

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

OCD Hobbs

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

WELL COMPLETION OR RECOMPLETION REPORT AND LOG

1a. Type of Well ☒ Oil Well ☐ Gas Well ☐ Dry ☐ Other			5. Lease Serial No. NMNM124664		
b. Type of Completion ☒ New Well ☐ Work Over ☐ Deepen ☐ Plug Back ☐ Diff. Resvr. Other _____			6. If Indian, Allottee or Tribe Name		
2. Name of Operator COG OPERATING LLC			7. Unit or CA Agreement Name and No.		
3. Address ONE CONCHO CENTER 600 W ILLINOIS AVENUE MIDLAND, TX 79701-4287			8. Lease Name and Well No. GUNNER 8 FEDERAL COM 4H		
3a. Phone No. (include area code) Ph: 575.748.6946			9. API Well No. 30-025-41187-00-S1		
4. Location of Well (Report location clearly and in accordance with Federal requirements)* Sec 8 T26S R34E Mer NMP At surface SESE 190FSL 380FEL At top prod interval reported below Sec 5 T26S R34E Mer NMP At total depth NENE 331FNL 435FEL			10. Field and Pool, or Exploratory WC-025 G06 S263407P		
14. Date Spudded 04/06/2015			15. Date T.D. Reached 05/03/2015		
16. Date Completed ☐ D & A ☒ Ready to Prod. 06/05/2015			17. Elevations (DF, KB, RT, GL)* 3335 GL		
18. Total Depth: MD 19730 TVD 9687			19. Plug Back T.D.: MD 19640 TVD 9696		
20. Depth Bridge Plug Set: MD 19640 TVD 9696			21. Type Electric & Other Mechanical Logs Run (Submit copy of each) NONE		
22. Was well cored? ☒ No ☐ Yes (Submit analysis) Was DST run? ☒ No ☐ Yes (Submit analysis) Directional Survey? ☐ No ☒ Yes (Submit analysis)					

23. Casing and Liner Record (Report all strings set in well)

Hole Size	Size/Grade	Wt. (#/ft.)	Top (MD)	Bottom (MD)	Stage Cementer Depth	No. of Sk. & Type of Cement	Slurry Vol. (BBL)	Cement Top*	Amount Pulled
17.500	13.375 J55	54.5	0	840		650		0	
12.250	9.625 J55	40.0	0	5280		1550		0	
8.750	5.500 P110	17.0	0	19730		3650		5150	

24. Tubing Record

Size	Depth Set (MD)	Packer Depth (MD)	Size	Depth Set (MD)	Packer Depth (MD)	Size	Depth Set (MD)	Packer Depth (MD)
2.875	9890	9247						

25. Producing Intervals

Formation	Top	Bottom	Perforated Interval	Size	No. Holes	Perf. Status
A) BONE SPRING UPPER	9923	19615	9923 TO 19615	0.000	2340	OPEN (97892) BS Upper
B)						
C)						
D)						

26. Perforation Record

27. Acid, Fracture, Treatment, Cement Squeeze, Etc.

Depth Interval	Amount and Type of Material
9923 TO 19615	SEE IN REMARKS

28. Production - Interval A

Date First Produced	Test Date	Hours Tested	Test Production	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity	Production Method
06/11/2015	07/20/2015	24	→	317.0	480.0	2821.0			FLows FROM WELL
Choke Size	Tbg. Press. Flwg. SI	Csg. Press.	24 Hr. Rate	Oil BBL	Gas MCF	Water BBL	Gas:Oil Ratio	Well Status	
	520	1070.0	→	317	480	2821		POW	

28a. Production - Interval B

Date First Produced	Test Date	Hours Tested	Test Production	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity	Production Method
			→						
Choke Size	Tbg. Press. Flwg. SI	Csg. Press.	24 Hr. Rate	Oil BBL	Gas MCF	Water BBL	Gas:Oil Ratio	Well Status	
	SI		→						

(See Instructions and spaces for additional data on reverse side)

ELECTRONIC SUBMISSION #313825 VERIFIED BY THE BLM WELL INFORMATION SYSTEM

** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED **

Reclamation
Date: 11/20/16

NOV 23 2015

28b. Production - Interval C

Date First Produced	Test Date	Hours Tested	Test Production	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity	Production Method
			→						
Choke Size	Tbg. Press. Flwg. SI	Csg. Press.	24 Hr. Rate	Oil BBL	Gas MCF	Water BBL	Gas:Oil Ratio	Well Status	
			→						

28c. Production - Interval D

Date First Produced	Test Date	Hours Tested	Test Production	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity	Production Method
			→						
Choke Size	Tbg. Press. Flwg. SI	Csg. Press.	24 Hr. Rate	Oil BBL	Gas MCF	Water BBL	Gas:Oil Ratio	Well Status	
			→						

29. Disposition of Gas(Sold, used for fuel, vented, etc.)
SOLD

30. Summary of Porous Zones (Include Aquifers):

Show all important zones of porosity and contents thereof: Cored intervals and all drill-stem tests, including depth interval tested, cushion used, time tool open, flowing and shut-in pressures and recoveries.

31. Formation (Log) Markers

Formation	Top	Bottom	Descriptions, Contents, etc.	Name	Top Meas. Depth
DELAWARE	5342	5387		RUSTLER	723
BELL CANYON	5388	6389		TOP OF SALT	1086
CHERRY CANYON	6390	8130		BASE OF SALT	5086
BRUSHY CANYON	8131	9592		DELAWARE	5342
BONE SPRING LIME	9593	9811		BELL CANYON	5388
				CHERRY CANYON	6390
				BRUSHY CANYON	8131
				BONE SPRING LIME	9593

32. Additional remarks (include plugging procedure):
Surveys & perforation record attached.

33. Circle enclosed attachments:

- | | | | |
|---|--------------------|---------------|-----------------------|
| 1. Electrical/Mechanical Logs (1 full set req'd.) | 2. Geologic Report | 3. DST Report | 4. Directional Survey |
| 5. Sundry Notice for plugging and cement verification | 6. Core Analysis | 7 Other: | |

34. I hereby certify that the foregoing and attached information is complete and correct as determined from all available records (see attached instructions):

Electronic Submission #313825 Verified by the BLM Well Information System.
For COG OPERATING LLC, sent to the Hobbs
Committed to AFMSS for processing by LINDA JIMENEZ on 08/25/2015 (15LJ1717SE)

Name (please print) STORMI DAVISTitle REGULATORY ANALYST

Signature _____ (Electronic Submission)

Date 08/25/2015

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.

**** REVISED ** REVISED ** REVISED ** REVISED ** REVISED ** REVISED ** REVISED ** REVISED ****

Date		02/26/2019		Pressure test		9500		Well		Gusmer 8 Prod 84H		Well		Gusmer 8 Prod 84H	
From Bottom to Top	Stage 1	Distance Between Perfs	Shots	Stage 2	Distance Between Perfs	Shots	Stage 3	Distance Between Perfs	Shots	Stage 4	Distance Between Perfs	Shots	Stage 5	Distance Between Perfs	Shots
	18,818	50	14	18,435	80	14	18,215	50	14	18,185	50	14	18,011	54	14
	18,850	50	12	18,267	32	12	18,362	47	12	18,115	50	12	18,080	50	12
	18,815		10	18,505		10	18,215		10	18,085		10	18,516		10
	Perforated feet	180	36	Perforated feet	70	36	Perforated feet	180	36	Perforated feet	180	36	Perforated feet	85	36
	Free Plug	18,845	Total Shots	Free Plug	18,447	Total Shots	Free Plug	18,340	Total Shots	Free Plug	18,104	Total Shots	Free Plug	18,546	Total Shots
From Bottom to Top	Stage 6	Distance Between Perfs	Shots	Stage 7	Distance Between Perfs	Shots	Stage 8	Distance Between Perfs	Shots	Stage 9	Distance Between Perfs	Shots	Stage 10	Distance Between Perfs	Shots
	18,800	50	14	18,714	53	14	18,550	50	14	18,410	58	14	18,280	50	14
	18,816	49	12	18,080	50	12	18,510	48	12	18,505	52	12	18,218	46	12
	18,787		10	18,619		10	18,469		10	18,315		10	18,170		10
	Perforated feet	89	36	Perforated feet	183	36	Perforated feet	92	36	Perforated feet	118	36	Perforated feet	96	36
	Free Plug	18,881	Total Shots	Free Plug	18,741	Total Shots	Free Plug	18,589	Total Shots	Free Plug	18,441	Total Shots	Free Plug	18,295	Total Shots
From Bottom to Top	Stage 11	Distance Between Perfs	Shots	Stage 12	Distance Between Perfs	Shots	Stage 13	Distance Between Perfs	Shots	Stage 14	Distance Between Perfs	Shots	Stage 15	Distance Between Perfs	Shots
	18,114	56	14	17,899	50	14	17,810	50	14	17,887	58	14	17,517	48	14
	18,080	50	12	17,850	48	12	17,787	50	12	17,830	50	12	17,487	58	12
	18,010		10	17,872		10	17,717		10	17,585		10	17,417		10
	Perforated feet	108	36	Perforated feet	98	36	Perforated feet	100	36	Perforated feet	186	36	Perforated feet	98	36
	Free Plug	18,141	Total Shots	Free Plug	17,961	Total Shots	Free Plug	17,861	Total Shots	Free Plug	17,884	Total Shots	Free Plug	17,543	Total Shots
From Bottom to Top	Stage 16	Distance Between Perfs	Shots	Stage 17	Distance Between Perfs	Shots	Stage 18	Distance Between Perfs	Shots	Stage 19	Distance Between Perfs	Shots	Stage 20	Distance Between Perfs	Shots
	17,267	50	14	17,217	53	14	17,988	49	14	18,917	50	14	18,767	50	14
	17,300	50	12	17,487	58	12	17,815	48	12	18,987	58	12	18,710	43	12
	17,275		10	17,117		10	18,887		10	18,817		10	18,687		10
	Perforated feet	106	36	Perforated feet	183	36	Perforated feet	87	36	Perforated feet	188	36	Perforated feet	82	36
	Free Plug	17,283	Total Shots	Free Plug	17,340	Total Shots	Free Plug	17,882	Total Shots	Free Plug	18,944	Total Shots	Free Plug	18,793	Total Shots
From Bottom to Top	Stage 21	Distance Between Perfs	Shots	Stage 22	Distance Between Perfs	Shots	Stage 23	Distance Between Perfs	Shots	Stage 24	Distance Between Perfs	Shots	Stage 25	Distance Between Perfs	Shots
	18,817	50	14	18,688	50	14	18,315	50	14	18,188	50	14	18,018	50	14
	18,880	50	12	18,431	53	12	18,388	50	12	18,115	47	12	18,080	50	12
	18,518		10	18,508		10	18,215		10	18,085		10	18,516		10
	Perforated feet	180	36	Perforated feet	183	36	Perforated feet	180	36	Perforated feet	87	36	Perforated feet	188	36
	Free Plug	18,843	Total Shots	Free Plug	18,693	Total Shots	Free Plug	18,343	Total Shots	Free Plug	18,183	Total Shots	Free Plug	18,643	Total Shots
From Bottom to Top	Stage 26	Distance Between Perfs	Shots	Stage 27	Distance Between Perfs	Shots	Stage 28	Distance Between Perfs	Shots	Stage 29	Distance Between Perfs	Shots	Stage 30	Distance Between Perfs	Shots
	18,870	48	14	18,718	50	14	18,570	48	14	18,418	50	14	18,268	54	14
	18,815	47	12	18,688	50	12	18,513	43	12	18,388	48	12	18,218	50	12
	18,788		10	18,618		10	18,488		10	18,318		10	18,188		10
	Perforated feet	85	36	Perforated feet	180	36	Perforated feet	83	36	Perforated feet	18448	36	Perforated feet	184	36
	Free Plug	18,883	Total Shots	Free Plug	18,743	Total Shots	Free Plug	18,593	Total Shots	Free Plug	18	Total Shots	Free Plug	18,284	Total Shots
From Bottom to Top	Stage 31	Distance Between Perfs	Shots	Stage 32	Distance Between Perfs	Shots	Stage 33	Distance Between Perfs	Shots	Stage 34	Distance Between Perfs	Shots	Stage 35	Distance Between Perfs	Shots
	15,118	50	14	14,985	54	14	14,819	57	14	14,889	50	14	14,518	50	14
	15,080	47	12	14,919	43	12	14,788	50	12	14,815	58	12	14,880	50	12
	15,019		10	14,879		10	14,719		10	14,589		10	14,418		10
	Perforated feet	87	36	Perforated feet	87	36	Perforated feet	187	36	Perforated feet	186	36	Perforated feet	188	36
	Free Plug	15,143	Total Shots	Free Plug	14,963	Total Shots	Free Plug	14,844	Total Shots	Free Plug	14,894	Total Shots	Free Plug	14,548	Total Shots
From Bottom to Top	Stage 36	Distance Between Perfs	Shots	Stage 37	Distance Between Perfs	Shots	Stage 38	Distance Between Perfs	Shots	Stage 39	Distance Between Perfs	Shots	Stage 40	Distance Between Perfs	Shots
	14,388	52	14	14,318	50	14	14,070	49	14	13,814	48	14	13,778	50	14
	14,318	50	12	14,170	54	12	14,020	50	12	13,878	50	12	13,728	52	12
	14,280		10	14,118		10	13,970		10	13,820		10	13,688		10
	Perforated feet	183	36	Perforated feet	184	36	Perforated feet	86	36	Perforated feet	89	36	Perforated feet	182	36
	Free Plug	14,384	Total Shots	Free Plug	14,338	Total Shots	Free Plug	14,065	Total Shots	Free Plug	13,848	Total Shots	Free Plug	13,803	Total Shots
From Bottom to Top	Stage 41	Distance Between Perfs	Shots	Stage 42	Distance Between Perfs	Shots	Stage 43	Distance Between Perfs	Shots	Stage 44	Distance Between Perfs	Shots	Stage 45	Distance Between Perfs	Shots
	13,820	48	14	13,470	54	14	13,392	48	14	13,170	50	14	13,020	50	14
	13,878	46	12	13,430	50	12	13,270	50	12	13,133	53	12	12,970	50	12
	13,824		10	13,378		10	13,220		10	13,078		10	12,820		10
	Perforated feet	84	36	Perforated feet	184	36	Perforated feet	90	36	Perforated feet	182	36	Perforated feet	188	36
	Free Plug	13,858	Total Shots	Free Plug	13,488	Total Shots	Free Plug	13,346	Total Shots	Free Plug	13,187	Total Shots	Free Plug	13,047	Total Shots
From Bottom to Top	Stage 46	Distance Between Perfs	Shots	Stage 47	Distance Between Perfs	Shots	Stage 48	Distance Between Perfs	Shots	Stage 49	Distance Between Perfs	Shots	Stage 50	Distance Between Perfs	Shots
	12,888	54	14	12,721	50	14	12,588	50	14	12,431	50	14	12,271	48	14
	12,881	50	12	12,671	50	12	12,531	50	12	12,373	54	12	12,321	50	12
	12,771		10	12,621		10	12,471		10	12,316		10	12,171		10
	Perforated feet	184	36	Perforated feet	188	36	Perforated feet	188	36	Perforated feet	184	36	Perforated feet	98	36
	Free Plug	12,898	Total Shots	Free Plug	12,789	Total Shots	Free Plug	12,686	Total Shots	Free Plug	12,429	Total Shots	Free Plug	12,295	Total Shots
From Bottom to Top	Stage 51	Distance Between Perfs	Shots	Stage 52	Distance Between Perfs	Shots	Stage 53	Distance Between Perfs	Shots	Stage 54	Distance Between Perfs	Shots	Stage 55	Distance Between Perfs	Shots
	12,118	53	14	11,971	50	14	11,851	49	14	11,888	53	14	11,518	56	14
	12,071	50	12	11,921	51	12	11,771	50	12	11,622	50	12	11,472	50	12
	12,021		10	11,871		10	11,721		10	11,572		10	11,422		10
	Perforated feet	183	36	Perforated feet	183	36	Perforated feet	99	36	Perforated feet	183	36	Perforated feet	188	36
	Free Plug	12,148	Total Shots	Free Plug	11,980	Total Shots	Free Plug	11,848	Total Shots	Free Plug	11,888	Total Shots	Free Plug	11,638	Total Shots
From Bottom to Top	Stage 56	Distance Between Perfs	Shots	Stage 57	Distance Between Perfs	Shots	Stage 58	Distance Between Perfs	Shots	Stage 59	Distance Between Perfs	Shots	Stage 60	Distance Between Perfs	Shots
	11,308	54	14	11,222	50	14	11,178	47	14	11,082	50	14	10,778	48	14
	11,322	50	12	11,172	50	12	11,022	50	12	10,872	50	12	10,722	50	12
	11,272		10	11,122		10	10,972		10	10,822		10	10,672		10
	Perforated feet	186	36	Perforated feet	188	36	Perforated feet	87	36	Perforated feet	188	36	Perforated feet	96	36
	Free Plug	11,287	Total Shots	Free Plug	11,253	Total Shots	Free Plug	11,097	Total Shots	Free Plug	10,881	Total Shots	Free Plug	10,787	Total Shots
From Bottom to Top	Stage 61	Distance Between Perfs	Shots	Stage 62	Distance Between Perfs	Shots	Stage 63	Distance Between Perfs	Shots	Stage 64	Distance Between Perfs	Shots	Stage 65	Distance Between Perfs	Shots
	10,822	50	14	10,487	55	14	10,320	53	14	10,173	50	14	10,023	50	14
	10,872	50	12	10,423	50	12	10,273	50	12	10,123	50	12	9,988	45	12
	10,822		10	10,373		10	10,223		10	10,073		10	9,923		10
	Perforated feet	188	36	Perforated feet	188	36	Perforated feet	183	36	Perforated feet	188	36	Perforated feet	95	36
	Free Plug	10,855	Total Shots	Free Plug	10,687	Total Shots	Free Plug	10,327	Total Shots	Free Plug	10,188	Total Shots	Free Plug	10,048	Total Shots



HOBBS OCD

NOV 16 2015

RECEIVED

COG Operating LLC

Lea County, NM

Gunner Federal

#4H

OH

Survey: MWD #1

Survey Report - Geographic

04 May, 2015



Wellplanning
Survey Report - Geographic

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #4H
Project:	Lee County, NM	TVD Reference:	WELL @ 3361.0usft (Original Well Elev)
Site:	Gunner Federal	MD Reference:	WELL @ 3361.0usft (Original Well Elev)
Well:	#4H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Single User Db

Project	Lee 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 Federal		
Site Position:		Northing:	383,347.50 usft
From:	Map	Easting:	763,104.70 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 3' 3.934 N
		Longitude:	103° 29' 2.891 W
		Grid Convergence:	0.45 "

Well	#4H		
Well Position	+N-S	0.0 usft	Northing:
	+E-W	0.0 usft	Easting:
Position Uncertainty	0.0 usft	Wellhead Elevation:	usft
		Latitude:	32° 3' 3.934 N
		Longitude:	103° 29' 2.891 W
		Ground Level:	3,335.0 usft

Wellbore	OH		
Magnetics	Model Name	Sample Date	Declination
			(°)
	IGRF2010	3/17/2015	7.07
			Dip Angle
			(°)
			59.95
			Field Strength
			(nT)
			48,146

Design	OH		
Audit Notes:			
Version:	1.0	Phase:	ACTUAL
		Tie On Depth:	0.0
Vertical Section:	Depth From (TVD)	+N-S	+E-W
	(usft)	(usft)	(usft)
	0.0	0.0	0.0
			Direction
			(°)
			359.27

Survey Program	Date 5/4/2015		
From	To	Survey (Wellbore)	Tool Name
(usft)	(usft)		
169.0	19,730.0	MWD #1 (OH)	MWD
			Description
			MWD - Standard

Survey										
Measured	Inclination	Azimuth	Vertical	+N-S	+E-W	Map	Map			
Depth	(°)	(°)	Depth	(usft)	(usft)	Northing	Easting	Latitude	Longitude	
(usft)			(usft)			(usft)	(usft)			
0.0	0.00	0.00	0.0	0.0	0.0	383,347.50	763,104.70	32° 3' 3.934 N	103° 29' 2.891 W	
169.0	0.88	278.90	169.0	0.2	-1.3	383,347.70	763,103.41	32° 3' 3.936 N	103° 29' 2.906 W	
327.0	0.31	293.23	327.0	0.6	-2.9	383,348.06	763,101.82	32° 3' 3.940 N	103° 29' 2.924 W	
447.0	0.40	201.05	447.0	0.3	-3.3	383,347.79	763,101.37	32° 3' 3.937 N	103° 29' 2.930 W	
577.0	0.88	154.63	577.0	-1.0	-3.1	383,348.47	763,101.64	32° 3' 3.924 N	103° 29' 2.927 W	
667.0	1.19	139.92	667.0	-2.4	-2.2	383,345.13	763,102.54	32° 3' 3.911 N	103° 29' 2.916 W	
757.0	1.72	130.68	756.9	-4.0	-0.5	383,343.53	763,104.16	32° 3' 3.895 N	103° 29' 2.898 W	
894.0	2.10	123.30	893.9	-6.7	3.1	383,340.81	763,107.62	32° 3' 3.868 N	103° 29' 2.855 W	
1,077.0	0.70	94.00	1,076.8	-8.6	7.0	383,338.80	763,111.74	32° 3' 3.848 N	103° 29' 2.810 W	
1,259.0	0.70	68.50	1,258.8	-8.7	9.3	383,338.85	763,113.96	32° 3' 3.848 N	103° 29' 2.784 W	
1,448.0	0.50	51.30	1,447.8	-8.1	11.1	383,339.39	763,115.76	32° 3' 3.853 N	103° 29' 2.763 W	
1,637.0	0.10	35.40	1,636.8	-7.5	11.6	383,340.04	763,116.50	32° 3' 3.859 N	103° 29' 2.755 W	



Wellplanning Survey Report - Geographic

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #4H
Project:	Lee County, NM	TVD Reference:	WELL @ 3361.0usft (Original Well Elev)
Site:	Gunner Federal	MD Reference:	WELL @ 3361.0usft (Original Well Elev)
Well:	#4H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Single User Db

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
1,731.0	0.40	241.80	1,730.8	-7.5	11.8	383,339.95	763,116.25	32° 3' 3.858 N	103° 29' 2.757 W	
1,819.0	0.70	217.20	1,818.8	-8.8	10.3	383,338.73	763,114.98	32° 3' 3.848 N	103° 29' 2.772 W	
2,013.0	0.50	195.30	2,012.8	-9.6	9.8	383,337.87	763,114.53	32° 3' 3.838 N	103° 29' 2.778 W	
2,202.0	0.70	169.00	2,201.7	-11.6	9.8	383,335.95	763,114.53	32° 3' 3.819 N	103° 29' 2.778 W	
2,298.0	0.50	158.40	2,295.7	-12.5	10.1	383,335.01	763,114.80	32° 3' 3.810 N	103° 29' 2.775 W	
2,484.0	0.80	16.50	2,483.7	-12.3	10.7	383,335.20	763,115.41	32° 3' 3.811 N	103° 29' 2.768 W	
2,578.0	1.10	14.70	2,577.7	-11.0	11.1	383,336.54	763,115.78	32° 3' 3.825 N	103° 29' 2.763 W	
2,766.0	1.10	28.80	2,765.7	-7.6	12.4	383,339.87	763,117.11	32° 3' 3.857 N	103° 29' 2.747 W	
2,860.0	1.10	42.50	2,859.7	-6.2	13.5	383,341.33	763,118.15	32° 3' 3.872 N	103° 29' 2.735 W	
3,049.0	1.10	46.00	3,048.6	-3.6	16.0	383,343.92	763,120.68	32° 3' 3.897 N	103° 29' 2.706 W	
3,143.0	1.10	1.90	3,142.6	-2.0	16.7	383,345.45	763,121.36	32° 3' 3.912 N	103° 29' 2.698 W	
3,331.0	1.10	12.20	3,330.8	1.5	17.1	383,349.02	763,121.80	32° 3' 3.948 N	103° 29' 2.692 W	
3,519.0	0.90	9.80	3,518.8	4.7	17.7	383,352.24	763,122.44	32° 3' 3.979 N	103° 29' 2.684 W	
3,707.0	0.90	284.90	3,706.5	8.6	16.6	383,354.07	763,121.28	32° 3' 3.998 N	103° 29' 2.698 W	
3,895.0	1.10	258.20	3,894.5	6.6	13.4	383,354.08	763,118.07	32° 3' 3.998 N	103° 29' 2.735 W	
3,989.0	0.80	248.30	3,988.5	6.2	12.0	383,353.72	763,118.73	32° 3' 3.995 N	103° 29' 2.751 W	
4,084.0	0.20	338.00	4,083.5	6.2	11.5	383,353.89	763,116.20	32° 3' 3.994 N	103° 29' 2.757 W	
4,272.0	0.90	33.70	4,271.5	7.7	12.2	383,355.22	763,116.90	32° 3' 4.009 N	103° 29' 2.749 W	
4,460.0	1.50	293.30	4,459.5	9.9	10.8	383,357.42	763,115.46	32° 3' 4.031 N	103° 29' 2.785 W	
4,648.0	0.40	230.00	4,647.4	10.5	8.0	383,357.97	763,112.89	32° 3' 4.037 N	103° 29' 2.797 W	
4,742.0	0.80	143.00	4,741.4	9.7	8.1	383,357.24	763,112.84	32° 3' 4.030 N	103° 29' 2.796 W	
4,836.0	0.90	135.10	4,835.4	8.7	9.1	383,356.19	763,113.75	32° 3' 4.019 N	103° 29' 2.785 W	
5,025.0	1.20	138.50	5,024.4	6.2	11.4	383,353.88	763,116.11	32° 3' 3.994 N	103° 29' 2.758 W	
5,119.0	0.40	182.20	5,118.4	5.1	12.1	383,352.59	763,116.75	32° 3' 3.983 N	103° 29' 2.750 W	
5,213.0	0.00	329.20	5,212.4	4.8	12.0	383,352.26	763,116.74	32° 3' 3.980 N	103° 29' 2.751 W	
5,364.0	0.49	215.38	5,363.4	4.2	11.7	383,351.74	763,116.37	32° 3' 3.975 N	103° 29' 2.755 W	
5,459.0	0.40	206.63	5,458.4	3.6	11.3	383,351.11	763,115.98	32° 3' 3.969 N	103° 29' 2.760 W	
5,552.0	0.40	237.52	5,551.4	3.1	10.9	383,350.65	763,115.56	32° 3' 3.964 N	103° 29' 2.764 W	
5,647.0	0.31	222.94	5,646.4	2.8	10.4	383,350.28	763,115.11	32° 3' 3.961 N	103° 29' 2.770 W	
5,741.0	0.31	215.05	5,740.4	2.4	10.1	383,349.88	763,114.79	32° 3' 3.957 N	103° 29' 2.774 W	
5,834.0	0.22	232.54	5,833.4	2.1	9.8	383,349.57	763,114.50	32° 3' 3.954 N	103° 29' 2.777 W	
5,929.0	0.22	222.45	5,928.4	1.8	9.5	383,349.32	763,114.24	32° 3' 3.951 N	103° 29' 2.780 W	
6,023.0	0.31	192.75	6,022.4	1.4	9.4	383,348.94	763,114.06	32° 3' 3.947 N	103° 29' 2.782 W	
6,117.0	0.40	195.13	6,116.4	0.9	9.2	383,348.38	763,113.92	32° 3' 3.942 N	103° 29' 2.784 W	
6,211.0	0.40	180.85	6,210.4	0.2	9.1	383,347.73	763,113.83	32° 3' 3.936 N	103° 29' 2.785 W	
6,305.0	0.31	171.42	6,304.4	-0.3	9.2	383,347.15	763,113.86	32° 3' 3.930 N	103° 29' 2.785 W	
6,399.0	0.49	208.22	6,398.4	-0.9	9.0	383,346.55	763,113.71	32° 3' 3.924 N	103° 29' 2.786 W	
6,493.0	0.31	183.94	6,492.4	-1.6	8.8	383,345.94	763,113.50	32° 3' 3.918 N	103° 29' 2.789 W	
6,587.0	0.31	178.65	6,586.4	-2.1	8.8	383,345.43	763,113.49	32° 3' 3.913 N	103° 29' 2.789 W	
6,681.0	0.31	237.83	6,680.4	-2.5	8.6	383,345.04	763,113.28	32° 3' 3.909 N	103° 29' 2.792 W	
6,775.0	0.09	149.28	6,774.4	-2.7	8.4	383,344.84	763,113.10	32° 3' 3.907 N	103° 29' 2.794 W	
6,870.0	0.09	186.63	6,869.4	-2.8	8.4	383,344.71	763,113.13	32° 3' 3.906 N	103° 29' 2.793 W	
6,964.0	0.09	10.22	6,963.4	-2.8	8.4	383,344.71	763,113.13	32° 3' 3.906 N	103° 29' 2.793 W	
7,058.0	0.22	20.93	7,057.4	-2.6	8.5	383,344.95	763,113.21	32° 3' 3.908 N	103° 29' 2.792 W	
7,152.0	0.40	46.93	7,151.4	-2.2	8.8	383,345.34	763,113.52	32° 3' 3.912 N	103° 29' 2.789 W	
7,246.0	0.49	31.24	7,245.4	-1.6	9.3	383,345.91	763,113.96	32° 3' 3.917 N	103° 29' 2.783 W	
7,340.0	0.49	354.13	7,339.4	-0.8	9.4	383,346.65	763,114.13	32° 3' 3.925 N	103° 29' 2.781 W	
7,434.0	0.40	311.25	7,433.4	-0.2	9.1	383,347.27	763,113.84	32° 3' 3.931 N	103° 29' 2.785 W	
7,527.0	0.09	6.02	7,526.4	0.1	8.9	383,347.55	763,113.81	32° 3' 3.934 N	103° 29' 2.787 W	
7,621.0	0.22	120.44	7,620.4	0.0	9.1	383,347.54	763,113.77	32° 3' 3.934 N	103° 29' 2.786 W	
7,716.0	0.82	145.64	7,717.3	-0.5	9.5	383,347.01	763,114.23	32° 3' 3.928 N	103° 29' 2.780 W	
7,811.0	1.02	162.12	7,810.3	-1.7	10.1	383,345.80	763,114.77	32° 3' 3.916 N	103° 29' 2.774 W	
7,906.0	1.19	172.75	7,905.3	-3.5	10.5	383,344.02	763,115.15	32° 3' 3.899 N	103° 29' 2.770 W	
8,000.0	1.28	169.66	7,999.3	-5.5	10.8	383,342.02	763,115.48	32° 3' 3.879 N	103° 29' 2.766 W	
8,094.0	1.81	177.86	8,093.3	-8.0	11.0	383,339.50	763,115.71	32° 3' 3.854 N	103° 29' 2.764 W	



Wellplanning Survey Report - Geographic

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #4H
Project:	Lea County, NM	TVD Reference:	WELL @ 3361.0usft (Original Well Elev)
Site:	Gunner Federal	MD Reference:	WELL @ 3361.0usft (Original Well Elev)
Well:	#4H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Single User Db

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N-S (usft)	+E-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
8,188.0	1.68	182.53	8,187.2	-10.9	11.0	383,336.84	763,115.70	32° 3' 3.826 N	103° 29' 2.764 W	
8,282.0	1.28	185.35	8,281.2	-13.3	10.8	383,334.22	763,115.54	32° 3' 3.802 N	103° 29' 2.768 W	
8,376.0	1.50	173.14	8,375.2	-15.5	10.9	383,331.96	763,115.59	32° 3' 3.779 N	103° 29' 2.768 W	
8,508.0	1.60	173.30	8,505.1	-19.0	11.3	383,328.46	763,116.01	32° 3' 3.745 N	103° 29' 2.781 W	
8,600.0	1.40	160.80	8,599.1	-21.4	11.8	383,326.08	763,116.54	32° 3' 3.721 N	103° 29' 2.755 W	
8,694.0	1.10	155.30	8,693.1	-23.3	12.6	383,324.17	763,117.29	32° 3' 3.702 N	103° 29' 2.747 W	
8,788.0	1.20	149.70	8,787.0	-25.0	13.5	383,322.50	763,118.16	32° 3' 3.686 N	103° 29' 2.737 W	
8,882.0	1.10	159.70	8,881.0	-28.7	14.3	383,320.81	763,118.97	32° 3' 3.669 N	103° 29' 2.728 W	
8,977.0	1.20	158.10	8,976.0	-28.5	15.0	383,319.03	763,119.86	32° 3' 3.651 N	103° 29' 2.720 W	
9,071.0	1.20	158.50	9,070.0	-30.3	15.7	383,317.20	763,120.39	32° 3' 3.633 N	103° 29' 2.711 W	
9,165.0	1.30	163.90	9,164.0	-32.2	16.3	383,315.28	763,121.05	32° 3' 3.614 N	103° 29' 2.704 W	
9,259.0	1.20	163.20	9,257.9	-34.2	16.9	383,313.29	763,121.83	32° 3' 3.594 N	103° 29' 2.697 W	
9,354.0	1.10	11.40	9,352.9	-34.3	17.4	383,313.23	763,122.09	32° 3' 3.593 N	103° 29' 2.682 W	
9,401.0	8.50	5.90	9,399.8	-31.2	17.8	383,316.32	763,122.46	32° 3' 3.624 N	103° 29' 2.688 W	
9,448.0	11.20	12.80	9,448.2	-24.1	19.0	383,323.43	763,123.74	32° 3' 3.694 N	103° 29' 2.672 W	
9,485.0	18.00	13.80	9,481.9	-13.3	21.6	383,334.17	763,128.30	32° 3' 3.800 N	103° 29' 2.641 W	
9,542.0	20.80	16.10	9,538.5	1.0	25.5	383,348.49	763,130.18	32° 3' 3.942 N	103° 29' 2.595 W	
9,589.0	22.90	13.70	9,580.1	17.9	29.9	383,385.39	763,134.84	32° 3' 4.109 N	103° 29' 2.541 W	
9,620.0	24.50	11.50	9,608.5	30.1	32.7	383,377.55	763,137.35	32° 3' 4.229 N	103° 29' 2.509 W	
9,651.0	27.00	8.10	9,638.4	43.3	35.1	383,390.80	763,139.75	32° 3' 4.360 N	103° 29' 2.480 W	
9,683.0	31.70	3.60	9,684.3	58.9	36.7	383,406.86	763,141.43	32° 3' 4.514 N	103° 29' 2.459 W	
9,714.0	36.80	359.80	9,689.9	78.3	37.2	383,423.81	763,141.90	32° 3' 4.686 N	103° 29' 2.452 W	
9,745.0	43.80	358.50	9,713.6	96.3	38.9	383,443.84	763,141.59	32° 3' 4.884 N	103° 29' 2.454 W	
9,777.0	50.00	358.80	9,735.4	119.7	38.6	383,467.18	763,141.28	32° 3' 5.115 N	103° 29' 2.455 W	
9,808.0	52.10	1.20	9,754.9	149.8	36.8	383,491.30	763,141.47	32° 3' 5.350 N	103° 29' 2.451 W	
9,840.0	56.10	0.80	9,773.7	163.7	37.2	383,517.21	763,141.92	32° 3' 5.610 N	103° 29' 2.443 W	
9,871.0	61.90	359.40	9,789.6	196.3	37.3	383,543.77	763,141.96	32° 3' 5.873 N	103° 29' 2.440 W	
9,903.0	68.50	357.80	9,803.0	225.3	38.5	383,572.79	763,141.24	32° 3' 6.160 N	103° 29' 2.446 W	
9,923.0	72.30	357.30	9,809.7	244.1	35.7	383,591.59	763,140.43	32° 3' 6.344 N	103° 29' 2.450 W	
9,954.0	79.20	358.40	9,817.4	274.1	34.1	383,621.51	763,138.78	32° 3' 6.642 N	103° 29' 2.473 W	
9,985.0	80.50	355.90	9,822.8	304.5	32.0	383,652.04	763,136.73	32° 3' 6.945 N	103° 29' 2.491 W	
10,017.0	82.20	356.40	9,827.6	336.1	29.9	383,683.60	763,134.61	32° 3' 7.258 N	103° 29' 2.513 W	
10,111.0	88.10	0.60	9,835.6	429.7	27.5	383,777.17	763,132.17	32° 3' 8.184 N	103° 29' 2.533 W	
10,205.0	90.70	358.90	9,836.6	523.7	27.1	383,871.15	763,131.76	32° 3' 9.114 N	103° 29' 2.525 W	
10,300.0	92.40	357.50	9,834.0	618.6	24.1	383,968.06	763,128.78	32° 3' 10.053 N	103° 29' 2.559 W	
10,384.0	92.60	357.80	9,829.9	712.4	20.2	384,059.90	763,124.93	32° 3' 10.982 N	103° 29' 2.591 W	
10,488.0	90.50	359.90	9,827.4	806.3	18.3	384,153.83	763,123.04	32° 3' 11.912 N	103° 29' 2.604 W	
10,582.0	90.90	1.00	9,826.2	900.3	19.1	384,247.82	763,123.76	32° 3' 12.842 N	103° 29' 2.587 W	
10,678.0	92.90	0.80	9,823.1	994.3	20.6	384,341.75	763,125.26	32° 3' 13.771 N	103° 29' 2.581 W	
10,770.0	92.30	359.20	9,818.8	1,088.2	20.6	384,435.65	763,125.26	32° 3' 14.700 N	103° 29' 2.553 W	
10,865.0	89.90	358.70	9,817.0	1,183.1	18.8	384,530.61	763,123.52	32° 3' 15.640 N	103° 29' 2.584 W	
10,959.0	88.40	358.40	9,818.4	1,277.1	16.4	384,624.57	763,121.14	32° 3' 16.570 N	103° 29' 2.583 W	
11,053.0	89.90	358.00	9,819.8	1,371.0	13.5	384,718.51	763,118.19	32° 3' 17.500 N	103° 29' 2.608 W	
11,147.0	91.40	357.80	9,818.7	1,464.9	10.0	384,812.44	763,114.74	32° 3' 18.430 N	103° 29' 2.640 W	
11,241.0	90.10	357.30	9,817.5	1,558.8	8.0	384,906.34	763,110.72	32° 3' 19.359 N	103° 29' 2.678 W	
11,335.0	90.30	357.50	9,817.2	1,652.7	1.8	385,000.24	763,106.48	32° 3' 20.289 N	103° 29' 2.719 W	
11,429.0	89.00	358.70	9,817.7	1,746.7	-1.4	385,094.19	763,103.34	32° 3' 21.218 N	103° 29' 2.747 W	
11,523.0	90.70	358.90	9,818.0	1,840.7	-3.3	385,188.16	763,101.37	32° 3' 22.149 N	103° 29' 2.761 W	
11,588.0	92.20	358.50	9,816.3	1,905.6	-4.8	385,253.12	763,099.90	32° 3' 22.792 N	103° 29' 2.773 W	
11,682.0	90.60	358.00	9,814.1	1,999.6	-7.3	385,347.08	763,097.36	32° 3' 23.721 N	103° 29' 2.793 W	
11,776.0	90.20	358.40	9,813.4	2,093.5	-10.3	385,441.01	763,094.41	32° 3' 24.651 N	103° 29' 2.819 W	
11,870.0	90.70	358.40	9,812.7	2,187.5	-13.2	385,534.96	763,091.45	32° 3' 25.581 N	103° 29' 2.845 W	
11,964.0	90.70	358.40	9,811.5	2,281.4	-15.9	385,628.91	763,088.83	32° 3' 26.511 N	103° 29' 2.867 W	
12,058.0	91.50	358.20	9,809.7	2,375.4	-18.7	385,722.85	763,086.04	32° 3' 27.441 N	103° 29' 2.891 W	
12,151.0	89.70	359.60	9,808.7	2,468.3	-20.4	385,815.83	763,084.26	32° 3' 28.381 N	103° 29' 2.903 W	



Wellplanning Survey Report - Geographic

Company:	COG Operating LLC	Local Co-ordinates Reference:	Well #4H
Project:	Lea County, NM	TVD Reference:	WELL @ 3361.0usft (Original Well Elev)
Site:	Gunner Federal	MD Reference:	WELL @ 3361.0usft (Original Well Elev)
Well:	#4H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Single User Db

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
12,246.0	90.20	0.60	9,808.8	2,563.3	-20.1	385,910.82	763,084.59	32° 3' 29.301 N	103° 29' 2.890 W	
12,340.0	92.00	1.20	9,807.0	2,657.3	-18.5	386,004.79	763,086.23	32° 3' 30.231 N	103° 29' 2.863 W	
12,434.0	90.90	0.10	9,804.8	2,751.3	-17.4	386,098.75	763,087.29	32° 3' 31.160 N	103° 29' 2.842 W	
12,528.0	89.30	359.60	9,804.5	2,845.2	-17.6	386,192.75	763,087.05	32° 3' 32.091 N	103° 29' 2.836 W	
12,622.0	90.10	359.10	9,805.0	2,939.2	-18.7	386,286.74	763,085.98	32° 3' 33.021 N	103° 29' 2.840 W	
12,716.0	89.30	358.50	9,805.5	3,033.2	-20.7	386,380.71	763,084.01	32° 3' 33.951 N	103° 29' 2.854 W	
12,810.0	91.40	358.40	9,804.9	3,127.2	-23.2	386,474.67	763,081.47	32° 3' 34.881 N	103° 29' 2.875 W	
12,930.0	92.20	359.60	9,801.1	3,247.1	-25.3	386,564.59	763,079.38	32° 3' 36.068 N	103° 29' 2.888 W	
13,025.0	89.90	359.20	9,799.4	3,342.1	-28.3	386,659.56	763,078.36	32° 3' 37.008 N	103° 29' 2.891 W	
13,119.0	90.10	358.90	9,799.4	3,436.1	-27.9	386,753.55	763,078.82	32° 3' 37.938 N	103° 29' 2.901 W	
13,213.0	90.60	358.70	9,798.8	3,530.0	-29.8	386,847.53	763,074.85	32° 3' 38.868 N	103° 29' 2.915 W	
13,307.0	88.70	358.20	9,799.4	3,624.0	-32.4	386,941.49	763,072.31	32° 3' 39.798 N	103° 29' 2.936 W	
13,401.0	90.60	358.40	9,799.9	3,717.9	-35.2	387,035.44	763,069.92	32° 3' 40.728 N	103° 29' 2.960 W	
13,495.0	88.80	358.50	9,800.4	3,811.9	-37.7	387,129.40	763,068.98	32° 3' 41.658 N	103° 29' 2.981 W	
13,589.0	88.70	358.20	9,802.5	3,905.6	-40.4	387,223.34	763,064.28	32° 3' 42.588 N	103° 29' 3.004 W	
13,683.0	90.40	357.70	9,803.2	3,999.8	-43.8	387,317.27	763,060.91	32° 3' 43.517 N	103° 29' 3.034 W	
13,777.0	91.70	357.50	9,801.5	4,093.7	-47.7	387,411.17	763,056.98	32° 3' 44.447 N	103° 29' 3.071 W	
13,871.0	90.00	358.20	9,800.1	4,187.6	-51.2	387,505.09	763,053.45	32° 3' 45.378 N	103° 29' 3.104 W	
13,965.0	90.10	357.50	9,800.0	4,281.5	-54.8	387,599.02	763,049.93	32° 3' 46.308 N	103° 29' 3.136 W	
14,059.0	90.90	358.80	9,799.2	4,375.4	-59.4	387,692.90	763,045.25	32° 3' 47.238 N	103° 29' 3.162 W	
14,153.0	91.60	357.70	9,797.2	4,469.3	-64.0	387,786.77	763,040.74	32° 3' 48.165 N	103° 29' 3.226 W	
14,237.0	90.60	359.90	9,795.5	4,553.2	-65.7	387,880.73	763,038.98	32° 3' 48.996 N	103° 29' 3.238 W	
14,331.0	89.20	0.50	9,795.7	4,647.2	-65.4	387,974.73	763,039.31	32° 3' 49.926 N	103° 29' 3.226 W	
14,425.0	89.00	0.50	9,797.2	4,741.2	-64.6	388,068.71	763,040.13	32° 3' 50.856 N	103° 29' 3.208 W	
14,519.0	88.10	0.80	9,799.6	4,835.2	-63.5	388,162.68	763,041.20	32° 3' 51.786 N	103° 29' 3.181 W	
14,613.0	89.20	1.00	9,801.8	4,929.1	-62.0	388,256.84	763,042.67	32° 3' 52.715 N	103° 29' 3.161 W	
14,707.0	89.10	0.80	9,803.2	5,023.1	-60.5	388,350.81	763,044.15	32° 3' 53.645 N	103° 29' 3.135 W	
14,802.0	88.50	0.10	9,805.2	5,118.1	-59.8	388,445.59	763,044.90	32° 3' 54.585 N	103° 29' 3.118 W	
14,896.0	88.60	359.40	9,807.5	5,212.0	-60.2	388,539.56	763,044.49	32° 3' 55.515 N	103° 29' 3.114 W	
14,990.0	90.30	359.10	9,808.4	5,306.0	-61.4	388,633.54	763,043.28	32° 3' 56.445 N	103° 29' 3.120 W	
15,084.0	90.00	359.80	9,808.2	5,400.0	-62.3	388,727.54	763,042.35	32° 3' 57.375 N	103° 29' 3.122 W	
15,178.0	90.80	358.70	9,807.5	5,494.0	-63.6	388,821.52	763,041.12	32° 3' 58.305 N	103° 29' 3.127 W	
15,272.0	90.80	357.50	9,806.2	5,588.0	-66.7	388,915.46	763,038.01	32° 3' 59.235 N	103° 29' 3.155 W	
15,366.0	91.50	357.10	9,804.3	5,681.8	-71.1	389,009.34	763,033.58	32° 4' 0.164 N	103° 29' 3.198 W	
15,460.0	89.10	358.80	9,803.8	5,775.7	-76.1	389,103.20	763,028.58	32° 4' 1.094 N	103° 29' 3.247 W	
15,554.0	87.00	359.10	9,807.0	5,869.6	-79.5	389,197.07	763,025.22	32° 4' 2.023 N	103° 29' 3.278 W	
15,648.0	88.80	0.50	9,810.5	5,963.5	-79.8	389,290.90	763,024.89	32° 4' 2.952 N	103° 29' 3.273 W	
15,742.0	90.50	1.00	9,811.1	6,057.5	-78.6	389,384.99	763,028.12	32° 4' 3.882 N	103° 29' 3.250 W	
15,836.0	91.50	0.80	9,809.4	6,151.5	-77.1	389,478.98	763,027.60	32° 4' 4.812 N	103° 29' 3.225 W	
15,931.0	92.90	0.80	9,805.8	6,246.4	-75.8	389,573.88	763,028.92	32° 4' 5.751 N	103° 29' 3.200 W	
16,025.0	92.30	0.60	9,801.5	6,340.3	-74.6	389,667.77	763,030.07	32° 4' 6.680 N	103° 29' 3.179 W	
16,119.0	90.90	359.40	9,798.9	6,434.2	-74.6	389,761.73	763,030.07	32° 4' 7.610 N	103° 29' 3.170 W	
16,213.0	92.00	358.70	9,796.5	6,528.2	-76.2	389,855.69	763,028.51	32° 4' 8.540 N	103° 29' 3.179 W	
16,307.0	89.70	358.00	9,795.1	6,622.1	-78.9	389,949.63	763,025.81	32° 4' 9.470 N	103° 29' 3.202 W	
16,401.0	89.40	357.50	9,795.9	6,716.1	-82.6	390,043.56	763,022.12	32° 4' 10.399 N	103° 29' 3.237 W	
16,496.0	90.00	358.80	9,796.3	6,810.9	-87.3	390,137.44	763,017.39	32° 4' 11.339 N	103° 29' 3.283 W	
16,590.0	91.20	358.40	9,795.4	6,904.8	-92.9	390,231.26	763,011.82	32° 4' 12.268 N	103° 29' 3.339 W	
16,684.0	90.50	357.10	9,794.0	6,998.6	-96.2	390,325.10	763,006.48	32° 4' 13.197 N	103° 29' 3.392 W	
16,777.0	90.70	357.00	9,793.0	7,091.5	-103.0	390,418.97	763,001.70	32° 4' 14.118 N	103° 29' 3.439 W	
16,871.0	91.70	358.20	9,791.0	7,185.4	-108.9	390,512.87	762,997.77	32° 4' 15.045 N	103° 29' 3.477 W	
16,965.0	93.10	358.70	9,787.1	7,279.2	-109.5	390,606.75	762,995.23	32° 4' 15.975 N	103° 29' 3.498 W	
17,060.0	92.50	359.40	9,782.5	7,374.1	-111.0	390,700.62	762,993.65	32° 4' 16.914 N	103° 29' 3.507 W	
17,154.0	93.00	359.60	9,777.9	7,468.0	-111.9	390,794.51	762,992.84	32° 4' 17.843 N	103° 29' 3.508 W	
17,248.0	92.20	359.40	9,773.7	7,561.9	-112.7	390,888.41	762,992.02	32° 4' 18.772 N	103° 29' 3.509 W	
17,342.0	91.10	1.00	9,771.0	7,655.9	-112.4	390,982.36	762,992.34	32° 4' 19.702 N	103° 29' 3.497 W	



Wellplanning
Survey Report - Geographic

Company: COG Operating LLC
Project: Lea County, NM
Site: Gunner Federal
Well: #4H
Wellbore: OH
Design: OH

Local Co-ordinate Reference: Well #4H
TVD Reference: WELL @ 3361.0usft (Original Well Elev)
MD Reference: WELL @ 3361.0usft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1 Single User Db

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N-S (usft)	+E-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
17,436.0	91.20	1.30	9,769.1	7,749.8	-110.5	391,097.32	762,994.23	32° 4' 20.831 N	103° 29' 3.488 W
17,530.0	92.20	1.20	9,766.3	7,843.8	-108.4	391,191.26	762,996.28	32° 4' 21.561 N	103° 29' 3.434 W
17,624.0	93.20	1.20	9,761.9	7,937.6	-106.5	391,285.13	762,998.25	32° 4' 22.489 N	103° 29' 3.402 W
17,718.0	92.20	0.60	9,757.4	8,031.5	-105.0	391,379.02	762,999.72	32° 4' 23.418 N	103° 29' 3.377 W
17,812.0	89.90	0.10	9,755.7	8,125.5	-104.4	391,472.99	763,000.29	32° 4' 24.348 N	103° 29' 3.361 W
17,906.0	89.90	359.80	9,755.9	8,219.5	-104.5	391,566.99	763,000.21	32° 4' 25.278 N	103° 29' 3.354 W
18,000.0	91.90	359.90	9,754.4	8,313.5	-105.6	391,660.97	762,999.15	32° 4' 26.208 N	103° 29' 3.357 W
18,106.0	91.20	359.60	9,751.5	8,419.4	-106.9	391,766.92	762,997.76	32° 4' 27.257 N	103° 29' 3.361 W
18,200.0	92.30	359.80	9,748.7	8,513.4	-107.4	391,860.87	762,997.27	32° 4' 28.187 N	103° 29' 3.364 W
18,295.0	93.90	359.80	9,743.5	8,608.2	-107.8	391,955.73	762,996.94	32° 4' 29.125 N	103° 29' 3.356 W
18,389.0	93.50	359.40	9,737.5	8,702.0	-108.4	392,049.53	762,996.28	32° 4' 30.054 N	103° 29' 3.355 W
18,483.0	93.10	359.10	9,732.1	8,795.9	-109.6	392,143.37	762,995.05	32° 4' 30.982 N	103° 29' 3.361 W
18,577.0	92.00	359.40	9,727.9	8,889.8	-110.9	392,237.26	762,993.82	32° 4' 31.912 N	103° 29' 3.367 W
18,670.0	92.50	359.60	9,724.2	8,982.7	-111.7	392,330.19	762,993.01	32° 4' 32.831 N	103° 29' 3.367 W
18,764.0	92.30	359.40	9,720.3	9,076.6	-112.5	392,424.10	762,992.19	32° 4' 33.761 N	103° 29' 3.368 W
18,858.0	91.20	359.60	9,717.4	9,170.6	-113.3	392,518.05	762,991.37	32° 4' 34.690 N	103° 29' 3.369 W
18,953.0	91.90	359.20	9,714.8	9,265.5	-114.3	392,613.01	762,990.38	32° 4' 35.630 N	103° 29' 3.372 W
19,047.0	90.00	358.90	9,713.3	9,359.5	-115.9	392,706.96	762,988.82	32° 4' 36.560 N	103° 29' 3.382 W
19,141.0	89.30	357.80	9,713.9	9,453.4	-118.6	392,800.94	762,986.11	32° 4' 37.490 N	103° 29' 3.405 W
19,235.0	91.50	357.50	9,713.2	9,547.4	-122.4	392,894.85	762,982.26	32° 4' 38.420 N	103° 29' 3.441 W
19,329.0	92.90	357.50	9,709.6	9,641.2	-126.5	392,988.69	762,978.16	32° 4' 39.349 N	103° 29' 3.480 W
19,423.0	92.10	358.00	9,705.5	9,735.0	-130.2	393,082.53	762,974.48	32° 4' 40.277 N	103° 29' 3.514 W
19,517.0	92.60	357.70	9,701.6	9,828.9	-133.7	393,176.38	762,970.95	32° 4' 41.206 N	103° 29' 3.546 W
19,611.0	94.30	358.00	9,696.0	9,922.6	-137.3	393,270.14	762,967.43	32° 4' 42.135 N	103° 29' 3.579 W
19,726.2	94.30	358.00	9,687.3	10,037.5	-141.3	393,364.95	762,963.42	32° 4' 43.271 N	103° 29' 3.615 W
PBHL(GFed#4H)									
19,730.0	94.30	358.00	9,687.1	10,041.2	-141.4	393,368.74	762,963.29	32° 4' 43.308 N	103° 29' 3.616 W

Checked By: _____ Approved By: _____ Date: _____