3	-49.2	3,901.7	0.00	0.00	0.00
13,500.0	91.11	359.28	9,741.8	4,001.3	-50.5	4,001.6	0.00	0.00	0.00
13,600.0	91.11	359.28	9,739.8	4,101.3	-51.7	4,101.6	0.00	0.00	0.00
13,700.0	91.11	359.28	9,737.9	4,201.3	-53.0	4,201.6	0.00	0.00	0.00
13,800.0	91.11	359.28	9,736.0	4,301.2	-54.3	4,301.6	0.00	0.00	0.00
13,900.0	91.11	359.28	9,734.0	4,401.2	-55.5	4,401.6	0.00	0.00	0.00
14,000.0	91.11	359.28	9,732.1	4,501.2	-56.8	4,501.5	0.00	0.00	0.00

Database:	Houston R5000 Database	Local Co-ordinate Reference:	Well #4H
Company:	COG Operating LLC	TVD Reference:	WELL @ 3365.0usft (Precision #77 - 30' KB)
Project:	Lea County, NM	MD Reference:	WELL @ 3365.0usft (Precision #77 - 30' KB)
Site:	Gunner 8 Federal	North Reference:	Grid
Well:	#4H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #2		

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)
14,100.0	91.11	359.28	9,730.2	4,601.2	-58.1	4,601.5	0.00	0.00	0.00
14,200.0	91.11	359.28	9,728.2	4,701.1	-59.3	4,701.5	0.00	0.00	0.00
14,300.0	91.11	359.28	9,726.3	4,801.1	-60.6	4,801.5	0.00	0.00	0.00
14,400.0	91.11	359.28	9,724.4	4,901.1	-61.8	4,901.5	0.00	0.00	0.00
14,500.0	91.11	359.28	9,722.4	5,001.0	-63.1	5,001.4	0.00	0.00	0.00
14,600.0	91.11	359.28	9,720.5	5,101.0	-64.4	5,101.4	0.00	0.00	0.00
14,700.0	91.11	359.28	9,718.6	5,201.0	-65.6	5,201.4	0.00	0.00	0.00
14,800.0	91.11	359.28	9,716.6	5,301.0	-66.9	5,301.4	0.00	0.00	0.00
14,900.0	91.11	359.28	9,714.7	5,400.9	-68.1	5,401.4	0.00	0.00	0.00
15,000.0	91.11	359.28	9,712.8	5,500.9	-69.4	5,501.4	0.00	0.00	0.00
15,100.0	91.11	359.28	9,710.8	5,600.9	-70.7	5,601.3	0.00	0.00	0.00
15,200.0	91.11	359.28	9,708.9	5,700.9	-71.9	5,701.3	0.00	0.00	0.00
15,300.0	91.11	359.28	9,707.0	5,800.8	-73.2	5,801.3	0.00	0.00	0.00
15,400.0	91.11	359.28	9,705.0	5,900.8	-74.4	5,901.3	0.00	0.00	0.00
15,500.0	91.11	359.28	9,703.1	6,000.8	-75.7	6,001.3	0.00	0.00	0.00
15,600.0	91.11	359.28	9,701.2	6,100.8	-77.0	6,101.2	0.00	0.00	0.00
15,700.0	91.11	359.28	9,699.2	6,200.7	-78.2	6,201.2	0.00	0.00	0.00
15,800.0	91.11	359.28	9,697.3	6,300.7	-79.5	6,301.2	0.00	0.00	0.00
15,900.0	91.11	359.28	9,695.4	6,400.7	-80.8	6,401.2	0.00	0.00	0.00
16,000.0	91.11	359.28	9,693.4	6,500.6	-82.0	6,501.2	0.00	0.00	0.00
16,100.0	91.11	359.28	9,691.5	6,600.6	-83.3	6,601.1	0.00	0.00	0.00
16,200.0	91.11	359.28	9,689.6	6,700.6	-84.5	6,701.1	0.00	0.00	0.00
16,300.0	91.11	359.28	9,687.6	6,800.6	-85.8	6,801.1	0.00	0.00	0.00
16,400.0	91.11	359.28	9,685.7	6,900.5	-87.1	6,901.1	0.00	0.00	0.00
16,500.0	91.11	359.28	9,683.8	7,000.5	-88.3	7,001.1	0.00	0.00	0.00
16,600.0	91.11	359.28	9,681.8	7,100.5	-89.6	7,101.0	0.00	0.00	0.00
16,700.0	91.11	359.28	9,679.9	7,200.5	-90.8	7,201.0	0.00	0.00	0.00
16,800.0	91.11	359.28	9,678.0	7,300.4	-92.1	7,301.0	0.00	0.00	0.00
16,900.0	91.11	359.28	9,676.0	7,400.4	-93.4	7,401.0	0.00	0.00	0.00
17,000.0	91.11	359.28	9,674.1	7,500.4	-94.6	7,501.0	0.00	0.00	0.00
17,100.0	91.11	359.28	9,672.2	7,600.3	-95.9	7,601.0	0.00	0.00	0.00
17,200.0	91.11	359.28	9,670.3	7,700.3	-97.2	7,700.9	0.00	0.00	0.00
17,300.0	91.11	359.28	9,668.3	7,800.3	-98.4	7,800.9	0.00	0.00	0.00
17,400.0	91.11	359.28	9,666.4	7,900.3	-99.7	7,900.9	0.00	0.00	0.00
17,500.0	91.11	359.28	9,664.5	8,000.2	-100.9	8,000.9	0.00	0.00	0.00
17,600.0	91.11	359.28	9,662.5	8,100.2	-102.2	8,100.9	0.00	0.00	0.00
17,700.0	91.11	359.28	9,660.6	8,200.2	-103.5	8,200.8	0.00	0.00	0.00
17,800.0	91.11	359.28	9,658.7	8,300.2	-104.7	8,300.8	0.00	0.00	0.00
17,900.0	91.11	359.28	9,656.7	8,400.1	-106.0	8,400.8	0.00	0.00	0.00
18,000.0	91.11	359.28	9,654.8	8,500.1	-107.2	8,500.8	0.00	0.00	0.00
18,100.0	91.11	359.28	9,652.9	8,600.1	-108.5	8,600.8	0.00	0.00	0.00
18,200.0	91.11	359.28	9,650.9	8,700.1	-109.8	8,700.7	0.00	0.00	0.00
18,300.0	91.11	359.28	9,649.0	8,800.0	-111.0	8,800.7	0.00	0.00	0.00
18,400.0	91.11	359.28	9,647.1	8,900.0	-112.3	8,900.7	0.00	0.00	0.00
18,500.0	91.11	359.28	9,645.1	9,000.0	-113.5	9,000.7	0.00	0.00	0.00
18,600.0	91.11	359.28	9,643.2	9,099.9	-114.8	9,100.7	0.00	0.00	0.00
18,700.0	91.11	359.28	9,641.3	9,199.9	-116.1	9,200.7	0.00	0.00	0.00
18,800.0	91.11	359.28	9,639.3	9,299.9	-117.3	9,300.6	0.00	0.00	0.00
18,900.0	91.11	359.28	9,637.4	9,399.9	-118.6	9,400.6	0.00	0.00	0.00
19,000.0	91.11	359.28	9,635.5	9,499.8	-119.9	9,500.6	0.00	0.00	0.00
19,100.0	91.11	359.28	9,633.5	9,599.8	-121.1	9,600.6	0.00	0.00	0.00
19,200.0	91.11	359.28	9,631.6	9,699.8	-122.4	9,700.6	0.00	0.00	0.00
19,300.0	91.11	359.28	9,629.7	9,799.8	-123.6	9,800.5	0.00	0.00	0.00
19,400.0	91.11	359.28	9,627.7	9,899.7	-124.9	9,900.5	0.00	0.00	0.00

Database:	Houston R5000 Database	**Local Co-ordinate Reference:**	Well #4H
Company:	COG Operating LLC	**TVD Reference:**	WELL @ 3365.0usft (Precision #77 - 30' KB)
Project:	Lea County, NM	**MD Reference:**	WELL @ 3365.0usft (Precision #77 - 30' KB)
Site:	Gunner 8 Federal	**North Reference:**	Grid
Well:	#4H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #2		

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)
19,500.0	91.11	359.28	9,625.8	9,999.7	-126.2	10,000.5	0.00	0.00	0.00
19,542.6	91.11	359.28	9,625.0	10,042.3	-126.7	10,043.1	0.00	0.00	0.00
TD @ 19542.6' MD, 9625.0' TVD - PBHL (G8#4H)									

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
PBHL (G8#4H) - plan hits target center - Point	0.00	0.00	9,625.0	10,042.3	-126.7	393,389.80	762,978.00	32° 4' 43.318 N	103° 29' 3.445 W

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
9,088.9	9,088.9	0.0	0.0	KOP - Start Build @ 8.00°/100'
10,227.8	9,805.0	730.0	-9.2	Landing Point - Hold @ 91.11° INC, 359.28° AZ
19,542.6	9,625.0	10,042.3	-126.7	TD @ 19542.6' MD, 9625.0' TVD

PECOS DISTRICT
CONDITIONS OF APPROVAL

OPERATOR'S NAME:	COG Operating LLC
LEASE NO.:	NMNM-124664
WELL NAME & NO.:	Gunner 8 Federal Com 4H
SURFACE HOLE FOOTAGE:	0190' FSL & 0380' FEL
BOTTOM HOLE FOOTAGE	1650' FNL & 0380' FEL Sec. 5, T. 26 S., R 34 E.
LOCATION:	Section 8, T. 26 S., R 34 E., NMPM
COUNTY:	Lea County, New Mexico
API:	30-025-41187

The original COAs still stand with the following drilling modifications:

I. DRILLING

A. DRILLING OPERATIONS REQUIREMENTS

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

a. Spudding well (minimum of 24 hours)
b. Setting and/or Cementing of all casing strings (minimum of 4 hours)
c. BOPE tests (minimum of 4 hours)

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

1. **Hydrogen Sulfide has been reported as a hazard in formations deeper than the proposed depth. It is recommended that monitoring equipment be onsite for potential Hydrogen Sulfide. If Hydrogen Sulfide is encountered, report measurements and formations to the BLM.**

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

3. Floor controls are required for 3M or Greater systems. These controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works is located, this does not include the dog house or stairway area.

4. **The record of the drilling rate along with the GR/N well log run from TD to surface (horizontal well – vertical portion of hole) shall be submitted to the BLM office as well as all other logs run on the borehole 30 days from completion. If available, a digital copy of the logs is to be submitted in addition to the paper copies. The Rustler top and top and bottom of Salt are to be recorded on the Completion Report.**

B. CASING

Changes to the approved APD casing 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.

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

Wait on cement (WOC) for Water Basin:
After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi at the shoe, 2) until cement has been in place at least 8 hours. WOC time will be recorded in the driller's log. See individual casing strings for details regarding lead cement slurry requirements.

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

Possible water and brine flows in the Salado, Castile, Delaware, and Bone Spring.
Possible lost circulation in the Delaware and Bone Springs formations.
Possible sulfur water flows from the Castile Group.

1. The **13-3/8** inch surface casing shall be set at approximately **800** feet (a minimum of 25 feet into the Rustler Anhydrite and above the salt) and cemented to the surface.

    a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.

b. **Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry.**

c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.

d. If cement falls back, remedial cementing will be done prior to drilling out that string.

Intermediate casing shall be kept fluid filled while running into hole to meet BLM minimum collapse requirements.

2. The minimum required fill of cement behind the **9-5/8** inch intermediate casing is:

   ☒ Cement to surface. If cement does not circulate see B.1.a, c-d above.

Centralizers required on horizontal leg, must be type for horizontal service and a minimum of one every other joint.

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

   ☒ Cement should tie-back at least 200 feet into previous casing string. Operator shall provide method of verification.

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

C. PRESSURE CONTROL

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API RP 53 Sec. 17.

2. **In the case where the only BOP installed is an annular preventer, it shall be tested to a minimum of 2000 psi (which may require upgrading to 3M or 5M annular).**

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

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

5. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.

    a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the plug. For those casing strings not using slips, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin after cut-off or once cement reaches 500 psi compressive strength (including lead when specified), whichever is greater. However, if the float does not hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).

    b. The tests shall be done by an independent service company utilizing a test plug **not a cup or J-packer**.

    c. 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.

    d. The results of the test shall be reported to the appropriate BLM office.

    e. All tests are required to be recorded on a calibrated test chart. **A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.**

    f. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug. This test shall be performed prior to the test at full stack pressure.

D. DRILL STEM TEST

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

E. WASTE MATERIAL AND FLUIDS

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

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

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