

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

State of New Mexico
Energy, Minerals & Natural Resources

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

Form C-104
Revised August 1, 2011

Submit one copy to appropriate District Office

☒ AMENDED REPORT

I. REQUEST FOR ALLOWABLE AND AUTHORIZATION TO TRANSPORT

¹ Operator name and Address COG Operating LLC 2208 W. Main Street Artesia, NM 88210		² OGRID Number 229137	
		³ Reason for Filing Code/ Effective Date NW	
API Number 30-025-47171	⁵ Pool Name Bobcat Draw; Upper Wolfcamp		⁶ Pool Code 98094
⁷ Property Code 39912	⁸ Property Name Gunner 8 Federal Com		⁹ Well Number 703H

II. 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
C	5	26S	34E		220	North	2010	West	Lea

¹¹ Bottom Hole Location

Ul or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South Line	Feet from the	East/West line	County
N	8	26S	34E		51	South	2295	West	Lea
¹² Lse Code F	¹³ Producing Method Code F		¹⁴ Gas Connection Date 1/13/21		¹⁵ C-129 Permit Number		¹⁶ C-129 Effective Date		¹⁷ C-129 Expiration Date

III. Oil and Gas Transporters

¹⁸ Transporter OGRID	¹⁹ Transporter Name and Address	²⁰ O/G/W
	ACC	O
298751	ETC	G
278421	Holly Refining and Marketing PO Box 159 Artesia, NM 88210	O

IV. Well Completion Data

²¹ Spud Date 3/19/20	²² Ready Date 1/13/21	²³ TD 22,997’	²⁴ PBTD 22,870’	²⁵ Perforations 12,964-22,845’	²⁶ DHC, MC
²⁷ Hole Size		²⁸ Casing & Tubing Size		²⁹ Depth Set	³⁰ Sacks Cement
17 1/2”		13 3/8”		395’	645
12 1/4” 9 7/8”		10 3/4” 7 5/8”		2,944’ 9,190”	550 760
6 3/4”		5 1/2”		22,979’	1295
		2 7/8”		12,262’	

V. Well Test Data

³¹ Date New Oil 1/13/21	³² Gas Delivery Date 1/13/21	³³ Test Date 1/13/21	³⁴ Test Length 24 Hrs	³⁵ Tbg. Pressure 4800#	³⁶ Csg. Pressure 1100#
³⁷ Choke Size 13/64	³⁸ Oil 392	³⁹ Water 1723	⁴⁰ Gas 696		⁴¹ Test Method Flowing
⁴² I hereby certify that the rules of the Oil Conservation Division have been complied with and that the information given above is true and complete to the best of my knowledge and belief. Signature: <i>Amanda Avery</i>			OIL CONSERVATION DIVISION Approved by: KURT SIMMONS Title: NMOCD, SANTA FE Approval Date: 04/14/2021		
Printed name: Amanda Avery					
Title: Regulatory Analyst					
E-mail Address:					
Date: 3/17/21		Phone: 575-748-6962			

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

DISTRICT II
511 S. FIRST ST., ARTESIA, NM 88210
Phone: (575) 746-1283 Fax: (575) 746-9720

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

As Drilled

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number 30-025-47171	Pool Code 98094	Pool Name Bobcat Draw; Upper Wolfcamp
Property Code 39912	Property Name GUNNER 8 FEDERAL COM	Well Number 703H
OGRID No. 229137	Operator Name COG OPERATING, LLC	Elevation 3339.7'

Surface Location

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
C	5	26-S	34-E		220	NORTH	2010	WEST	LEA

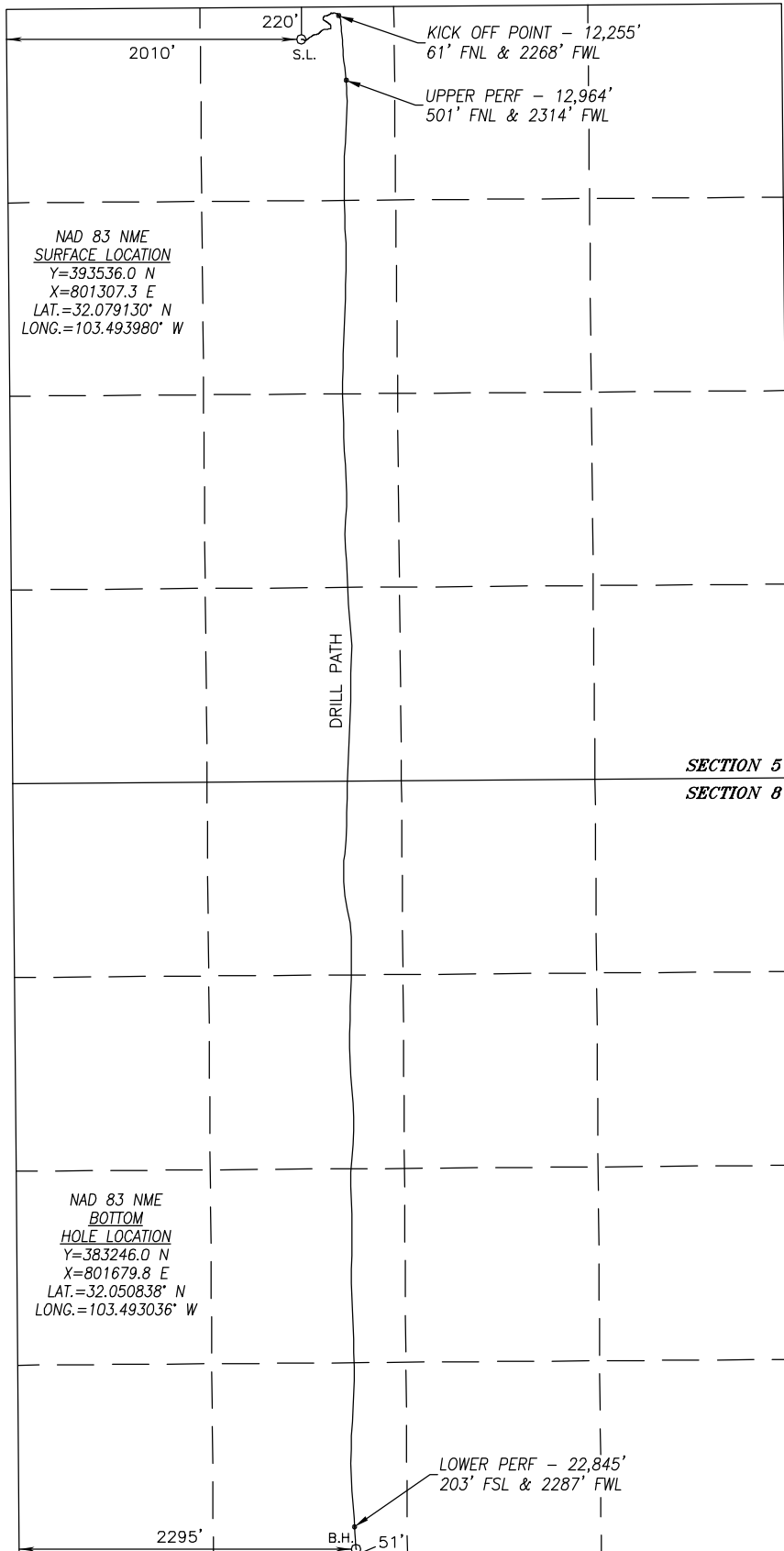
Bottom Hole Location If Different From Surface

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
N	8	26-S	34-E		51	SOUTH	2295	WEST	LEA
Dedicated Acres 640	Joint or Infill	Consolidation Code	Order No.						

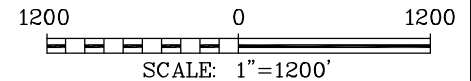
NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED
OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION

SEE PAGE 2

Property Code 39912	Property Name GUNNER 8 FEDERAL COM	Well Number 703H
OGRID No. 229137	Operator Name COG OPERATING, LLC	Elevation 3339.7'



SURFACE INFO AND BOREPATH SHOWN HEREON IS BASED ON DIRECTIONAL SURVEY REPORT PROVIDED BY COG OPERATING, LLC FOR THE GUNNER 8 FEDERAL COM #703H SUPPLIED TO HARCROW SURVEYING, LLC ON DECEMBER 9, 2020



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.

1/4/21

Signature

Date

Amanda Avery

Printed Name

Amanda Avery

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.

NOV. 15, 2019/JULY 29, 2020

Date of Survey/Date of Geographic Survey

Signature & Seal of Professional Surveyor



12/11/20
Certificate No. CHAD HARCROW 17777

PAGE 2 OF 2

W.O. #20-1661

DRAWN BY: WN



COG Operating LLC

Lea County, NM (NAD27 NME)

Gunner 8 Federal Com

703H

OH / 66565

Design: Surveys (McVay 8)

Standard Survey Report

29 July, 2020





Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 703H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	RKB @ 3365.70usft (McVay 8)
Site:	Gunner 8 Federal Com	MD Reference:	RKB @ 3365.70usft (McVay 8)
Well:	703H	North Reference:	Grid
Wellbore:	OH / 66565	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (McVay 8)	Database:	USA Compass

Project	Lea County, NM (NAD27 NME)		
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 Com		
Site Position:		Northing:	393,259.80 usft
From:	Map	Easting:	759,100.10 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 4' 42.331178 N
		Longitude:	103° 29' 48.524929 W
		Grid Convergence:	0.44 °

Well	703H		
Well Position	+N/-S	0.00 usft	Northing: 393,478.60 usft
	+E/-W	0.00 usft	Easting: 760,120.20 usft
Position Uncertainty	1.00 usft	Wellhead Elevation:	usft
		Latitude:	32° 4' 44.417893 N
		Longitude:	103° 29' 36.649778 W
		Ground Level:	3,339.70 usft

Wellbore	OH / 66565		
Magnetics	Model Name	Sample Date	Declination (°)
	MVHD	6/24/2020	6.47
			Dip Angle (°) 59.70
			Field Strength (nT) 47,612.29857436

Design	Surveys (McVay 8)		
Audit Notes:			
Version:	1.0	Phase:	ACTUAL
		Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)
	0.00	0.00	0.00
			Direction (°) 177.85

Survey Program	Date	7/29/2020		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
100.00	12,305.00	Scientific Gyro Surveys (OH / 66565)	Scientific Keeper	Scientific Drilling Intl. Standard Wireline Keeper
11,901.00	22,997.00	Gordon MWD Surveys (OH / 66565)	MWD+IFR1+FDIR	OWSG MWD + IFR1 + FDIR Correction

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)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
100.00	0.84	86.55	100.00	0.04	0.73	-0.02	0.84	0.84	0.00	
125.00	0.84	79.23	124.99	0.09	1.09	-0.05	0.43	0.00	-29.28	
150.00	0.93	79.27	149.99	0.16	1.47	-0.11	0.36	0.36	0.16	
175.00	0.95	78.35	174.99	0.24	1.88	-0.17	0.10	0.08	-3.68	
200.00	0.92	81.06	199.98	0.31	2.28	-0.23	0.21	-0.12	10.84	
225.00	0.98	80.25	224.98	0.38	2.69	-0.28	0.25	0.24	-3.24	
250.00	0.96	80.48	249.98	0.45	3.10	-0.34	0.08	-0.08	0.92	
275.00	1.14	85.56	274.97	0.51	3.56	-0.37	0.81	0.72	20.32	
300.00	1.05	86.55	299.97	0.54	4.03	-0.39	0.37	-0.36	3.96	



Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 703H
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Site:	Gunner 8 Federal Com	MD Reference:	RKB @ 3365.70usft (McVay 8)
Well:	703H	North Reference:	Grid
Wellbore:	OH / 66565	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (McVay 8)	Database:	USA Compass

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)
325.00	1.00	87.15	324.96	0.56	4.48	-0.40	0.20	-0.20	2.40
350.00	1.01	88.62	349.96	0.58	4.92	-0.40	0.11	0.04	5.88
375.00	1.02	87.45	374.96	0.60	5.36	-0.39	0.09	0.04	-4.68
400.00	1.06	87.84	399.95	0.61	5.82	-0.40	0.16	0.16	1.56
425.00	1.09	89.37	424.95	0.63	6.28	-0.39	0.17	0.12	6.12
450.00	1.02	89.76	449.94	0.63	6.74	-0.38	0.28	-0.28	1.56
475.00	1.05	92.46	474.94	0.62	7.20	-0.35	0.23	0.12	10.80
500.00	1.14	91.28	499.94	0.60	7.67	-0.32	0.37	0.36	-4.72
525.00	1.09	91.27	524.93	0.59	8.16	-0.29	0.20	-0.20	-0.04
550.00	1.16	97.69	549.93	0.55	8.65	-0.23	0.58	0.28	25.68
575.00	1.19	98.16	574.92	0.48	9.16	-0.14	0.13	0.12	1.88
600.00	1.19	101.10	599.91	0.40	9.67	-0.03	0.24	0.00	11.76
625.00	1.15	100.69	624.91	0.30	10.17	0.08	0.16	-0.16	-1.64
650.00	1.13	99.52	649.90	0.21	10.66	0.19	0.12	-0.08	-4.68
675.00	1.19	95.80	674.90	0.15	11.16	0.27	0.39	0.24	-14.88
700.00	1.24	95.54	699.89	0.09	11.69	0.34	0.20	0.20	-1.04
725.00	1.24	97.40	724.89	0.03	12.23	0.43	0.16	0.00	7.44
750.00	1.25	104.02	749.88	-0.07	12.76	0.55	0.58	0.04	26.48
775.00	1.22	107.19	774.88	-0.21	13.28	0.71	0.30	-0.12	12.68
800.00	1.23	113.28	799.87	-0.40	13.78	0.91	0.52	0.04	24.36
825.00	1.21	116.25	824.87	-0.62	14.26	1.15	0.27	-0.08	11.88
850.00	1.23	111.99	849.86	-0.84	14.75	1.39	0.37	0.08	-17.04
875.00	1.27	113.95	874.85	-1.05	15.25	1.62	0.23	0.16	7.84
900.00	1.30	114.99	899.85	-1.28	15.76	1.87	0.15	0.12	4.16
925.00	1.37	120.13	924.84	-1.55	16.27	2.16	0.55	0.28	20.56
950.00	1.40	128.05	949.83	-1.89	16.77	2.52	0.77	0.12	31.68
975.00	1.42	129.36	974.83	-2.28	17.25	2.92	0.15	0.08	5.24
1,000.00	1.37	128.41	999.82	-2.66	17.73	3.32	0.22	-0.20	-3.80
1,025.00	1.36	130.25	1,024.81	-3.03	18.19	3.72	0.18	-0.04	7.36
1,050.00	1.34	129.13	1,049.80	-3.41	18.64	4.11	0.13	-0.08	-4.48
1,075.00	1.40	124.87	1,074.80	-3.77	19.12	4.48	0.47	0.24	-17.04
1,100.00	1.38	128.86	1,099.79	-4.13	19.60	4.87	0.40	-0.08	15.96
1,125.00	1.32	126.33	1,124.78	-4.49	20.07	5.24	0.34	-0.24	-10.12
1,150.00	1.29	128.63	1,149.78	-4.84	20.52	5.61	0.24	-0.12	9.20
1,175.00	1.24	131.15	1,174.77	-5.19	20.94	5.98	0.30	-0.20	10.08
1,200.00	1.19	124.67	1,199.76	-5.52	21.36	6.32	0.58	-0.20	-25.92
1,225.00	1.23	123.75	1,224.76	-5.82	21.80	6.63	0.18	0.16	-3.68
1,250.00	1.23	124.01	1,249.75	-6.11	22.24	6.94	0.02	0.00	1.04
1,275.00	1.22	129.13	1,274.75	-6.43	22.67	7.28	0.44	-0.04	20.48
1,300.00	1.25	126.09	1,299.74	-6.76	23.10	7.62	0.29	0.12	-12.16
1,325.00	1.18	123.15	1,324.74	-7.06	23.54	7.94	0.37	-0.28	-11.76
1,350.00	1.16	122.60	1,349.73	-7.34	23.96	8.23	0.09	-0.08	-2.20
1,375.00	1.20	122.56	1,374.73	-7.62	24.40	8.53	0.16	0.16	-0.16



Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 703H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	RKB @ 3365.70usft (McVay 8)
Site:	Gunner 8 Federal Com	MD Reference:	RKB @ 3365.70usft (McVay 8)
Well:	703H	North Reference:	Grid
Wellbore:	OH / 66565	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (McVay 8)	Database:	USA Compass

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)	
1,400.00	1.25	117.58	1,399.72	-7.88	24.86	8.81	0.47	0.20	-19.92	
1,425.00	1.19	117.39	1,424.71	-8.13	25.33	9.07	0.24	-0.24	-0.76	
1,450.00	1.17	127.58	1,449.71	-8.40	25.77	9.37	0.84	-0.08	40.76	
1,475.00	1.12	119.22	1,474.70	-8.68	26.18	9.66	0.70	-0.20	-33.44	
1,500.00	1.08	112.74	1,499.70	-8.89	26.61	9.88	0.52	-0.16	-25.92	
1,525.00	1.07	111.98	1,524.69	-9.07	27.05	10.08	0.07	-0.04	-3.04	
1,550.00	1.06	111.40	1,549.69	-9.24	27.48	10.26	0.06	-0.04	-2.32	
1,575.00	1.07	110.13	1,574.69	-9.41	27.91	10.45	0.10	0.04	-5.08	
1,600.00	1.13	102.66	1,599.68	-9.54	28.37	10.60	0.62	0.24	-29.88	
1,625.00	1.60	77.19	1,624.67	-9.52	28.95	10.60	3.03	1.88	-101.88	
1,650.00	2.18	59.97	1,649.66	-9.20	29.70	10.31	3.22	2.32	-68.88	
1,675.00	2.31	55.99	1,674.64	-8.68	30.53	9.82	0.81	0.52	-15.92	
1,700.00	2.35	53.98	1,699.62	-8.10	31.37	9.27	0.36	0.16	-8.04	
1,725.00	2.34	52.00	1,724.60	-7.48	32.18	8.68	0.33	-0.04	-7.92	
1,750.00	2.35	51.39	1,749.58	-6.85	32.98	8.08	0.11	0.04	-2.44	
1,775.00	2.29	49.15	1,774.56	-6.20	33.76	7.46	0.43	-0.24	-8.96	
1,800.00	2.31	49.52	1,799.54	-5.55	34.52	6.84	0.10	0.08	1.48	
1,825.00	2.24	50.34	1,824.52	-4.91	35.28	6.23	0.31	-0.28	3.28	
1,850.00	2.16	49.50	1,849.50	-4.29	36.02	5.64	0.35	-0.32	-3.36	
1,875.00	2.14	48.99	1,874.48	-3.68	36.73	5.05	0.11	-0.08	-2.04	
1,900.00	2.18	49.48	1,899.47	-3.06	37.44	4.47	0.18	0.16	1.96	
1,925.00	2.20	50.64	1,924.45	-2.45	38.17	3.88	0.19	0.08	4.64	
1,950.00	2.16	50.86	1,949.43	-1.85	38.91	3.31	0.16	-0.16	0.88	
1,975.00	2.11	51.36	1,974.41	-1.26	39.64	2.75	0.21	-0.20	2.00	
2,000.00	2.06	48.98	1,999.40	-0.68	40.33	2.19	0.40	-0.20	-9.52	
2,025.00	2.13	47.79	2,024.38	-0.07	41.02	1.61	0.33	0.28	-4.76	
2,050.00	2.11	46.06	2,049.36	0.56	41.69	1.01	0.27	-0.08	-6.92	
2,075.00	2.15	46.71	2,074.34	1.20	42.37	0.39	0.19	0.16	2.60	
2,100.00	2.26	47.01	2,099.33	1.86	43.07	-0.24	0.44	0.44	1.20	
2,125.00	2.16	47.06	2,124.31	2.51	43.77	-0.87	0.40	-0.40	0.20	
2,150.00	2.16	48.87	2,149.29	3.14	44.47	-1.47	0.27	0.00	7.24	
2,175.00	2.22	49.76	2,174.27	3.77	45.20	-2.07	0.28	0.24	3.56	
2,200.00	2.29	50.79	2,199.25	4.39	45.95	-2.67	0.32	0.28	4.12	
2,225.00	2.49	51.72	2,224.23	5.05	46.77	-3.29	0.81	0.80	3.72	
2,250.00	2.48	53.32	2,249.21	5.71	47.63	-3.92	0.28	-0.04	6.40	
2,275.00	2.52	53.75	2,274.18	6.35	48.50	-4.53	0.18	0.16	1.72	
2,300.00	2.78	54.24	2,299.16	7.03	49.44	-5.17	1.04	1.04	1.96	
2,325.00	2.72	53.49	2,324.13	7.74	50.41	-5.84	0.28	-0.24	-3.00	
2,350.00	2.85	55.22	2,349.10	8.45	51.40	-6.51	0.62	0.52	6.92	
2,375.00	3.18	55.86	2,374.06	9.19	52.48	-7.22	1.33	1.32	2.56	
2,400.00	3.25	56.19	2,399.02	9.98	53.64	-7.96	0.29	0.28	1.32	
2,425.00	3.35	56.86	2,423.98	10.77	54.84	-8.70	0.43	0.40	2.68	
2,450.00	3.87	55.47	2,448.93	11.65	56.15	-9.53	2.11	2.08	-5.56	



Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 703H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	RKB @ 3365.70usft (McVay 8)
Site:	Gunner 8 Federal Com	MD Reference:	RKB @ 3365.70usft (McVay 8)
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Design:	Surveys (McVay 8)	Database:	USA Compass

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)	
2,475.00	3.62	56.42	2,473.88	12.56	57.50	-10.40	1.03	-1.00	3.80	
2,500.00	3.63	57.43	2,498.83	13.42	58.83	-11.21	0.26	0.04	4.04	
2,525.00	3.76	57.99	2,523.78	14.28	60.19	-12.02	0.54	0.52	2.24	
2,550.00	3.83	58.60	2,548.72	15.15	61.60	-12.83	0.32	0.28	2.44	
2,575.00	3.86	58.11	2,573.67	16.03	63.02	-13.66	0.18	0.12	-1.96	
2,600.00	3.92	57.94	2,598.61	16.93	64.46	-14.50	0.24	0.24	-0.68	
2,625.00	3.91	57.86	2,623.55	17.84	65.91	-15.35	0.05	-0.04	-0.32	
2,650.00	3.52	57.61	2,648.50	18.70	67.28	-16.17	1.56	-1.56	-1.00	
2,675.00	3.15	55.27	2,673.45	19.51	68.49	-16.92	1.58	-1.48	-9.36	
2,700.00	3.00	54.23	2,698.42	20.28	69.59	-17.65	0.64	-0.60	-4.16	
2,725.00	2.94	54.78	2,723.39	21.03	70.64	-18.37	0.27	-0.24	2.20	
2,750.00	2.93	55.16	2,748.35	21.77	71.69	-19.06	0.09	-0.04	1.52	
2,775.00	3.00	54.62	2,773.32	22.51	72.75	-19.77	0.30	0.28	-2.16	
2,800.00	3.04	55.48	2,798.28	23.26	73.83	-20.48	0.24	0.16	3.44	
2,825.00	3.16	56.14	2,823.25	24.02	74.94	-21.20	0.50	0.48	2.64	
2,850.00	3.14	57.57	2,848.21	24.78	76.09	-21.90	0.32	-0.08	5.72	
2,875.00	3.32	57.69	2,873.17	25.53	77.28	-22.61	0.72	0.72	0.48	
2,900.00	3.46	57.71	2,898.13	26.32	78.53	-23.35	0.56	0.56	0.08	
2,925.00	3.47	58.99	2,923.08	27.11	79.82	-24.10	0.31	0.04	5.12	
2,950.00	3.65	60.30	2,948.03	27.90	81.16	-24.83	0.79	0.72	5.24	
2,975.00	3.60	61.34	2,972.98	28.67	82.54	-25.55	0.33	-0.20	4.16	
3,000.00	3.64	62.08	2,997.93	29.41	83.93	-26.25	0.25	0.16	2.96	
3,025.00	3.61	63.99	3,022.88	30.13	85.34	-26.91	0.50	-0.12	7.64	
3,050.00	3.48	69.65	3,047.83	30.74	86.76	-27.46	1.49	-0.52	22.64	
3,075.00	3.24	78.53	3,072.79	31.15	88.16	-27.82	2.29	-0.96	35.52	
3,100.00	3.33	79.88	3,097.75	31.41	89.57	-28.03	0.47	0.36	5.40	
3,125.00	3.48	82.18	3,122.71	31.64	91.03	-28.21	0.81	0.60	9.20	
3,150.00	3.70	82.67	3,147.66	31.85	92.59	-28.35	0.89	0.88	1.96	
3,175.00	4.03	82.84	3,172.60	32.06	94.26	-28.50	1.32	1.32	0.68	
3,200.00	4.18	82.55	3,197.54	32.29	96.03	-28.66	0.61	0.60	-1.16	
3,225.00	4.18	82.55	3,222.47	32.53	97.84	-28.83	0.00	0.00	0.00	
3,250.00	3.89	78.40	3,247.41	32.82	99.57	-29.06	1.65	-1.16	-16.60	
3,275.00	3.77	74.46	3,272.35	33.21	101.20	-29.39	1.16	-0.48	-15.76	
3,300.00	3.81	74.71	3,297.30	33.65	102.79	-29.77	0.17	0.16	1.00	
3,325.00	3.81	74.75	3,322.24	34.08	104.39	-30.14	0.01	0.00	0.16	
3,350.00	3.85	75.03	3,347.19	34.52	106.00	-30.52	0.18	0.16	1.12	
3,375.00	3.96	73.91	3,372.13	34.97	107.64	-30.91	0.54	0.44	-4.48	
3,400.00	4.16	73.90	3,397.07	35.46	109.35	-31.34	0.80	0.80	-0.04	
3,425.00	4.15	73.46	3,422.00	35.97	111.08	-31.78	0.13	-0.04	-1.76	
3,450.00	4.20	73.32	3,446.93	36.49	112.83	-32.24	0.20	0.20	-0.56	
3,475.00	4.20	73.79	3,471.87	37.01	114.58	-32.69	0.14	0.00	1.88	
3,500.00	4.23	72.13	3,496.80	37.55	116.34	-33.16	0.50	0.12	-6.64	
3,525.00	4.05	66.62	3,521.73	38.18	118.03	-33.73	1.75	-0.72	-22.04	
3,550.00	3.95	50.61	3,546.67	39.08	119.50	-34.57	4.47	-0.40	-64.04	



Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 703H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	RKB @ 3365.70usft (McVay 8)
Site:	Gunner 8 Federal Com	MD Reference:	RKB @ 3365.70usft (McVay 8)
Well:	703H	North Reference:	Grid
Wellbore:	OH / 66565	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (McVay 8)	Database:	USA Compass

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)
3,575.00	3.91	39.93	3,571.62	40.28	120.72	-35.72	2.93	-0.16	-42.72
3,600.00	3.92	38.33	3,596.56	41.60	121.79	-37.01	0.44	0.04	-6.40
3,625.00	4.01	39.53	3,621.50	42.95	122.88	-38.31	0.49	0.36	4.80
3,650.00	4.04	39.71	3,646.44	44.30	124.00	-39.62	0.13	0.12	0.72
3,675.00	3.92	40.89	3,671.38	45.62	125.12	-40.90	0.58	-0.48	4.72
3,700.00	3.85	42.35	3,696.32	46.89	126.25	-42.12	0.48	-0.28	5.84
3,725.00	3.73	43.88	3,721.26	48.10	127.37	-43.28	0.63	-0.48	6.12
3,750.00	3.73	44.73	3,746.21	49.26	128.51	-44.41	0.22	0.00	3.40
3,775.00	3.65	44.23	3,771.16	50.41	129.64	-45.51	0.34	-0.32	-2.00
3,800.00	3.61	44.63	3,796.11	51.54	130.75	-46.60	0.19	-0.16	1.60
3,825.00	3.58	45.23	3,821.06	52.65	131.85	-47.67	0.19	-0.12	2.40
3,850.00	3.63	46.54	3,846.01	53.74	132.98	-48.72	0.39	0.20	5.24
3,875.00	3.64	46.46	3,870.96	54.83	134.13	-49.76	0.04	0.04	-0.32
3,900.00	3.57	48.59	3,895.91	55.90	135.29	-50.78	0.60	-0.28	8.52
3,925.00	3.66	49.79	3,920.86	56.93	136.48	-51.77	0.47	0.36	4.80
3,950.00	3.61	50.24	3,945.81	57.94	137.70	-52.74	0.23	-0.20	1.80
3,975.00	3.66	51.72	3,970.76	58.94	138.93	-53.69	0.43	0.20	5.92
4,000.00	3.71	52.34	3,995.71	59.93	140.20	-54.63	0.26	0.20	2.48
4,025.00	3.78	54.85	4,020.65	60.90	141.51	-55.55	0.71	0.28	10.04
4,050.00	3.90	59.28	4,045.60	61.81	142.92	-56.40	1.28	0.48	17.72
4,075.00	3.91	59.26	4,070.54	62.68	144.38	-57.22	0.04	0.04	-0.08
4,100.00	3.97	61.74	4,095.48	63.52	145.87	-58.01	0.72	0.24	9.92
4,125.00	4.36	63.53	4,120.42	64.36	147.49	-58.78	1.64	1.56	7.16
4,150.00	4.13	64.72	4,145.35	65.16	149.15	-59.52	0.99	-0.92	4.76
4,175.00	3.97	66.00	4,170.28	65.90	150.76	-60.20	0.74	-0.64	5.12
4,200.00	3.16	66.65	4,195.24	66.53	152.18	-60.77	3.24	-3.24	2.60
4,225.00	2.31	64.08	4,220.21	67.02	153.26	-61.22	3.43	-3.40	-10.28
4,250.00	1.98	63.21	4,245.19	67.43	154.10	-61.61	1.33	-1.32	-3.48
4,275.00	1.85	66.62	4,270.18	67.79	154.86	-61.93	0.69	-0.52	13.64
4,300.00	1.89	69.94	4,295.16	68.09	155.62	-62.20	0.46	0.16	13.28
4,325.00	1.89	70.62	4,320.15	68.37	156.39	-62.45	0.09	0.00	2.72
4,350.00	1.95	74.59	4,345.13	68.62	157.19	-62.67	0.58	0.24	15.88
4,375.00	2.14	79.85	4,370.12	68.81	158.06	-62.84	1.07	0.76	21.04
4,400.00	2.24	79.75	4,395.10	68.98	159.00	-62.97	0.40	0.40	-0.40
4,425.00	2.27	86.19	4,420.08	69.10	159.98	-63.05	1.02	0.12	25.76
4,450.00	2.59	88.76	4,445.06	69.15	161.04	-63.06	1.35	1.28	10.28
4,475.00	2.87	90.31	4,470.03	69.16	162.23	-63.02	1.16	1.12	6.20
4,500.00	3.10	91.75	4,495.00	69.13	163.53	-62.95	0.97	0.92	5.76
4,525.00	3.44	95.98	4,519.96	69.03	164.95	-62.80	1.67	1.36	16.92
4,550.00	3.80	96.44	4,544.91	68.86	166.52	-62.57	1.44	1.44	1.84
4,575.00	4.02	96.04	4,569.85	68.68	168.21	-62.32	0.89	0.88	-1.60
4,600.00	4.30	91.37	4,594.78	68.56	170.02	-62.14	1.76	1.12	-18.68
4,625.00	4.67	85.06	4,619.71	68.63	171.97	-62.13	2.46	1.48	-25.24



Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 703H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	RKB @ 3365.70usft (McVay 8)
Site:	Gunner 8 Federal Com	MD Reference:	RKB @ 3365.70usft (McVay 8)
Well:	703H	North Reference:	Grid
Wellbore:	OH / 66565	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (McVay 8)	Database:	USA Compass

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)
4,650.00	4.85	82.20	4,644.62	68.86	174.03	-62.28	1.19	0.72	-11.44
4,675.00	4.76	81.44	4,669.53	69.16	176.11	-62.50	0.44	-0.36	-3.04
4,700.00	4.82	81.75	4,694.44	69.46	178.17	-62.73	0.26	0.24	1.24
4,725.00	4.73	81.62	4,719.36	69.76	180.23	-62.95	0.36	-0.36	-0.52
4,750.00	4.30	79.79	4,744.28	70.08	182.17	-63.20	1.81	-1.72	-7.32
4,775.00	3.17	78.41	4,769.23	70.38	183.77	-63.44	4.53	-4.52	-5.52
4,800.00	2.92	78.45	4,794.19	70.65	185.07	-63.66	1.00	-1.00	0.16
4,825.00	2.92	78.65	4,819.16	70.90	186.32	-63.86	0.04	0.00	0.80
4,850.00	2.90	80.50	4,844.13	71.13	187.57	-64.05	0.38	-0.08	7.40
4,875.00	2.89	80.73	4,869.09	71.34	188.82	-64.21	0.06	-0.04	0.92
4,900.00	2.92	79.30	4,894.06	71.56	190.06	-64.38	0.31	0.12	-5.72
4,925.00	3.01	79.14	4,919.03	71.80	191.33	-64.57	0.36	0.36	-0.64
4,950.00	2.96	79.15	4,943.99	72.05	192.61	-64.77	0.20	-0.20	0.04
4,975.00	3.07	81.49	4,968.96	72.27	193.91	-64.94	0.66	0.44	9.36
5,000.00	3.19	84.78	4,993.92	72.43	195.26	-65.05	0.86	0.48	13.16
5,025.00	3.24	83.21	5,018.88	72.58	196.66	-65.15	0.41	0.20	-6.28
5,050.00	2.75	76.61	5,043.85	72.80	197.94	-65.32	2.39	-1.96	-26.40
5,075.00	1.98	50.00	5,068.83	73.22	198.86	-65.70	5.29	-3.08	-106.44
5,100.00	2.00	19.97	5,093.81	73.90	199.34	-66.37	4.12	0.08	-120.12
5,125.00	1.92	14.42	5,118.80	74.72	199.59	-67.18	0.82	-0.32	-22.20
5,150.00	1.84	17.73	5,143.79	75.51	199.82	-67.96	0.54	-0.32	13.24
5,175.00	1.84	14.50	5,168.77	76.28	200.04	-68.72	0.41	0.00	-12.92
5,200.00	1.82	14.97	5,193.76	77.05	200.24	-69.48	0.10	-0.08	1.88
5,225.00	1.81	7.99	5,218.75	77.82	200.40	-70.25	0.88	-0.04	-27.92
5,250.00	1.64	9.08	5,243.74	78.57	200.51	-70.99	0.69	-0.68	4.36
5,275.00	1.70	4.63	5,268.73	79.29	200.60	-71.71	0.57	0.24	-17.80
5,300.00	1.62	8.17	5,293.72	80.01	200.68	-72.43	0.52	-0.32	14.16
5,325.00	1.71	4.98	5,318.70	80.73	200.76	-73.14	0.52	0.36	-12.76
5,350.00	1.67	5.70	5,343.69	81.47	200.83	-73.87	0.18	-0.16	2.88
5,375.00	1.76	4.24	5,368.68	82.21	200.89	-74.62	0.40	0.36	-5.84
5,400.00	1.69	6.26	5,393.67	82.96	200.96	-75.36	0.37	-0.28	8.08
5,425.00	1.70	2.57	5,418.66	83.70	201.02	-76.10	0.44	0.04	-14.76
5,450.00	1.67	4.43	5,443.65	84.43	201.06	-76.83	0.25	-0.12	7.44
5,475.00	1.78	359.12	5,468.64	85.18	201.08	-77.58	0.78	0.44	-21.24
5,500.00	1.62	359.03	5,493.63	85.92	201.07	-78.32	0.64	-0.64	-0.36
5,525.00	1.66	357.00	5,518.62	86.64	201.05	-79.04	0.28	0.16	-8.12
5,550.00	1.70	357.17	5,543.61	87.37	201.01	-79.77	0.16	0.16	0.68
5,575.00	1.70	355.46	5,568.60	88.11	200.96	-80.51	0.20	0.00	-6.84
5,600.00	1.64	356.52	5,593.58	88.84	200.91	-81.24	0.27	-0.24	4.24
5,625.00	1.73	354.63	5,618.57	89.57	200.86	-81.97	0.42	0.36	-7.56
5,650.00	1.50	358.64	5,643.56	90.27	200.81	-82.68	1.02	-0.92	16.04
5,675.00	1.59	355.55	5,668.55	90.95	200.78	-83.35	0.49	0.36	-12.36
5,700.00	1.60	355.45	5,693.55	91.64	200.72	-84.05	0.04	0.04	-0.40



Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 703H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	RKB @ 3365.70usft (McVay 8)
Site:	Gunner 8 Federal Com	MD Reference:	RKB @ 3365.70usft (McVay 8)
Well:	703H	North Reference:	Grid
Wellbore:	OH / 66565	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (McVay 8)	Database:	USA Compass

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)
5,725.00	1.56	352.79	5,718.54	92.33	200.65	-84.73	0.33	-0.16	-10.64
5,750.00	1.48	350.98	5,743.53	92.98	200.56	-85.39	0.37	-0.32	-7.24
5,775.00	1.46	346.71	5,768.52	93.61	200.44	-86.03	0.45	-0.08	-17.08
5,800.00	1.40	346.24	5,793.51	94.22	200.29	-86.64	0.24	-0.24	-1.88
5,825.00	1.36	345.45	5,818.50	94.80	200.14	-87.23	0.18	-0.16	-3.16
5,850.00	1.32	343.44	5,843.50	95.36	199.99	-87.79	0.25	-0.16	-8.04
5,875.00	1.32	336.98	5,868.49	95.91	199.79	-88.34	0.59	0.00	-25.84
5,900.00	1.30	335.70	5,893.48	96.43	199.56	-88.87	0.14	-0.08	-5.12
5,925.00	1.24	333.11	5,918.48	96.93	199.32	-89.38	0.33	-0.24	-10.36
5,950.00	1.22	331.55	5,943.47	97.40	199.07	-89.87	0.16	-0.08	-6.24
5,975.00	1.26	329.06	5,968.47	97.87	198.81	-90.35	0.27	0.16	-9.96
6,000.00	1.24	330.32	5,993.46	98.34	198.53	-90.83	0.14	-0.08	5.04
6,025.00	1.28	329.52	6,018.45	98.82	198.25	-91.31	0.17	0.16	-3.20
6,050.00	1.23	328.31	6,043.45	99.29	197.97	-91.79	0.23	-0.20	-4.84
6,075.00	1.21	327.45	6,068.44	99.74	197.69	-92.25	0.11	-0.08	-3.44
6,100.00	1.25	325.11	6,093.44	100.19	197.39	-92.71	0.26	0.16	-9.36
6,125.00	1.17	324.78	6,118.43	100.62	197.09	-93.15	0.32	-0.32	-1.32
6,150.00	1.33	318.90	6,143.42	101.05	196.75	-93.59	0.82	0.64	-23.52
6,175.00	1.44	310.79	6,168.42	101.47	196.32	-94.03	0.90	0.44	-32.44
6,200.00	1.64	307.49	6,193.41	101.89	195.80	-94.47	0.87	0.80	-13.20
6,225.00	1.72	307.37	6,218.40	102.34	195.22	-94.94	0.32	0.32	-0.48
6,250.00	1.72	306.77	6,243.39	102.79	194.62	-95.42	0.07	0.00	-2.40
6,275.00	1.84	306.42	6,268.37	103.25	194.00	-95.90	0.48	0.48	-1.40
6,300.00	1.86	305.87	6,293.36	103.73	193.34	-96.40	0.11	0.08	-2.20
6,325.00	1.87	306.85	6,318.35	104.21	192.69	-96.91	0.13	0.04	3.92
6,350.00	1.87	306.90	6,343.33	104.70	192.04	-97.42	0.01	0.00	0.20
6,375.00	1.82	306.79	6,368.32	105.18	191.39	-97.93	0.20	-0.20	-0.44
6,400.00	1.82	307.13	6,393.31	105.66	190.76	-98.43	0.04	0.00	1.36
6,425.00	1.93	307.11	6,418.30	106.15	190.10	-98.95	0.44	0.44	-0.08
6,450.00	1.90	305.31	6,443.28	106.65	189.43	-99.47	0.27	-0.12	-7.20
6,475.00	1.93	306.83	6,468.27	107.14	188.76	-99.98	0.24	0.12	6.08
6,500.00	1.87	307.11	6,493.25	107.64	188.09	-100.51	0.24	-0.24	1.12
6,525.00	1.91	307.53	6,518.24	108.14	187.44	-101.03	0.17	0.16	1.68
6,550.00	1.84	304.65	6,543.23	108.62	186.78	-101.54	0.47	-0.28	-11.52
6,575.00	1.78	306.18	6,568.21	109.08	186.13	-102.02	0.31	-0.24	6.12
6,600.00	1.78	306.13	6,593.20	109.54	185.51	-102.50	0.01	0.00	-0.20
6,625.00	1.78	306.94	6,618.19	110.00	184.88	-102.98	0.10	0.00	3.24
6,650.00	1.74	307.38	6,643.18	110.46	184.27	-103.47	0.17	-0.16	1.76
6,675.00	1.72	308.75	6,668.17	110.93	183.68	-103.96	0.18	-0.08	5.48
6,700.00	1.65	306.14	6,693.16	111.37	183.09	-104.43	0.42	-0.28	-10.44
6,725.00	1.63	308.35	6,718.15	111.81	182.52	-104.88	0.27	-0.08	8.84
6,750.00	1.65	306.02	6,743.14	112.24	181.95	-105.33	0.28	0.08	-9.32
6,775.00	1.60	307.96	6,768.13	112.67	181.39	-105.78	0.30	-0.20	7.76
6,800.00	1.58	306.82	6,793.12	113.09	180.84	-106.22	0.15	-0.08	-4.56



Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 703H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	RKB @ 3365.70usft (McVay 8)
Site:	Gunner 8 Federal Com	MD Reference:	RKB @ 3365.70usft (McVay 8)
Well:	703H	North Reference:	Grid
Wellbore:	OH / 66565	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (McVay 8)	Database:	USA Compass

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)
6,825.00	1.59	306.24	6,818.11	113.50	180.28	-106.66	0.08	0.04	-2.32
6,850.00	1.55	306.48	6,843.10	113.90	179.73	-107.08	0.16	-0.16	0.96
6,875.00	1.57	305.95	6,868.09	114.31	179.18	-107.50	0.10	0.08	-2.12
6,900.00	1.59	303.56	6,893.08	114.70	178.61	-107.92	0.28	0.08	-9.56
6,925.00	1.55	304.26	6,918.07	115.08	178.05	-108.32	0.18	-0.16	2.80
6,950.00	1.69	307.06	6,943.06	115.49	177.47	-108.75	0.64	0.56	11.20
6,975.00	1.54	306.82	6,968.05	115.92	176.91	-109.20	0.60	-0.60	-0.96
7,000.00	1.57	308.39	6,993.04	116.33	176.37	-109.63	0.21	0.12	6.28
7,025.00	1.55	307.19	7,018.03	116.75	175.83	-110.07	0.15	-0.08	-4.80
7,050.00	1.59	307.82	7,043.02	117.17	175.29	-110.51	0.17	0.16	2.52
7,075.00	1.64	307.80	7,068.01	117.60	174.73	-110.96	0.20	0.20	-0.08
7,100.00	1.49	306.78	7,093.00	118.01	174.19	-111.39	0.61	-0.60	-4.08
7,125.00	1.57	308.75	7,117.99	118.42	173.66	-111.82	0.38	0.32	7.88
7,150.00	1.59	308.23	7,142.98	118.85	173.12	-112.27	0.10	0.08	-2.08
7,175.00	1.58	307.60	7,167.97	119.27	172.58	-112.72	0.08	-0.04	-2.52
7,200.00	1.58	305.98	7,192.96	119.69	172.03	-113.15	0.18	0.00	-6.48
7,225.00	1.61	304.89	7,217.96	120.09	171.46	-113.57	0.17	0.12	-4.36
7,250.00	1.50	305.22	7,242.95	120.48	170.90	-113.98	0.44	-0.44	1.32
7,275.00	1.55	299.58	7,267.94	120.84	170.34	-114.36	0.63	0.20	-22.56
7,300.00	1.58	304.89	7,292.93	121.20	169.77	-114.75	0.59	0.12	21.24
7,325.00	1.68	308.66	7,317.92	121.63	169.20	-115.19	0.59	0.40	15.08
7,350.00	1.72	307.64	7,342.91	122.08	168.61	-115.67	0.20	0.16	-4.08
7,375.00	1.68	305.41	7,367.90	122.53	168.02	-116.14	0.31	-0.16	-8.92
7,400.00	1.62	307.13	7,392.89	122.95	167.44	-116.58	0.31	-0.24	6.88
7,425.00	1.70	303.69	7,417.87	123.37	166.85	-117.02	0.51	0.32	-13.76
7,450.00	1.76	306.07	7,442.86	123.80	166.23	-117.48	0.37	0.24	9.52
7,475.00	1.83	305.60	7,467.85	124.26	165.59	-117.96	0.29	0.28	-1.88
7,500.00	1.85	305.05	7,492.84	124.72	164.94	-118.45	0.11	0.08	-2.20
7,525.00	1.95	300.39	7,517.82	125.17	164.24	-118.92	0.74	0.40	-18.64
7,550.00	1.83	297.04	7,542.81	125.57	163.52	-119.34	0.65	-0.48	-13.40
7,575.00	1.78	301.38	7,567.80	125.95	162.83	-119.75	0.58	-0.20	17.36
7,600.00	1.86	303.32	7,592.79	126.38	162.16	-120.20	0.40	0.32	7.76
7,625.00	1.89	296.02	7,617.77	126.78	161.45	-120.63	0.96	0.12	-29.20
7,650.00	1.78	294.68	7,642.76	127.12	160.73	-121.00	0.47	-0.44	-5.36
7,675.00	1.67	295.22	7,667.75	127.44	160.05	-121.35	0.44	-0.44	2.16
7,700.00	1.60	297.33	7,692.74	127.76	159.41	-121.69	0.37	-0.28	8.44
7,725.00	1.58	297.94	7,717.73	128.08	158.79	-122.03	0.10	-0.08	2.44
7,750.00	1.56	298.39	7,742.72	128.40	158.19	-122.38	0.09	-0.08	1.80
7,775.00	1.58	296.62	7,767.71	128.72	157.58	-122.71	0.21	0.08	-7.08
7,800.00	1.50	292.87	7,792.70	129.00	156.97	-123.02	0.51	-0.32	-15.00
7,825.00	1.54	294.03	7,817.69	129.26	156.36	-123.31	0.20	0.16	4.64
7,850.00	1.60	297.12	7,842.68	129.56	155.75	-123.62	0.41	0.24	12.36
7,875.00	1.59	296.22	7,867.67	129.87	155.12	-123.96	0.11	-0.04	-3.60



Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 703H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	RKB @ 3365.70usft (McVay 8)
Site:	Gunner 8 Federal Com	MD Reference:	RKB @ 3365.70usft (McVay 8)
Well:	703H	North Reference:	Grid
Wellbore:	OH / 66565	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (McVay 8)	Database:	USA Compass

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)
7,900.00	1.67	296.03	7,892.66	130.18	154.48	-124.30	0.32	0.32	-0.76
7,925.00	1.63	297.57	7,917.65	130.51	153.84	-124.65	0.24	-0.16	6.16
7,950.00	1.77	301.19	7,942.64	130.87	153.20	-125.03	0.71	0.56	14.48
7,975.00	2.28	314.61	7,967.63	131.42	152.51	-125.61	2.77	2.04	53.68
8,000.00	3.51	328.27	7,992.59	132.42	151.76	-126.64	5.61	4.92	54.64
8,025.00	3.99	332.80	8,017.54	133.85	150.96	-128.09	2.25	1.92	18.12
8,050.00	4.00	333.46	8,042.48	135.40	150.17	-129.67	0.19	0.04	2.64
8,075.00	3.93	333.01	8,067.42	136.94	149.39	-131.24	0.31	-0.28	-1.80
8,100.00	4.04	334.52	8,092.36	138.50	148.62	-132.83	0.61	0.44	6.04
8,125.00	3.73	336.95	8,117.30	140.05	147.93	-134.40	1.40	-1.24	9.72
8,150.00	2.99	351.65	8,142.26	141.44	147.51	-135.81	4.52	-2.96	58.80
8,175.00	2.69	18.29	8,167.23	142.64	147.60	-137.00	5.36	-1.20	106.56
8,200.00	2.73	28.16	8,192.20	143.72	148.07	-138.07	1.87	0.16	39.48
8,225.00	2.85	29.57	8,217.17	144.79	148.65	-139.11	0.55	0.48	5.64
8,250.00	2.88	29.26	8,242.14	145.88	149.27	-140.17	0.14	0.12	-1.24
8,275.00	2.84	26.96	8,267.11	146.98	149.86	-141.25	0.49	-0.16	-9.20
8,300.00	2.69	28.49	8,292.08	148.04	150.42	-142.30	0.67	-0.60	6.12
8,325.00	2.59	29.18	8,317.05	149.05	150.97	-143.29	0.42	-0.40	2.76
8,350.00	2.56	27.49	8,342.03	150.04	151.50	-144.25	0.33	-0.12	-6.76
8,375.00	2.47	30.83	8,367.00	151.00	152.04	-145.19	0.69	-0.36	13.36
8,400.00	2.44	34.25	8,391.98	151.90	152.61	-146.07	0.60	-0.12	13.68
8,425.00	2.35	33.22	8,416.96	152.77	153.19	-146.92	0.40	-0.36	-4.12
8,450.00	2.38	33.99	8,441.94	153.63	153.77	-147.75	0.17	0.12	3.08
8,475.00	2.40	31.63	8,466.92	154.51	154.33	-148.61	0.40	0.08	-9.44
8,500.00	2.23	32.99	8,491.90	155.36	154.87	-149.44	0.71	-0.68	5.44
8,525.00	2.21	32.81	8,516.88	156.17	155.40	-150.23	0.08	-0.08	-0.72
8,550.00	2.17	37.50	8,541.86	156.95	155.94	-150.99	0.73	-0.16	18.76
8,575.00	2.17	54.32	8,566.84	157.61	156.62	-151.62	2.54	0.00	67.28
8,600.00	2.50	73.55	8,591.82	158.04	157.52	-152.01	3.38	1.32	76.92
8,625.00	2.69	75.69	8,616.80	158.34	158.62	-152.27	0.85	0.76	8.56
8,650.00	2.51	75.73	8,641.77	158.62	159.72	-152.51	0.72	-0.72	0.16
8,675.00	2.54	77.02	8,666.75	158.87	160.79	-152.73	0.26	0.12	5.16
8,700.00	2.50	77.07	8,691.72	159.12	161.86	-152.94	0.16	-0.16	0.20
8,725.00	2.37	77.57	8,716.70	159.35	162.89	-153.13	0.53	-0.52	2.00
8,750.00	2.41	80.98	8,741.68	159.55	163.92	-153.29	0.59	0.16	13.64
8,775.00	2.32	77.38	8,766.66	159.74	164.93	-153.44	0.69	-0.36	-14.40
8,800.00	2.42	75.13	8,791.63	159.99	165.93	-153.65	0.55	0.40	-9.00
8,825.00	2.47	80.83	8,816.61	160.21	166.98	-153.83	0.99	0.20	22.80
8,850.00	2.29	78.17	8,841.59	160.40	168.00	-153.98	0.84	-0.72	-10.64
8,875.00	2.12	78.84	8,866.57	160.59	168.94	-154.14	0.69	-0.68	2.68
8,900.00	2.05	78.61	8,891.56	160.77	169.83	-154.28	0.28	-0.28	-0.92
8,925.00	2.04	79.65	8,916.54	160.93	170.71	-154.42	0.15	-0.04	4.16
8,950.00	2.00	80.72	8,941.52	161.08	171.58	-154.53	0.22	-0.16	4.28



Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 703H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	RKB @ 3365.70usft (McVay 8)
Site:	Gunner 8 Federal Com	MD Reference:	RKB @ 3365.70usft (McVay 8)
Well:	703H	North Reference:	Grid
Wellbore:	OH / 66565	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (McVay 8)	Database:	USA Compass

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)	
8,975.00	1.95	82.32	8,966.51	161.21	172.43	-154.63	0.30	-0.20	6.40	
9,000.00	1.92	82.32	8,991.49	161.32	173.26	-154.71	0.12	-0.12	0.00	
9,025.00	1.83	81.10	9,016.48	161.44	174.07	-154.80	0.39	-0.36	-4.88	
9,050.00	1.67	79.65	9,041.47	161.57	174.83	-154.90	0.66	-0.64	-5.80	
9,075.00	1.72	78.71	9,066.46	161.71	175.55	-155.01	0.23	0.20	-3.76	
9,100.00	1.70	70.25	9,091.45	161.91	176.27	-155.18	1.01	-0.08	-33.84	
9,125.00	1.62	77.64	9,116.44	162.11	176.96	-155.36	0.91	-0.32	29.56	
9,150.00	1.51	74.94	9,141.43	162.27	177.63	-155.49	0.53	-0.44	-10.80	
9,175.00	1.42	72.10	9,166.42	162.45	178.24	-155.65	0.46	-0.36	-11.36	
9,200.00	1.44	71.11	9,191.41	162.65	178.83	-155.82	0.13	0.08	-3.96	
9,225.00	1.38	64.93	9,216.40	162.88	179.40	-156.03	0.65	-0.24	-24.72	
9,250.00	1.29	63.78	9,241.40	163.13	179.93	-156.26	0.38	-0.36	-4.60	
9,275.00	1.28	68.21	9,266.39	163.36	180.44	-156.47	0.40	-0.04	17.72	
9,300.00	1.30	65.77	9,291.39	163.58	180.96	-156.67	0.23	0.08	-9.76	
9,325.00	1.36	63.38	9,316.38	163.83	181.48	-156.90	0.33	0.24	-9.56	
9,350.00	1.51	61.43	9,341.37	164.12	182.03	-157.17	0.63	0.60	-7.80	
9,375.00	1.66	63.19	9,366.36	164.44	182.65	-157.47	0.63	0.60	7.04	
9,400.00	1.98	62.33	9,391.35	164.80	183.35	-157.81	1.28	1.28	-3.44	
9,425.00	2.01	64.81	9,416.33	165.19	184.13	-158.16	0.37	0.12	9.92	
9,450.00	2.09	65.24	9,441.32	165.57	184.94	-158.51	0.33	0.32	1.72	
9,475.00	2.13	66.62	9,466.30	165.94	185.78	-158.85	0.26	0.16	5.52	
9,500.00	2.17	64.16	9,491.28	166.33	186.64	-159.21	0.40	0.16	-9.84	
9,525.00	2.04	60.21	9,516.27	166.76	187.45	-159.61	0.78	-0.52	-15.80	
9,550.00	1.93	56.27	9,541.25	167.21	188.18	-160.04	0.70	-0.44	-15.76	
9,575.00	1.93	52.93	9,566.24	167.70	188.87	-160.50	0.45	0.00	-13.36	
9,600.00	1.83	50.06	9,591.22	168.21	189.51	-160.98	0.55	-0.40	-11.48	
9,625.00	1.71	47.40	9,616.21	168.72	190.09	-161.47	0.58	-0.48	-10.64	
9,650.00	1.64	45.14	9,641.20	169.22	190.62	-161.95	0.38	-0.28	-9.04	
9,675.00	1.67	45.15	9,666.19	169.73	191.13	-162.44	0.12	0.12	0.04	
9,700.00	1.82	44.27	9,691.18	170.28	191.67	-162.96	0.61	0.60	-3.52	
9,725.00	1.85	42.93	9,716.17	170.85	192.22	-163.52	0.21	0.12	-5.36	
9,750.00	1.67	53.89	9,741.15	171.37	192.79	-164.01	1.52	-0.72	43.84	
9,775.00	1.86	76.86	9,766.14	171.67	193.48	-164.29	2.91	0.76	91.88	
9,800.00	1.98	94.99	9,791.13	171.73	194.30	-164.32	2.47	0.48	72.52	
9,825.00	1.93	99.99	9,816.11	171.62	195.15	-164.17	0.71	-0.20	20.00	
9,850.00	2.10	98.37	9,841.10	171.48	196.02	-164.00	0.72	0.68	-6.48	
9,875.00	2.11	94.87	9,866.08	171.37	196.93	-163.86	0.52	0.04	-14.00	
9,900.00	1.99	85.12	9,891.07	171.37	197.82	-163.83	1.47	-0.48	-39.00	
9,925.00	1.88	86.62	9,916.05	171.43	198.66	-163.86	0.48	-0.44	6.00	
9,950.00	1.81	76.15	9,941.04	171.55	199.45	-163.94	1.38	-0.28	-41.88	
9,975.00	1.64	71.24	9,966.03	171.76	200.18	-164.13	0.90	-0.68	-19.64	
10,000.00	1.32	60.74	9,991.02	172.01	200.77	-164.36	1.67	-1.28	-42.00	
10,025.00	1.15	47.84	10,016.01	172.32	201.20	-164.65	1.30	-0.68	-51.60	
10,050.00	1.13	34.40	10,041.01	172.69	201.53	-165.01	1.07	-0.08	-53.76	



Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 703H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	RKB @ 3365.70usft (McVay 8)
Site:	Gunner 8 Federal Com	MD Reference:	RKB @ 3365.70usft (McVay 8)
Well:	703H	North Reference:	Grid
Wellbore:	OH / 66565	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (McVay 8)	Database:	USA Compass

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)	
10,075.00	1.10	23.67	10,066.00	173.12	201.76	-165.43	0.84	-0.12	-42.92	
10,100.00	1.13	17.48	10,091.00	173.57	201.93	-165.87	0.50	0.12	-24.76	
10,125.00	1.09	12.96	10,115.99	174.04	202.06	-166.34	0.38	-0.16	-18.08	
10,150.00	1.11	11.16	10,140.99	174.51	202.16	-166.80	0.16	0.08	-7.20	
10,175.00	1.06	7.98	10,165.99	174.98	202.24	-167.27	0.31	-0.20	-12.72	
10,200.00	1.11	356.50	10,190.98	175.45	202.26	-167.73	0.89	0.20	-45.92	
10,225.00	1.10	5.41	10,215.98	175.93	202.27	-168.21	0.69	-0.04	35.64	
10,250.00	1.14	355.87	10,240.97	176.41	202.27	-168.70	0.76	0.16	-38.16	
10,275.00	1.06	359.40	10,265.97	176.89	202.25	-169.18	0.42	-0.32	14.12	
10,300.00	1.15	353.87	10,290.96	177.37	202.22	-169.66	0.56	0.36	-22.12	
10,325.00	0.83	7.78	10,315.96	177.80	202.22	-170.09	1.59	-1.28	55.64	
10,350.00	0.77	19.98	10,340.96	178.14	202.30	-170.42	0.72	-0.24	48.80	
10,375.00	0.74	30.97	10,365.95	178.44	202.44	-170.72	0.59	-0.12	43.96	
10,400.00	0.87	41.83	10,390.95	178.72	202.65	-170.99	0.80	0.52	43.44	
10,425.00	0.74	51.44	10,415.95	178.96	202.90	-171.22	0.75	-0.52	38.44	
10,450.00	0.92	64.82	10,440.95	179.14	203.21	-171.39	1.05	0.72	53.52	
10,475.00	0.93	78.63	10,465.94	179.27	203.59	-171.51	0.89	0.04	55.24	
10,500.00	0.89	90.48	10,490.94	179.31	203.99	-171.53	0.77	-0.16	47.40	
10,525.00	1.19	92.68	10,515.94	179.29	204.44	-171.50	1.21	1.20	8.80	
10,550.00	1.26	87.84	10,540.93	179.29	204.97	-171.48	0.50	0.28	-19.36	
10,575.00	1.22	84.84	10,565.92	179.33	205.51	-171.49	0.30	-0.16	-12.00	
10,600.00	1.04	95.57	10,590.92	179.33	206.00	-171.47	1.11	-0.72	42.92	
10,625.00	1.03	94.98	10,615.92	179.29	206.45	-171.42	0.06	-0.04	-2.36	
10,650.00	0.98	96.07	10,640.91	179.24	206.89	-171.36	0.21	-0.20	4.36	
10,675.00	1.08	99.58	10,665.91	179.18	207.33	-171.28	0.47	0.40	14.04	
10,700.00	1.06	103.41	10,690.90	179.09	207.79	-171.17	0.30	-0.08	15.32	
10,725.00	1.04	107.05	10,715.90	178.97	208.23	-171.03	0.28	-0.08	14.56	
10,750.00	0.94	105.14	10,740.89	178.85	208.65	-170.90	0.42	-0.40	-7.64	
10,775.00	0.89	120.76	10,765.89	178.70	209.01	-170.73	1.01	-0.20	62.48	
10,800.00	0.75	129.84	10,790.89	178.49	209.31	-170.51	0.76	-0.56	36.32	
10,825.00	0.75	125.78	10,815.89	178.29	209.56	-170.30	0.21	0.00	-16.24	
10,850.00	0.44	136.84	10,840.89	178.13	209.76	-170.13	1.32	-1.24	44.24	
10,875.00	0.48	152.49	10,865.88	177.96	209.88	-169.96	0.53	0.16	62.60	
10,900.00	0.63	149.87	10,890.88	177.75	209.99	-169.75	0.61	0.60	-10.48	
10,925.00	0.72	129.78	10,915.88	177.53	210.18	-169.52	1.01	0.36	-80.36	
10,950.00	0.56	133.84	10,940.88	177.35	210.39	-169.33	0.66	-0.64	16.24	
10,975.00	0.61	147.92	10,965.88	177.15	210.55	-169.13	0.61	0.20	56.32	
11,000.00	0.76	129.58	10,990.88	176.93	210.75	-168.90	1.06	0.60	-73.36	
11,025.00	0.62	118.54	11,015.88	176.76	211.00	-168.72	0.77	-0.56	-44.16	
11,050.00	0.61	112.26	11,040.87	176.65	211.24	-168.60	0.27	-0.04	-25.12	
11,075.00	0.65	105.41	11,065.87	176.56	211.50	-168.50	0.34	0.16	-27.40	
11,100.00	0.68	96.90	11,090.87	176.50	211.78	-168.43	0.41	0.12	-34.04	
11,125.00	0.72	92.73	11,115.87	176.48	212.09	-168.40	0.26	0.16	-16.68	



Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 703H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	RKB @ 3365.70usft (McVay 8)
Site:	Gunner 8 Federal Com	MD Reference:	RKB @ 3365.70usft (McVay 8)
Well:	703H	North Reference:	Grid
Wellbore:	OH / 66565	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (McVay 8)	Database:	USA Compass

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)
11,150.00	0.63	89.21	11,140.87	176.47	212.38	-168.38	0.40	-0.36	-14.08
11,175.00	1.01	75.39	11,165.86	176.53	212.73	-168.42	1.70	1.52	-55.28
11,200.00	1.53	66.65	11,190.86	176.72	213.25	-168.59	2.21	2.08	-34.96
11,225.00	2.02	61.34	11,215.85	177.06	213.94	-168.91	2.07	1.96	-21.24
11,250.00	2.09	63.07	11,240.83	177.48	214.74	-169.30	0.37	0.28	6.92
11,275.00	2.18	62.94	11,265.81	177.90	215.57	-169.69	0.36	0.36	-0.52
11,300.00	2.26	65.22	11,290.79	178.32	216.44	-170.08	0.48	0.32	9.12
11,325.00	2.42	65.24	11,315.77	178.75	217.36	-170.47	0.64	0.64	0.08
11,350.00	2.58	67.57	11,340.75	179.19	218.36	-170.87	0.76	0.64	9.32
11,375.00	2.59	75.63	11,365.72	179.54	219.43	-171.18	1.45	0.04	32.24
11,400.00	2.60	84.15	11,390.70	179.74	220.54	-171.34	1.54	0.04	34.08
11,425.00	2.80	94.87	11,415.67	179.75	221.71	-171.30	2.17	0.80	42.88
11,450.00	3.00	99.02	11,440.64	179.59	222.97	-171.10	1.16	0.80	16.60
11,475.00	3.07	102.26	11,465.60	179.35	224.27	-170.81	0.74	0.28	12.96
11,500.00	3.09	102.28	11,490.57	179.06	225.58	-170.47	0.08	0.08	0.08
11,525.00	3.32	101.58	11,515.53	178.77	226.95	-170.13	0.93	0.92	-2.80
11,550.00	3.50	99.47	11,540.48	178.50	228.41	-169.81	0.88	0.72	-8.44
11,575.00	3.72	98.63	11,565.44	178.26	229.97	-169.50	0.91	0.88	-3.36
11,600.00	3.74	96.54	11,590.38	178.04	231.58	-169.23	0.55	0.08	-8.36
11,625.00	3.70	95.76	11,615.33	177.87	233.19	-168.99	0.26	-0.16	-3.12
11,650.00	3.65	95.74	11,640.28	177.71	234.79	-168.77	0.20	-0.20	-0.08
11,675.00	3.63	98.99	11,665.23	177.50	236.36	-168.51	0.83	-0.08	13.00
11,700.00	3.30	99.63	11,690.18	177.26	237.85	-168.21	1.33	-1.32	2.56
11,725.00	2.96	104.54	11,715.14	176.98	239.18	-167.88	1.73	-1.36	19.64
11,750.00	2.80	109.18	11,740.11	176.61	240.39	-167.47	1.13	-0.64	18.56
11,775.00	2.67	113.14	11,765.08	176.18	241.50	-167.00	0.92	-0.52	15.84
11,800.00	2.45	116.78	11,790.06	175.71	242.51	-166.49	1.09	-0.88	14.56
11,825.00	2.17	126.43	11,815.04	175.19	243.37	-165.94	1.91	-1.12	38.60
11,850.00	1.94	135.35	11,840.02	174.61	244.05	-165.33	1.57	-0.92	35.68
11,875.00	2.32	125.92	11,865.01	174.01	244.75	-164.71	2.06	1.52	-37.72
11,900.00	2.22	129.44	11,889.99	173.41	245.54	-164.08	0.69	-0.40	14.08
11,901.00	2.22	129.63	11,890.99	173.38	245.57	-164.05	0.74	0.00	19.00
Tie In									
11,946.00	2.27	135.07	11,935.95	172.20	246.87	-162.81	0.49	0.11	12.09
First Gordon MWD Survey									
11,985.00	2.33	135.75	11,974.92	171.08	247.97	-161.66	0.17	0.15	1.74
12,067.00	2.53	138.17	12,056.85	168.54	250.34	-159.03	0.27	0.24	2.95
12,161.00	2.56	139.51	12,150.75	165.40	253.08	-155.79	0.07	0.03	1.43
12,256.00	3.38	141.90	12,245.63	161.58	256.19	-151.86	0.87	0.86	2.52
12,288.00	8.47	155.66	12,277.44	158.69	257.74	-148.91	16.40	15.91	43.00
12,319.00	13.01	154.74	12,307.89	153.45	260.17	-143.58	14.66	14.65	-2.97
12,351.00	16.26	160.79	12,338.85	145.96	263.19	-135.98	11.21	10.16	18.91
12,398.00	23.15	168.60	12,383.08	130.67	267.18	-120.55	15.66	14.66	16.62
12,418.00	25.68	171.77	12,401.29	122.52	268.58	-112.36	14.24	12.64	15.87



Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 703H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	RKB @ 3365.70usft (McVay 8)
Site:	Gunner 8 Federal Com	MD Reference:	RKB @ 3365.70usft (McVay 8)
Well:	703H	North Reference:	Grid
Wellbore:	OH / 66565	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (McVay 8)	Database:	USA Compass

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)
FTP: 12418' MD									
12,446.00	29.31	175.34	12,426.13	109.68	270.01	-99.48	14.24	12.97	12.74
12,493.00	34.22	175.51	12,466.08	85.03	271.98	-74.76	10.45	10.45	0.36
12,540.00	39.06	173.76	12,503.78	57.12	274.62	-46.77	10.53	10.30	-3.72
12,587.00	41.31	174.89	12,539.68	26.94	277.61	-16.50	5.03	4.79	2.40
12,635.00	40.98	176.11	12,575.83	-4.54	280.09	15.05	1.81	-0.69	2.54
12,682.00	45.46	177.55	12,610.07	-36.67	281.86	47.22	9.76	9.53	3.06
12,730.00	48.98	177.45	12,642.67	-71.86	283.39	82.44	7.33	7.33	-0.21
12,777.00	54.74	175.53	12,671.68	-108.74	285.68	119.38	12.67	12.26	-4.09
12,824.00	62.94	171.39	12,695.99	-148.64	290.32	159.43	19.00	17.45	-8.81
12,871.00	68.09	171.29	12,715.46	-190.91	296.76	201.91	10.96	10.96	-0.21
12,918.00	70.57	173.63	12,732.05	-234.50	302.52	245.69	7.04	5.28	4.98
12,965.00	72.86	176.18	12,746.80	-278.95	306.47	290.25	7.09	4.87	5.43
13,014.00	78.96	177.82	12,758.73	-326.38	308.95	337.74	12.86	12.45	3.35
13,061.00	83.93	179.01	12,765.72	-372.83	310.23	384.20	10.87	10.57	2.53
13,109.00	86.14	178.57	12,769.87	-420.63	311.24	432.01	4.69	4.60	-0.92
13,203.00	92.60	182.79	12,770.90	-514.55	310.13	525.82	8.21	6.87	4.49
13,298.00	92.77	183.24	12,766.45	-609.31	305.13	620.33	0.51	0.18	0.47
13,392.00	91.81	183.62	12,762.70	-703.07	299.52	713.81	1.10	-1.02	0.40
13,487.00	87.33	181.91	12,763.41	-797.93	294.93	808.43	5.05	-4.72	-1.80
13,580.00	90.80	180.19	12,764.93	-890.88	293.23	901.26	4.16	3.73	-1.85
13,675.00	86.47	180.34	12,767.19	-985.83	292.79	996.12	4.56	-4.56	0.16
13,769.00	92.44	179.38	12,768.08	-1,079.78	293.02	1,090.02	6.43	6.35	-1.02
13,794.00	92.62	179.35	12,766.98	-1,104.76	293.30	1,114.98	0.73	0.72	-0.12
13,889.00	90.74	177.89	12,764.19	-1,199.68	295.59	1,209.93	2.51	-1.98	-1.54
13,983.00	91.42	178.00	12,762.42	-1,293.60	298.96	1,303.91	0.73	0.72	0.12
14,077.00	89.05	176.19	12,762.04	-1,387.47	303.72	1,397.89	3.17	-2.52	-1.93
14,172.00	89.40	180.52	12,763.32	-1,482.40	306.45	1,492.85	4.57	0.37	4.56
14,267.00	88.63	181.87	12,764.96	-1,577.36	304.46	1,587.68	1.64	-0.81	1.42
14,362.00	88.81	180.75	12,767.08	-1,672.31	302.29	1,682.48	1.19	0.19	-1.18
14,457.00	89.42	181.69	12,768.55	-1,767.28	300.27	1,777.30	1.18	0.64	0.99
14,552.00	88.19	183.22	12,770.53	-1,862.17	296.20	1,871.97	2.07	-1.29	1.61
14,646.00	89.75	182.36	12,772.22	-1,956.04	291.63	1,965.60	1.89	1.66	-0.91
14,741.00	90.74	182.13	12,771.81	-2,050.96	287.91	2,060.32	1.07	1.04	-0.24
14,835.00	89.95	180.83	12,771.24	-2,144.93	285.48	2,154.13	1.62	-0.84	-1.38
14,930.00	90.24	181.98	12,771.09	-2,239.90	283.15	2,248.94	1.25	0.31	1.21
15,024.00	89.17	180.98	12,771.57	-2,333.86	280.72	2,342.75	1.56	-1.14	-1.06
15,119.00	88.69	178.05	12,773.34	-2,428.83	281.53	2,437.68	3.12	-0.51	-3.08
15,213.00	89.06	178.06	12,775.19	-2,522.76	284.72	2,531.66	0.39	0.39	0.01
15,308.00	88.93	178.96	12,776.86	-2,617.71	287.19	2,626.64	0.96	-0.14	0.95
15,402.00	89.62	178.07	12,778.05	-2,711.67	289.62	2,720.63	1.20	0.73	-0.95
15,498.00	88.84	175.78	12,779.34	-2,807.52	294.77	2,816.60	2.52	-0.81	-2.39
15,592.00	88.59	177.78	12,781.44	-2,901.34	300.05	2,910.55	2.14	-0.27	2.13



Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 703H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	RKB @ 3365.70usft (McVay 8)
Site:	Gunner 8 Federal Com	MD Reference:	RKB @ 3365.70usft (McVay 8)
Well:	703H	North Reference:	Grid
Wellbore:	OH / 66565	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (McVay 8)	Database:	USA Compass

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)	
15,687.00	88.35	176.70	12,783.98	-2,996.19	304.62	3,005.51	1.16	-0.25	-1.14	
15,782.00	88.32	178.07	12,786.74	-3,091.05	308.95	3,100.47	1.44	-0.03	1.44	
15,876.00	90.44	182.81	12,787.76	-3,185.01	308.23	3,194.33	5.52	2.26	5.04	
15,971.00	89.63	186.02	12,787.70	-3,279.72	300.92	3,288.70	3.48	-0.85	3.38	
16,066.00	89.49	178.46	12,788.43	-3,374.57	297.21	3,383.35	7.96	-0.15	-7.96	
16,161.00	88.29	176.55	12,790.27	-3,469.46	301.34	3,478.32	2.37	-1.26	-2.01	
16,255.00	87.17	175.80	12,794.00	-3,563.17	307.61	3,572.20	1.43	-1.19	-0.80	
16,350.00	88.78	178.47	12,797.35	-3,657.98	312.35	3,667.13	3.28	1.69	2.81	
16,445.00	90.11	178.04	12,798.27	-3,752.93	315.25	3,762.12	1.47	1.40	-0.45	
16,540.00	89.30	175.84	12,798.76	-3,847.79	320.32	3,857.10	2.47	-0.85	-2.32	
16,636.00	90.45	174.66	12,798.97	-3,943.46	328.27	3,952.99	1.72	1.20	-1.23	
16,731.00	88.98	174.24	12,799.44	-4,038.01	337.45	4,047.82	1.61	-1.55	-0.44	
16,825.00	90.28	179.02	12,800.05	-4,131.81	342.98	4,141.77	5.27	1.38	5.09	
16,920.00	91.45	183.05	12,798.62	-4,226.77	341.26	4,236.59	4.42	1.23	4.24	
17,015.00	90.36	180.72	12,797.12	-4,321.69	338.14	4,331.34	2.71	-1.15	-2.45	
17,110.00	89.79	179.46	12,796.99	-4,416.69	337.99	4,426.26	1.46	-0.60	-1.33	
17,205.00	90.30	181.16	12,796.92	-4,511.69	337.47	4,521.17	1.87	0.54	1.79	
17,300.00	90.30	182.33	12,796.42	-4,606.64	334.58	4,615.95	1.23	0.00	1.23	
17,394.00	90.32	183.26	12,795.91	-4,700.52	330.00	4,709.60	0.99	0.02	0.99	
17,489.00	88.54	182.58	12,796.86	-4,795.39	325.16	4,804.22	2.01	-1.87	-0.72	
17,583.00	88.39	182.36	12,799.37	-4,889.27	321.11	4,897.88	0.28	-0.16	-0.23	
17,678.00	92.02	182.07	12,799.03	-4,984.18	317.44	4,992.58	3.83	3.82	-0.31	
17,773.00	91.69	181.58	12,795.96	-5,079.09	314.41	5,087.31	0.62	-0.35	-0.52	
17,868.00	90.53	181.50	12,794.12	-5,174.03	311.86	5,182.09	1.22	-1.22	-0.08	
17,963.00	88.13	180.68	12,795.23	-5,269.00	310.05	5,276.92	2.67	-2.53	-0.86	
18,057.00	88.85	179.24	12,797.71	-5,362.96	310.12	5,370.82	1.71	0.77	-1.53	
18,153.00	90.17	184.76	12,798.53	-5,458.86	306.77	5,466.53	5.91	1.38	5.75	
18,247.00	91.32	189.28	12,797.31	-5,552.12	295.29	5,559.29	4.96	1.22	4.81	
18,294.00	89.62	184.50	12,796.92	-5,598.77	289.65	5,605.69	10.79	-3.62	-10.17	
18,342.00	88.14	179.98	12,797.86	-5,646.71	287.78	5,653.53	9.91	-3.08	-9.42	
18,437.00	90.88	179.73	12,798.67	-5,741.70	288.02	5,748.46	2.90	2.88	-0.26	
18,532.00	87.39	169.79	12,800.11	-5,836.16	296.68	5,843.18	11.09	-3.67	-10.46	
18,626.00	88.94	168.36	12,803.12	-5,928.40	314.48	5,936.02	2.24	1.65	-1.52	
18,722.00	83.87	170.34	12,809.14	-6,022.52	332.19	6,030.75	5.67	-5.28	2.06	
18,817.00	83.52	177.88	12,819.58	-6,116.38	341.87	6,124.90	7.90	-0.37	7.94	
18,912.00	87.94	181.12	12,826.66	-6,211.08	342.69	6,219.56	5.76	4.65	3.41	
19,007.00	87.78	180.97	12,830.21	-6,306.00	340.96	6,314.35	0.23	-0.17	-0.16	
19,101.00	88.44	181.02	12,833.31	-6,399.93	339.33	6,408.15	0.70	0.70	0.05	
19,196.00	91.17	182.38	12,833.63	-6,494.88	336.51	6,502.93	3.21	2.87	1.43	
19,290.00	90.39	179.76	12,832.35	-6,588.84	334.75	6,596.76	2.91	-0.83	-2.79	
19,385.00	92.02	181.65	12,830.35	-6,683.81	333.59	6,691.62	2.63	1.72	1.99	
19,480.00	92.17	182.14	12,826.88	-6,778.69	330.45	6,786.32	0.54	0.16	0.52	
19,574.00	91.73	178.97	12,823.68	-6,872.62	329.54	6,880.14	3.40	-0.47	-3.37	



Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 703H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	RKB @ 3365.70usft (McVay 8)
Site:	Gunner 8 Federal Com	MD Reference:	RKB @ 3365.70usft (McVay 8)
Well:	703H	North Reference:	Grid
Wellbore:	OH / 66565	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (McVay 8)	Database:	USA Compass

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)
19,669.00	91.70	177.96	12,820.84	-6,967.54	332.08	6,975.09	1.06	-0.03	-1.06
19,764.00	91.24	177.53	12,818.40	-7,062.44	335.82	7,070.06	0.66	-0.48	-0.45
19,858.00	89.04	172.74	12,818.17	-7,156.06	343.79	7,163.92	5.61	-2.34	-5.10
19,953.00	87.94	176.14	12,820.67	-7,250.57	352.99	7,258.71	3.76	-1.16	3.58
20,047.00	89.42	179.90	12,822.84	-7,344.47	356.23	7,352.66	4.30	1.57	4.00
20,142.00	89.40	181.37	12,823.82	-7,439.46	355.18	7,447.54	1.55	-0.02	1.55
20,236.00	89.51	181.70	12,824.71	-7,533.42	352.66	7,541.34	0.37	0.12	0.35
20,331.00	91.76	186.39	12,823.66	-7,628.14	345.96	7,635.75	5.48	2.37	4.94
20,425.00	92.85	183.33	12,819.88	-7,721.72	338.01	7,728.96	3.45	1.16	-3.26
20,520.00	88.63	177.97	12,818.65	-7,816.65	336.93	7,823.78	7.18	-4.44	-5.64
20,614.00	88.26	176.74	12,821.20	-7,910.51	341.27	7,917.74	1.37	-0.39	-1.31
20,709.00	90.47	179.76	12,822.25	-8,005.44	344.17	8,012.72	3.94	2.33	3.18
20,803.00	91.84	180.48	12,820.36	-8,099.42	343.97	8,106.62	1.65	1.46	0.77
20,898.00	91.40	180.50	12,817.67	-8,194.38	343.16	8,201.48	0.46	-0.46	0.02
20,992.00	90.73	179.92	12,815.93	-8,288.36	342.81	8,295.39	0.94	-0.71	-0.62
21,087.00	91.86	181.05	12,813.78	-8,383.33	342.01	8,390.26	1.68	1.19	1.19
21,182.00	90.82	180.30	12,811.56	-8,478.29	340.89	8,485.12	1.35	-1.09	-0.79
21,277.00	86.48	176.78	12,813.80	-8,573.20	343.31	8,580.04	5.88	-4.57	-3.71
21,372.00	86.31	175.99	12,819.77	-8,667.82	349.29	8,674.82	0.85	-0.18	-0.83
21,466.00	87.48	178.78	12,824.86	-8,761.58	353.57	8,768.67	3.21	1.24	2.97
21,561.00	86.84	178.59	12,829.57	-8,856.43	355.74	8,863.55	0.70	-0.67	-0.20
21,655.00	86.54	178.23	12,835.00	-8,950.24	358.35	8,957.38	0.50	-0.32	-0.38
21,750.00	89.32	180.72	12,838.43	-9,045.16	359.22	9,052.27	3.93	2.93	2.62
21,845.00	88.47	178.09	12,840.26	-9,140.13	360.20	9,147.20	2.91	-0.89	-2.77
21,938.00	92.46	184.06	12,839.50	-9,233.05	358.46	9,239.99	7.72	4.29	6.42
22,033.00	91.22	183.22	12,836.45	-9,327.80	352.43	9,334.46	1.58	-1.31	-0.88
22,128.00	92.66	183.68	12,833.24	-9,422.57	346.72	9,428.95	1.59	1.52	0.48
22,222.00	92.31	181.75	12,829.16	-9,516.37	342.27	9,522.52	2.08	-0.37	-2.05
22,317.00	92.99	182.47	12,824.77	-9,611.21	338.78	9,617.15	1.04	0.72	0.76
22,411.00	92.06	179.44	12,820.63	-9,705.09	337.21	9,710.91	3.37	-0.99	-3.22
22,505.00	90.26	177.32	12,818.72	-9,799.03	339.87	9,804.88	2.96	-1.91	-2.26
22,599.00	88.47	176.00	12,819.77	-9,892.85	345.35	9,898.85	2.37	-1.90	-1.40
22,694.00	88.12	176.00	12,822.59	-9,987.58	351.97	9,993.75	0.37	-0.37	0.00
22,789.00	87.32	175.90	12,826.37	-10,082.27	358.67	10,088.63	0.85	-0.84	-0.11
22,884.00	88.28	176.33	12,830.02	-10,176.98	365.11	10,183.51	1.11	1.01	0.45
22,939.00	88.79	176.52	12,831.43	-10,231.85	368.53	10,238.48	0.99	0.93	0.35
Final Gordon MWD Survey									
22,948.00	88.79	176.52	12,831.62	-10,240.83	369.08	10,247.47	0.00	0.00	0.00
LTP: 22948' MD									
22,997.00	88.79	176.52	12,832.65	-10,289.73	372.05	10,296.45	0.00	0.00	0.00
Projection to TD									



Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 703H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	RKB @ 3365.70usft (McVay 8)
Site:	Gunner 8 Federal Com	MD Reference:	RKB @ 3365.70usft (McVay 8)
Well:	703H	North Reference:	Grid
Wellbore:	OH / 66565	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (McVay 8)	Database:	USA Compass

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
11,901.00	11,890.99	173.38	245.57	Tie In
11,946.00	11,935.95	172.20	246.87	First Gordon MWD Survey
12,418.00	12,401.29	122.52	268.58	FTP: 12418' MD
22,939.00	12,831.43	-10,231.85	368.53	Final Gordon MWD Survey
22,948.00	12,831.62	-10,240.83	369.08	LTP: 22948' MD
22,997.00	12,832.65	-10,289.73	372.05	Projection to TD

Checked By: _____ Approved By: _____ Date: _____

Submit To Appropriate District Office Two Copies <u>District I</u> 1625 N. French Dr., Hobbs, NM 88240 <u>District II</u> 811 S. First St., Artesia, NM 88210 <u>District III</u> 1000 Rio Brazos Rd., Aztec, NM 87410 <u>District IV</u> 1220 S. St. Francis Dr., Santa Fe, NM 87505				State of New Mexico Energy, Minerals and Natural Resources Oil Conservation Division 1220 South St. Francis Dr. Santa Fe, NM 87505				Form C-105 Revised April 3, 2017			
				1. WELL API NO.				30-025-47171			
				2. Type of Lease				☐ STATE ☐ FEE ☒ FED/INDIAN			
				3. State Oil & Gas Lease No.							
WELL COMPLETION OR RECOMPLETION REPORT AND LOG											
4. Reason for filing: ☒ COMPLETION REPORT (Fill in boxes #1 through #31 for State and Fee wells only) ☐ C-144 CLOSURE ATTACHMENT (Fill in boxes #1 through #9, #15 Date Rig Released and #32 and/or #33; attach this and the plat to the C-144 closure report in accordance with 19.15.17.13.K NMAC)								5. Lease Name or Unit Agreement Name			
								Gunner Federal Com			
								6. Well Number:			
								703H			
7. Type of Completion:											
☒ NEW WELL ☐ WORKOVER ☐ DEEPENING ☐ PLUGBACK ☐ DIFFERENT RESERVOIR ☐ OTHER _____											
8. Name of Operator						9. OGRID					
COG Operating LLC						229137					
10. Address of Operator						11. Pool name or Wildcat					
2208 W. Main Street						Bobcat Draw; Upper Wolfcamp					
Artesia, NM 88210											
12. Location	Unit Ltr	Section	Township	Range	Lot	Feet from the	N/S Line	Feet from the	E/W Line	County	
Surface:	C	5	26S	34E		220'	North	2010'	West	Lea	
BH:	N	8	26S	34E		51'	South	2295'	West	Lea	
13. Date Spudded	14. Date T.D. Reached		15. Date Rig Released			16. Date Completed (Ready to Produce)			17. Elevations (DF and RKB, RT, GR, etc.)		
5/19/20	7/26/20		7/29/20			1/13/21			3340' GR		
18. Total Measured Depth of Well			19. Plug Back Measured Depth			20. Was Directional Survey Made?			21. Type Electric and Other Logs Run		
22,997'			22,870'			Yes					
22. Producing Interval(s), of this completion - Top, Bottom, Name											
12,964-22,8' Wolfcamp											
23. CASING RECORD (Report all strings set in well)											
CASING SIZE		WEIGHT LB./FT.		DEPTH SET		HOLE SIZE		CEMENTING RECORD		AMOUNT PULLED	
13 3/4"		45.5#		980'		14 3/4"		714 sx			
7 5/8"		29.7#		12030'		8 3/4"		850 sx			
5 1/2"		23#		22,979'		6 3/4"		1735 sx			
								1295			
24. LINER RECORD						25. TUBING RECORD					
SIZE	TOP	BOTTOM	SACKS CEMENT	SCREEN	SIZE	DEPTH SET	PACKER SET				
					2 7/8"	12262'	12252'				
26. Perforation record (interval, size, and number)						27. ACID, SHOT, FRACTURE, CEMENT, SQUEEZE, ETC.					
12,964-22,845' (2220)						DEPTH INTERVAL		AMOUNT AND KIND MATERIAL USED			
						12,964-22,845'		Acdz w/50,904 gal 7 1/2%; Frac w/19,999,720# sand & 19,775,406 gal fluid			
28. PRODUCTION											
Date First Production			Production Method (Flowing, gas lift, pumping - Size and type pump)				Well Status (Prod. or Shut-in)				
1/13/21			Flowing				Producing				
Date of Test	Hours Tested	Choke Size	Prod'n For Test Period	Oil - Bbl	Gas - MCF	Water - Bbl.	Gas - Oil Ratio				
1/13/21	24	13/64"		392	696	1723					
Flow Tubing Press.	Casing Pressure	Calculated 24-Hour Rate	Oil - Bbl.	Gas - MCF	Water - Bbl.	Oil Gravity - API - (Corr.)					
4800#	1100#		392	696	1723						
29. Disposition of Gas (Sold, used for fuel, vented, etc.)							30. Test Witnessed By				
Sold							Juan Villalobos				
31. List Attachments											
Surveys											
32. If a temporary pit was used at the well, attach a plat with the location of the temporary pit.								33. Rig Release Date:			
								7/29/20			
34. If an on-site burial was used at the well, report the exact location of the on-site burial:											
Latitude _____ Longitude _____ NAD83											
I hereby certify that the information shown on both sides of this form is true and complete to the best of my knowledge and belief											
Printed											
Signature <i>Amanda Avery</i>				Name: Amanda Avery				Title Regulatory Analyst		Date: 3/17/21	
E-mail Address: amanda.l.avery@conocophillips.com											

INSTRUCTIONS

INDICATE FORMATION TOPS IN CONFORMANCE WITH GEOGRAPHICAL SECTION OF STATE

OIL OR GAS SANDS OR ZONES

IMPORTANT WATER SANDS

No. 1, from.....to.....feet.....
 No. 2, from.....to.....feet.....
 No. 3, from.....to.....feet.....

LITHOLOGY RECORD (Attach additional sheet if necessary)

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) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

CONDITIONS

Action 21306

CONDITIONS OF APPROVAL

Operator:	COG OPERATING LLC	600 W Illinois Ave	Midland, TX79701	OGRID:	229137	Action Number:	21306	Action Type:	C-104C
OCD Reviewer									Condition
ksimmons									None