

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 O GRID Number 229137	
		³ Reason for Filing Code/ Effective Date RT 1/25/21	
API Number 30-015-46812	⁵ Pool Name Purple Sage; Wolfcamp		⁶ Pool Code 98220
⁷ Property Code 323072	⁸ Property Name Hambone Federal Com		⁹ Well Number 701H

II. ¹⁰ Surface Location

Ul or lot no. P	Section 8	Township 26S	Range 29E	Lot Idn	Feet from the 222	North/South Line South	Feet from the 1168	East/West line East	County Eddy
--------------------	--------------	-----------------	--------------	---------	----------------------	---------------------------	-----------------------	------------------------	----------------

¹¹ Bottom Hole Location

Ul or lot no. 1	Section 5	Township 26S	Range 29E	Lot Idn	Feet from the 201	North/South Line North	Feet from the 310	East/West line East	County Eddy
¹² Lse Code F	¹³ Producing Method Code		¹⁴ Gas Connection Date		¹⁵ C -129 Permit Number	¹⁶ C -129 Effective Date		¹⁷ C -129 Expiration Date	

III. Oil and Gas Transporters

¹⁸ Transporter O GRID	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 1/15/21	²³ TD 19,991'	²⁴ PBTD 18,840'	²⁵ Perforations 10,220-19,815'	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"	19,976'		1295
		2 7/8"	9,393'		

V. Well Test Data

³¹ Date New Oil	³² Gas Delivery Date	³³ Test Date	³⁴ Test Length	³⁵ Tbg. Pressure	³⁶ Csg. Pressure
³⁷ Choke Size	³⁸ Oil	³⁹ Water	⁴⁰ Gas		⁴¹ Test Method

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: Amanda Avery		OIL CONSERVATION DIVISION Approved by: 	
Printed name: Amanda Avery		Title: BUSINESS OP. SPEC.	
Title: Regulatory Analyst		Approval Date: 02/05/2021	
E-mail Address:		C-104 RT EXPIRES: 04/15/2021	
Date: 1/20/21	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

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number 30-015-46812		Pool Code 98220	Pool Name Purple Sage; Wolfcamp
Property Code 323072	Property Name HAMBONE FEDERAL COM		Well Number 701H
OGRID No. 229137	Operator Name COG OPERATING, LLC		Elevation 2914.4'

Surface Location

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
P	8	26-S	29-E		222	SOUTH	1168	EAST	EDDY

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
1	5	26-S	29-E		201	NORTH	310	EAST	EDDY
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

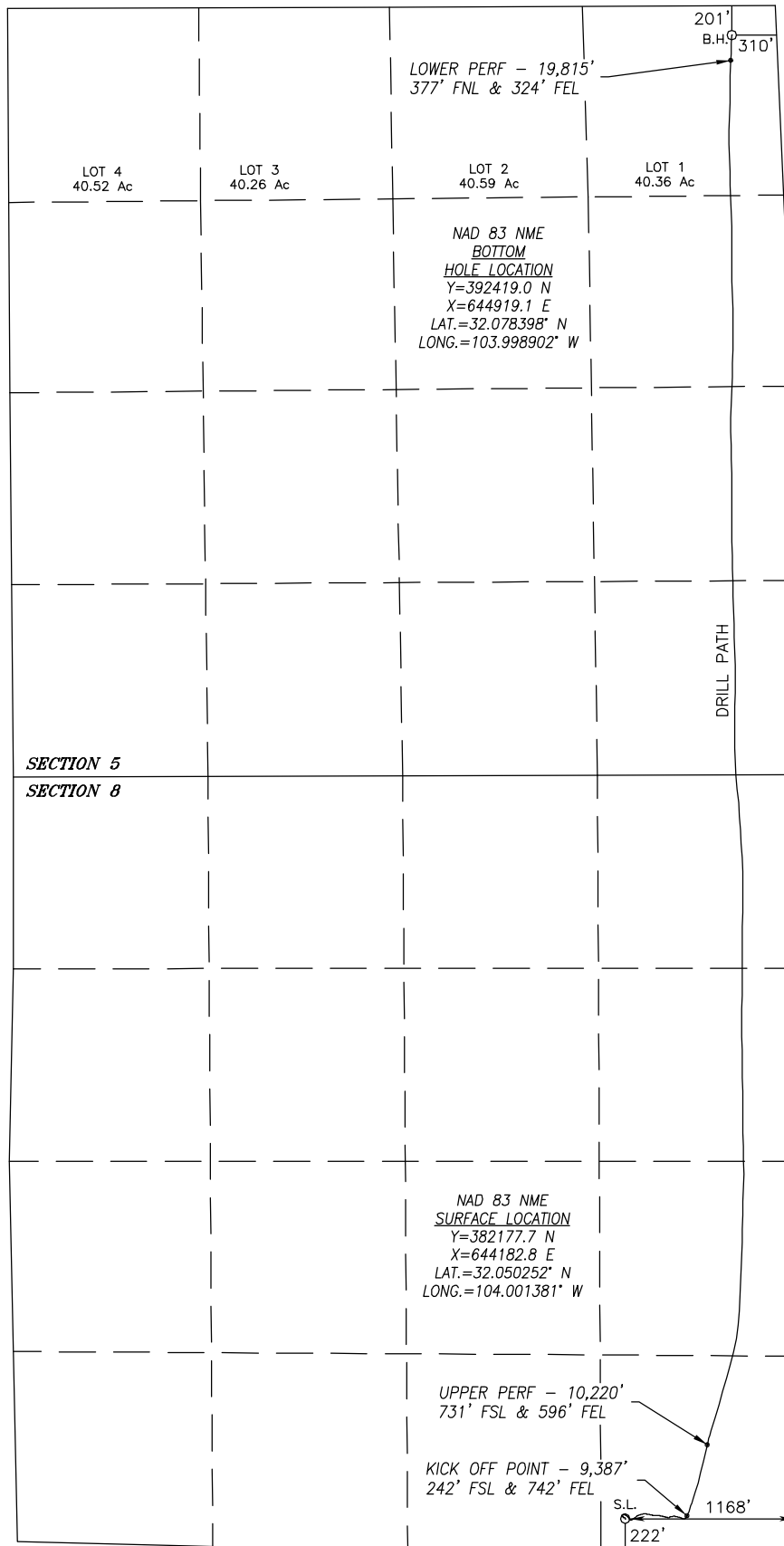
SEE PAGE 2

PAGE 1 OF 2

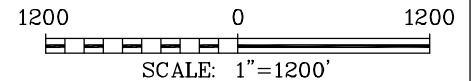
W.O. #20-1641

DRAWN BY: WN

Property Code 323072	Property Name HAMBONE FEDERAL COM	Well Number 701H
OGRID No. 229137	Operator Name COG OPERATING, LLC	Elevation 2914.4'



SURFACE INFO AND BOREPATH SHOWN HEREON IS BASED ON DIRECTIONAL SURVEY REPORT PROVIDED BY COG OPERATING, LLC FOR THE HAMBONE FEDERAL COM #701H SUPPLIED TO HARCROW SURVEYING, LLC ON DECEMBER 4, 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.

Amanda Avery 1/20/21

Signature Date

Amanda Avery

Printed Name

aavery@concho.com

E-mail Address

SURVEYOR CERTIFICATION

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

JULY 3, 2019/JUNE 4, 2020

Date of Survey/Date of Geographic Survey

Signature & Seal of Professional Surveyor



12/8/20

Certificate No. CHAD HARCROW 17777

PAGE 2 OF 2

W.O. #20-1641

DRAWN BY: WN

Intent ☐ As Drilled ☐

API #		
Operator Name:	Property Name:	Well Number

Kick Off Point (KOP)

UL	Section	Township	Range	Lot	Feet	From N/S	Feet	From E/W	County
Latitude					Longitude				NAD

First Take Point (FTP)

UL	Section	Township	Range	Lot	Feet	From N/S	Feet	From E/W	County
Latitude					Longitude				NAD

Last Take Point (LTP)

UL	Section	Township	Range	Lot	Feet	From N/S	Feet	From E/W	County
Latitude					Longitude				NAD

Is this well the defining well for the Horizontal Spacing Unit? ☐Is this well an infill well? ☐

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

API #		
Operator Name:	Property Name:	Well Number

KZ 06/29/2018



COG Operating LLC

Eddy County, NM (NAD27 NME)

Hambone Federal Com

701H

OH / 66455

Design: Surveys (Pioneer 84)

Standard Survey Report

04 June, 2020





Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 701H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	RKB @ 2939.40usft (Pioneer 84)
Site:	Hambone Federal Com	MD Reference:	RKB @ 2939.40usft (Pioneer 84)
Well:	701H	North Reference:	Grid
Wellbore:	OH / 66455	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Pioneer 84)	Database:	USA Compass

Project	Eddy 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	Hambone Federal Com		
Site Position:		Northing:	382,232.28 usft
From:	Map	Easting:	601,211.49 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 3' 1.622153 N
		Longitude:	104° 0' 23.979022 W
		Grid Convergence:	0.17 °

Well	701H		
Well Position	+N/-S	0.00 usft	Northing:
	+E/-W	0.00 usft	Easting:
Position Uncertainty	1.00 usft	Wellhead Elevation:	usft
		Latitude:	32° 3' 0.457028 N
		Longitude:	104° 0' 3.232059 W
		Ground Level:	2,914.40 usft

Wellbore	OH / 66455		
Magnetics	Model Name	Sample Date	Declination (°)
	MVHD	5/26/2020	6.71
			Dip Angle (°)
			59.63
			Field Strength (nT)
			47,699.64832349

Design	Surveys (Pioneer 84)		
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 (°)
			4.00

Survey Program	Date	6/4/2020		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
100.00	9,076.00	SDI Gyro Surveys (OH / 66455)	Scientific Keeper	Scientific Drilling Intl. Standard Wireline Keeper
9,076.00	19,991.00	Phoenix MWD Surveys (OH / 66455)	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	0.80	358.18	100.00	0.70	-0.02	0.69	0.80	0.80	0.00	
125.00	0.78	355.27	124.99	1.04	-0.04	1.04	0.18	-0.08	-11.64	
150.00	0.80	349.49	149.99	1.38	-0.09	1.37	0.33	0.08	-23.12	
175.00	0.76	349.74	174.99	1.72	-0.15	1.70	0.16	-0.16	1.00	
200.00	0.96	341.81	199.99	2.08	-0.24	2.06	0.93	0.80	-31.72	
225.00	0.87	340.57	224.98	2.46	-0.37	2.43	0.37	-0.36	-4.96	
250.00	0.83	343.51	249.98	2.81	-0.49	2.77	0.24	-0.16	11.76	
275.00	0.88	342.11	274.98	3.17	-0.60	3.12	0.22	0.20	-5.60	
300.00	0.81	340.39	299.98	3.52	-0.72	3.46	0.30	-0.28	-6.88	



Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 701H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	RKB @ 2939.40usft (Pioneer 84)
Site:	Hambone Federal Com	MD Reference:	RKB @ 2939.40usft (Pioneer 84)
Well:	701H	North Reference:	Grid
Wellbore:	OH / 66455	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Pioneer 84)	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	0.87	333.58	324.97	3.85	-0.86	3.78	0.47	0.24	-27.24
350.00	0.84	327.59	349.97	4.18	-1.04	4.09	0.38	-0.12	-23.96
375.00	0.82	316.00	374.97	4.46	-1.26	4.36	0.68	-0.08	-46.36
400.00	0.99	306.45	399.96	4.72	-1.56	4.60	0.91	0.68	-38.20
425.00	0.96	299.47	424.96	4.95	-1.92	4.80	0.49	-0.12	-27.92
450.00	1.06	300.45	449.96	5.17	-2.30	5.00	0.41	0.40	3.92
475.00	1.14	298.99	474.95	5.41	-2.72	5.20	0.34	0.32	-5.84
500.00	1.04	290.03	499.95	5.60	-3.15	5.37	0.79	-0.40	-35.84
525.00	1.22	294.17	524.94	5.79	-3.60	5.53	0.79	0.72	16.56
550.00	1.29	295.84	549.94	6.02	-4.10	5.72	0.32	0.28	6.68
575.00	1.32	292.61	574.93	6.26	-4.62	5.92	0.32	0.12	-12.92
600.00	1.44	292.20	599.92	6.49	-5.18	6.11	0.48	0.48	-1.64
625.00	1.39	290.16	624.92	6.71	-5.75	6.29	0.28	-0.20	-8.16
650.00	1.63	291.67	649.91	6.94	-6.37	6.48	0.97	0.96	6.04
675.00	1.76	292.94	674.90	7.23	-7.05	6.72	0.54	0.52	5.08
700.00	1.79	289.76	699.88	7.51	-7.77	6.95	0.41	0.12	-12.72
725.00	1.75	287.03	724.87	7.75	-8.50	7.14	0.37	-0.16	-10.92
750.00	1.93	290.61	749.86	8.01	-9.26	7.35	0.85	0.72	14.32
775.00	1.90	286.93	774.85	8.28	-10.05	7.56	0.51	-0.12	-14.72
800.00	1.96	287.67	799.83	8.53	-10.86	7.75	0.26	0.24	2.96
825.00	1.91	285.65	824.82	8.77	-11.67	7.94	0.34	-0.20	-8.08
850.00	1.96	287.14	849.80	9.01	-12.48	8.12	0.28	0.20	5.96
875.00	1.70	288.37	874.79	9.25	-13.24	8.31	1.05	-1.04	4.92
900.00	0.94	317.61	899.78	9.52	-13.73	8.54	3.97	-3.04	116.96
925.00	0.84	6.35	924.78	9.86	-13.84	8.87	2.96	-0.40	194.96
950.00	0.88	9.78	949.78	10.23	-13.79	9.24	0.26	0.16	13.72
975.00	0.82	18.02	974.77	10.59	-13.70	9.60	0.54	-0.24	32.96
1,000.00	0.86	14.19	999.77	10.94	-13.60	9.96	0.28	0.16	-15.32
1,025.00	0.78	26.82	1,024.77	11.27	-13.48	10.30	0.79	-0.32	50.52
1,050.00	0.73	24.50	1,049.77	11.57	-13.34	10.61	0.23	-0.20	-9.28
1,075.00	0.76	19.62	1,074.77	11.87	-13.21	10.92	0.28	0.12	-19.52
1,100.00	0.69	24.75	1,099.76	12.16	-13.10	11.22	0.38	-0.28	20.52
1,125.00	0.59	22.77	1,124.76	12.42	-12.98	11.48	0.41	-0.40	-7.92
1,150.00	0.55	30.00	1,149.76	12.64	-12.87	11.71	0.33	-0.16	28.92
1,175.00	0.52	27.44	1,174.76	12.85	-12.76	11.92	0.15	-0.12	-10.24
1,200.00	0.45	32.13	1,199.76	13.03	-12.66	12.11	0.32	-0.28	18.76
1,225.00	0.45	26.64	1,224.76	13.20	-12.56	12.29	0.17	0.00	-21.96
1,250.00	0.49	24.58	1,249.76	13.39	-12.47	12.48	0.17	0.16	-8.24
1,275.00	0.45	28.25	1,274.76	13.57	-12.38	12.67	0.20	-0.16	14.68
1,300.00	0.43	21.87	1,299.76	13.74	-12.30	12.85	0.21	-0.08	-25.52
1,325.00	0.40	6.44	1,324.75	13.92	-12.25	13.03	0.46	-0.12	-61.72
1,350.00	0.45	346.87	1,349.75	14.10	-12.27	13.21	0.61	0.20	-78.28
1,375.00	0.44	338.63	1,374.75	14.28	-12.32	13.39	0.26	-0.04	-32.96



Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 701H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	RKB @ 2939.40usft (Pioneer 84)
Site:	Hambone Federal Com	MD Reference:	RKB @ 2939.40usft (Pioneer 84)
Well:	701H	North Reference:	Grid
Wellbore:	OH / 66455	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Pioneer 84)	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	0.59	331.06	1,399.75	14.49	-12.42	13.58	0.66	0.60	-30.28
1,425.00	0.60	323.83	1,424.75	14.70	-12.56	13.79	0.30	0.04	-28.92
1,450.00	0.83	315.63	1,449.75	14.94	-12.76	14.01	1.00	0.92	-32.80
1,475.00	0.84	306.70	1,474.75	15.18	-13.04	14.23	0.52	0.04	-35.72
1,500.00	1.05	309.34	1,499.74	15.43	-13.36	14.46	0.86	0.84	10.56
1,525.00	1.24	303.54	1,524.74	15.73	-13.77	14.73	0.89	0.76	-23.20
1,550.00	1.42	304.80	1,549.73	16.05	-14.25	15.02	0.73	0.72	5.04
1,575.00	1.65	303.36	1,574.72	16.43	-14.80	15.36	0.93	0.92	-5.76
1,600.00	1.76	302.48	1,599.71	16.83	-15.42	15.71	0.45	0.44	-3.52
1,625.00	1.93	303.31	1,624.70	17.27	-16.10	16.10	0.69	0.68	3.32
1,650.00	2.21	303.28	1,649.68	17.77	-16.86	16.55	1.12	1.12	-0.12
1,675.00	2.29	303.25	1,674.66	18.30	-17.68	17.03	0.32	0.32	-0.12
1,700.00	2.56	303.66	1,699.64	18.89	-18.56	17.55	1.08	1.08	1.64
1,725.00	2.51	303.92	1,724.62	19.50	-19.48	18.10	0.21	-0.20	1.04
1,750.00	2.54	305.80	1,749.59	20.13	-20.38	18.66	0.35	0.12	7.52
1,775.00	2.61	305.91	1,774.57	20.79	-21.29	19.25	0.28	0.28	0.44
1,800.00	2.20	315.51	1,799.54	21.47	-22.09	19.87	2.29	-1.64	38.40
1,825.00	1.65	347.14	1,824.53	22.16	-22.50	20.53	4.70	-2.20	126.52
1,850.00	1.64	27.81	1,849.52	22.83	-22.42	21.21	4.57	-0.04	162.68
1,875.00	1.91	50.04	1,874.51	23.41	-21.93	21.82	2.94	1.08	88.92
1,900.00	1.99	56.83	1,899.49	23.92	-21.25	22.37	0.98	0.32	27.16
1,925.00	2.08	62.30	1,924.48	24.36	-20.48	22.87	0.86	0.36	21.88
1,950.00	1.98	60.92	1,949.46	24.78	-19.70	23.35	0.45	-0.40	-5.52
1,975.00	2.01	60.17	1,974.45	25.21	-18.95	23.83	0.16	0.12	-3.00
2,000.00	1.96	60.97	1,999.43	25.64	-18.19	24.31	0.23	-0.20	3.20
2,025.00	1.88	57.35	2,024.42	26.07	-17.47	24.78	0.58	-0.32	-14.48
2,050.00	1.74	52.62	2,049.41	26.52	-16.83	25.28	0.82	-0.56	-18.92
2,075.00	1.66	49.41	2,074.40	26.98	-16.25	25.78	0.50	-0.32	-12.84
2,100.00	1.63	48.71	2,099.39	27.45	-15.71	26.29	0.14	-0.12	-2.80
2,125.00	1.66	47.62	2,124.38	27.93	-15.17	26.81	0.17	0.12	-4.36
2,150.00	1.68	47.95	2,149.36	28.42	-14.63	27.33	0.09	0.08	1.32
2,175.00	1.68	51.12	2,174.35	28.90	-14.08	27.85	0.37	0.00	12.68
2,200.00	1.97	68.69	2,199.34	29.28	-13.39	28.28	2.51	1.16	70.28
2,225.00	2.84	88.10	2,224.32	29.46	-12.37	28.53	4.72	3.48	77.64
2,250.00	3.50	95.91	2,249.28	29.40	-10.99	28.56	3.15	2.64	31.24
2,275.00	3.97	98.88	2,274.23	29.19	-9.38	28.47	2.03	1.88	11.88
2,300.00	4.29	101.12	2,299.16	28.88	-7.61	28.28	1.43	1.28	8.96
2,325.00	4.29	101.66	2,324.09	28.51	-5.77	28.04	0.16	0.00	2.16
2,350.00	4.24	101.46	2,349.02	28.14	-3.95	27.79	0.21	-0.20	-0.80
2,375.00	4.17	104.32	2,373.96	27.73	-2.17	27.51	0.88	-0.28	11.44
2,400.00	4.07	110.86	2,398.89	27.19	-0.46	27.09	1.92	-0.40	26.16
2,425.00	3.92	120.78	2,423.83	26.43	1.11	26.45	2.83	-0.60	39.68
2,450.00	4.20	125.19	2,448.77	25.47	2.59	25.59	1.68	1.12	17.64



Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 701H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	RKB @ 2939.40usft (Pioneer 84)
Site:	Hambone Federal Com	MD Reference:	RKB @ 2939.40usft (Pioneer 84)
Well:	701H	North Reference:	Grid
Wellbore:	OH / 66455	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Pioneer 84)	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	4.53	126.95	2,473.70	24.35	4.13	24.58	1.42	1.32	7.04	
2,500.00	4.83	127.08	2,498.61	23.12	5.76	23.46	1.20	1.20	0.52	
2,525.00	5.31	126.19	2,523.52	21.80	7.53	22.27	1.95	1.92	-3.56	
2,550.00	5.59	124.84	2,548.40	20.42	9.46	21.03	1.23	1.12	-5.40	
2,575.00	5.64	124.95	2,573.28	19.02	11.47	19.78	0.20	0.20	0.44	
2,600.00	5.49	125.34	2,598.16	17.63	13.45	18.52	0.62	-0.60	1.56	
2,625.00	4.85	127.67	2,623.06	16.29	15.26	17.32	2.69	-2.56	9.32	
2,650.00	4.21	130.87	2,647.98	15.04	16.79	16.18	2.75	-2.56	12.80	
2,675.00	3.58	132.06	2,672.93	13.92	18.07	15.15	2.54	-2.52	4.76	
2,700.00	3.12	132.98	2,697.88	12.93	19.14	14.24	1.85	-1.84	3.68	
2,725.00	2.83	136.13	2,722.85	12.03	20.07	13.40	1.33	-1.16	12.60	
2,750.00	2.72	138.42	2,747.82	11.14	20.89	12.57	0.62	-0.44	9.16	
2,775.00	2.75	136.16	2,772.79	10.26	21.70	11.75	0.45	0.12	-9.04	
2,800.00	2.70	140.38	2,797.76	9.37	22.49	10.92	0.83	-0.20	16.88	
2,825.00	2.41	144.45	2,822.74	8.49	23.17	10.09	1.37	-1.16	16.28	
2,850.00	2.40	147.14	2,847.72	7.63	23.76	9.27	0.45	-0.04	10.76	
2,875.00	2.39	148.81	2,872.70	6.74	24.32	8.42	0.28	-0.04	6.68	
2,900.00	2.35	148.61	2,897.67	5.86	24.85	7.58	0.16	-0.16	-0.80	
2,925.00	2.34	148.56	2,922.65	4.98	25.39	6.74	0.04	-0.04	-0.20	
2,950.00	2.31	149.63	2,947.63	4.11	25.91	5.91	0.21	-0.12	4.28	
2,975.00	2.33	148.98	2,972.61	3.24	26.42	5.08	0.13	0.08	-2.60	
3,000.00	2.39	149.84	2,997.59	2.36	26.95	4.23	0.28	0.24	3.44	
3,025.00	2.29	150.10	3,022.57	1.47	27.46	3.39	0.40	-0.40	1.04	
3,050.00	2.28	152.68	3,047.55	0.60	27.93	2.55	0.41	-0.04	10.32	
3,075.00	2.25	150.90	3,072.53	-0.27	28.40	1.71	0.31	-0.12	-7.12	
3,100.00	2.21	150.83	3,097.51	-1.12	28.88	0.90	0.16	-0.16	-0.28	
3,125.00	2.20	149.96	3,122.49	-1.96	29.35	0.10	0.14	-0.04	-3.48	
3,150.00	2.26	149.18	3,147.47	-2.80	29.84	-0.71	0.27	0.24	-3.12	
3,175.00	2.28	150.34	3,172.45	-3.65	30.34	-1.53	0.20	0.08	4.64	
3,200.00	2.30	150.19	3,197.43	-4.52	30.84	-2.36	0.08	0.08	-0.60	
3,225.00	2.23	147.55	3,222.41	-5.37	31.35	-3.16	0.50	-0.28	-10.56	
3,250.00	2.05	137.75	3,247.40	-6.11	31.91	-3.86	1.63	-0.72	-39.20	
3,275.00	1.92	121.36	3,272.38	-6.66	32.57	-4.37	2.32	-0.52	-65.56	
3,300.00	1.99	121.17	3,297.37	-7.10	33.30	-4.76	0.28	0.28	-0.76	
3,325.00	1.95	118.47	3,322.35	-7.53	34.04	-5.13	0.40	-0.16	-10.80	
3,350.00	1.87	119.27	3,347.34	-7.93	34.77	-5.48	0.34	-0.32	3.20	
3,375.00	1.84	118.39	3,372.33	-8.32	35.48	-5.82	0.17	-0.12	-3.52	
3,400.00	1.84	115.52	3,397.31	-8.68	36.20	-6.13	0.37	0.00	-11.48	
3,425.00	1.79	114.22	3,422.30	-9.02	36.91	-6.42	0.26	-0.20	-5.20	
3,450.00	1.79	111.72	3,447.29	-9.32	37.63	-6.67	0.31	0.00	-10.00	
3,475.00	2.11	97.37	3,472.27	-9.52	38.45	-6.82	2.33	1.28	-57.40	
3,500.00	3.00	77.67	3,497.25	-9.44	39.55	-6.66	4.95	3.56	-78.80	
3,525.00	3.42	74.37	3,522.21	-9.10	40.90	-6.22	1.83	1.68	-13.20	
3,550.00	3.42	73.51	3,547.17	-8.69	42.34	-5.71	0.21	0.00	-3.44	



Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 701H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	RKB @ 2939.40usft (Pioneer 84)
Site:	Hambone Federal Com	MD Reference:	RKB @ 2939.40usft (Pioneer 84)
Well:	701H	North Reference:	Grid
Wellbore:	OH / 66455	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Pioneer 84)	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	3.45	73.92	3,572.12	-8.27	43.78	-5.19	0.16	0.12	1.64
3,600.00	3.39	71.79	3,597.08	-7.83	45.20	-4.66	0.56	-0.24	-8.52
3,625.00	3.34	68.98	3,622.03	-7.34	46.58	-4.07	0.69	-0.20	-11.24
3,650.00	3.31	69.86	3,646.99	-6.83	47.94	-3.47	0.24	-0.12	3.52
3,675.00	3.91	63.53	3,671.94	-6.20	49.38	-2.74	2.88	2.40	-25.32
3,700.00	4.63	60.13	3,696.87	-5.32	51.02	-1.74	3.05	2.88	-13.60
3,725.00	4.89	59.39	3,721.79	-4.27	52.81	-0.58	1.07	1.04	-2.96
3,750.00	4.88	58.65	3,746.70	-3.18	54.64	0.64	0.26	-0.04	-2.96
3,775.00	4.86	56.37	3,771.61	-2.04	56.43	1.91	0.78	-0.08	-9.12
3,800.00	4.86	55.61	3,796.52	-0.85	58.18	3.21	0.26	0.00	-3.04
3,825.00	4.96	54.92	3,821.42	0.37	59.94	4.55	0.46	0.40	-2.76
3,850.00	4.86	53.73	3,846.33	1.61	61.68	5.92	0.57	-0.40	-4.76
3,875.00	4.76	52.14	3,871.24	2.88	63.35	7.29	0.67	-0.40	-6.36
3,900.00	4.75	52.17	3,896.16	4.15	64.99	8.68	0.04	-0.04	0.12
3,925.00	4.64	51.09	3,921.07	5.42	66.59	10.05	0.56	-0.44	-4.32
3,950.00	4.63	49.91	3,945.99	6.70	68.15	11.44	0.38	-0.04	-4.72
3,975.00	4.50	49.90	3,970.91	7.99	69.67	12.83	0.52	-0.52	-0.04
4,000.00	4.48	49.54	3,995.84	9.25	71.17	14.20	0.14	-0.08	-1.44
4,025.00	4.56	49.35	4,020.76	10.53	72.66	15.58	0.33	0.32	-0.76
4,050.00	4.61	50.18	4,045.68	11.82	74.19	16.97	0.33	0.20	3.32
4,075.00	4.55	50.03	4,070.60	13.10	75.72	18.36	0.24	-0.24	-0.60
4,100.00	4.48	50.28	4,095.52	14.36	77.23	19.72	0.29	-0.28	1.00
4,125.00	4.41	50.46	4,120.45	15.60	78.72	21.06	0.29	-0.28	0.72
4,150.00	4.97	56.36	4,145.36	16.81	80.37	22.38	2.95	2.24	23.60
4,175.00	5.39	60.63	4,170.26	17.99	82.29	23.69	2.28	1.68	17.08
4,200.00	5.46	61.61	4,195.15	19.13	84.36	24.97	0.46	0.28	3.92
4,225.00	5.46	62.11	4,220.03	20.25	86.46	26.24	0.19	0.00	2.00
4,250.00	5.41	61.29	4,244.92	21.37	88.54	27.50	0.37	-0.20	-3.28
4,275.00	5.47	61.32	4,269.81	22.51	90.62	28.78	0.24	0.24	0.12
4,300.00	5.55	61.24	4,294.69	23.66	92.73	30.08	0.32	0.32	-0.32
4,325.00	5.69	63.82	4,319.57	24.79	94.90	31.36	1.16	0.56	10.32
4,350.00	5.78	73.46	4,344.45	25.70	97.22	32.42	3.87	0.36	38.56
4,375.00	5.79	76.07	4,369.32	26.36	99.65	33.25	1.05	0.04	10.44
4,400.00	5.81	76.65	4,394.19	26.96	102.10	34.02	0.25	0.08	2.32
4,425.00	5.84	77.40	4,419.06	27.53	104.58	34.76	0.33	0.12	3.00
4,450.00	5.71	76.61	4,443.94	28.09	107.03	35.49	0.61	-0.52	-3.16
4,475.00	5.47	76.86	4,468.82	28.65	109.40	36.22	0.96	-0.96	1.00
4,500.00	5.24	76.42	4,493.71	29.19	111.67	36.91	0.93	-0.92	-1.76
4,525.00	5.10	76.83	4,518.61	29.71	113.86	37.58	0.58	-0.56	1.64
4,550.00	4.88	75.85	4,543.51	30.22	115.97	38.24	0.94	-0.88	-3.92
4,575.00	4.84	75.91	4,568.42	30.74	118.03	38.90	0.16	-0.16	0.24
4,600.00	4.62	77.13	4,593.34	31.22	120.03	39.52	0.97	-0.88	4.88
4,625.00	4.63	76.20	4,618.26	31.69	121.99	40.12	0.30	0.04	-3.72



Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 701H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	RKB @ 2939.40usft (Pioneer 84)
Site:	Hambone Federal Com	MD Reference:	RKB @ 2939.40usft (Pioneer 84)
Well:	701H	North Reference:	Grid
Wellbore:	OH / 66455	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Pioneer 84)	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	4.68	77.08	4,643.17	32.15	123.97	40.73	0.35	0.20	3.52	
4,675.00	4.71	76.69	4,668.09	32.62	125.96	41.33	0.18	0.12	-1.56	
4,700.00	4.81	77.25	4,693.00	33.09	127.98	41.94	0.44	0.40	2.24	
4,725.00	5.21	87.58	4,717.91	33.37	130.14	42.37	3.94	1.60	41.32	
4,750.00	5.52	93.03	4,742.80	33.35	132.47	42.52	2.38	1.24	21.80	
4,775.00	5.64	94.92	4,767.68	33.18	134.90	42.52	0.88	0.48	7.56	
4,800.00	5.72	94.50	4,792.56	32.98	137.36	42.49	0.36	0.32	-1.68	
4,825.00	5.71	94.77	4,817.43	32.78	139.84	42.46	0.11	-0.04	1.08	
4,850.00	5.66	95.14	4,842.31	32.56	142.31	42.42	0.25	-0.20	1.48	
4,875.00	5.52	94.81	4,867.19	32.35	144.74	42.38	0.57	-0.56	-1.32	
4,900.00	5.37	95.90	4,892.08	32.13	147.10	42.32	0.73	-0.60	4.36	
4,925.00	5.31	96.68	4,916.97	31.88	149.41	42.23	0.38	-0.24	3.12	
4,950.00	5.20	97.54	4,941.87	31.59	151.68	42.10	0.54	-0.44	3.44	
4,975.00	4.99	99.27	4,966.77	31.27	153.88	41.93	1.04	-0.84	6.92	
5,000.00	4.93	99.88	4,991.67	30.91	156.01	41.72	0.32	-0.24	2.44	
5,025.00	4.85	99.14	5,016.58	30.56	158.11	41.52	0.41	-0.32	-2.96	
5,050.00	4.74	100.99	5,041.50	30.19	160.17	41.30	0.76	-0.44	7.40	
5,075.00	4.48	103.00	5,066.41	29.78	162.14	41.02	1.22	-1.04	8.04	
5,100.00	4.34	102.56	5,091.34	29.35	164.01	40.73	0.58	-0.56	-1.76	
5,125.00	4.28	102.34	5,116.27	28.95	165.84	40.45	0.25	-0.24	-0.88	
5,150.00	4.16	103.44	5,141.20	28.54	167.64	40.17	0.58	-0.48	4.40	
5,175.00	4.11	103.18	5,166.14	28.12	169.39	39.87	0.21	-0.20	-1.04	
5,200.00	4.04	103.00	5,191.07	27.72	171.12	39.59	0.28	-0.28	-0.72	
5,225.00	3.96	104.01	5,216.01	27.31	172.82	39.31	0.43	-0.32	4.04	
5,250.00	4.03	105.60	5,240.95	26.87	174.50	38.98	0.52	0.28	6.36	
5,275.00	4.10	105.98	5,265.89	26.38	176.21	38.62	0.30	0.28	1.52	
5,300.00	3.94	103.67	5,290.83	25.93	177.90	38.29	0.91	-0.64	-9.24	
5,325.00	4.05	104.30	5,315.77	25.51	179.59	37.99	0.47	0.44	2.52	
5,350.00	4.28	99.90	5,340.70	25.14	181.37	37.73	1.57	0.92	-17.60	
5,375.00	4.59	98.68	5,365.63	24.82	183.27	37.55	1.30	1.24	-4.88	
5,400.00	4.56	98.12	5,390.55	24.53	185.25	37.40	0.22	-0.12	-2.24	
5,425.00	4.15	96.18	5,415.47	24.29	187.13	37.30	1.74	-1.64	-7.76	
5,450.00	3.98	94.85	5,440.41	24.12	188.89	37.25	0.78	-0.68	-5.32	
5,475.00	3.79	93.43	5,465.35	24.00	190.58	37.24	0.85	-0.76	-5.68	
5,500.00	3.52	92.29	5,490.30	23.92	192.17	37.28	1.12	-1.08	-4.56	
5,525.00	3.51	93.50	5,515.26	23.84	193.70	37.31	0.30	-0.04	4.84	
5,550.00	3.39	94.45	5,540.21	23.74	195.21	37.31	0.53	-0.48	3.80	
5,575.00	3.22	91.54	5,565.17	23.66	196.64	37.33	0.96	-0.68	-11.64	
5,600.00	3.21	92.72	5,590.13	23.61	198.05	37.38	0.27	-0.04	4.72	
5,625.00	3.21	93.55	5,615.09	23.53	199.44	37.40	0.19	0.00	3.32	
5,650.00	3.22	91.71	5,640.05	23.47	200.84	37.43	0.41	0.04	-7.36	
5,675.00	3.20	91.81	5,665.01	23.43	202.24	37.49	0.08	-0.08	0.40	
5,700.00	3.37	91.91	5,689.97	23.38	203.67	37.54	0.68	0.68	0.40	



Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 701H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	RKB @ 2939.40usft (Pioneer 84)
Site:	Hambone Federal Com	MD Reference:	RKB @ 2939.40usft (Pioneer 84)
Well:	701H	North Reference:	Grid
Wellbore:	OH / 66455	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Pioneer 84)	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	4.07	92.46	5,714.92	23.32	205.30	37.59	2.80	2.80	2.20	
5,750.00	4.80	95.31	5,739.84	23.18	207.22	37.59	3.05	2.92	11.40	
5,775.00	4.67	95.52	5,764.76	22.99	209.28	37.54	0.52	-0.52	0.84	
5,800.00	4.81	95.53	5,789.67	22.79	211.33	37.48	0.56	0.56	0.04	
5,825.00	4.79	94.30	5,814.58	22.61	213.42	37.45	0.42	-0.08	-4.92	
5,850.00	4.82	94.19	5,839.50	22.46	215.51	37.44	0.13	0.12	-0.44	
5,875.00	4.89	94.68	5,864.41	22.29	217.62	37.43	0.33	0.28	1.96	
5,900.00	4.90	94.07	5,889.32	22.13	219.74	37.41	0.21	0.04	-2.44	
5,925.00	4.88	95.17	5,914.23	21.96	221.87	37.39	0.38	-0.08	4.40	
5,950.00	4.92	96.23	5,939.13	21.75	223.99	37.33	0.40	0.16	4.24	
5,975.00	4.88	95.15	5,964.04	21.53	226.12	37.26	0.40	-0.16	-4.32	
6,000.00	4.96	95.29	5,988.95	21.34	228.25	37.22	0.32	0.32	0.56	
6,025.00	4.70	95.29	6,013.86	21.14	230.35	37.17	1.04	-1.04	0.00	
6,050.00	4.64	95.69	6,038.78	20.95	232.37	37.12	0.27	-0.24	1.60	
6,075.00	4.56	94.62	6,063.70	20.77	234.37	37.08	0.47	-0.32	-4.28	
6,100.00	4.32	96.11	6,088.62	20.59	236.30	37.03	1.07	-0.96	5.96	
6,125.00	4.36	95.90	6,113.55	20.39	238.18	36.97	0.17	0.16	-0.84	
6,150.00	4.17	96.11	6,138.48	20.20	240.03	36.90	0.76	-0.76	0.84	
6,175.00	4.16	97.67	6,163.42	19.98	241.83	36.81	0.45	-0.04	6.24	
6,200.00	3.96	98.11	6,188.35	19.74	243.58	36.69	0.81	-0.80	1.76	
6,225.00	4.02	98.32	6,213.29	19.49	245.31	36.56	0.25	0.24	0.84	
6,250.00	3.82	99.54	6,238.23	19.22	246.99	36.42	0.87	-0.80	4.88	
6,275.00	3.74	99.89	6,263.18	18.94	248.62	36.25	0.33	-0.32	1.40	
6,300.00	3.68	100.98	6,288.13	18.65	250.21	36.07	0.37	-0.24	4.36	
6,325.00	3.59	101.63	6,313.08	18.34	251.76	35.87	0.40	-0.36	2.60	
6,350.00	3.53	102.49	6,338.03	18.02	253.28	35.65	0.32	-0.24	3.44	
6,375.00	3.36	104.29	6,362.98	17.67	254.74	35.41	0.81	-0.68	7.20	
6,400.00	3.25	104.39	6,387.94	17.31	256.14	35.15	0.44	-0.44	0.40	
6,425.00	3.23	105.45	6,412.90	16.95	257.50	34.88	0.25	-0.08	4.24	
6,450.00	3.11	105.83	6,437.86	16.58	258.84	34.60	0.49	-0.48	1.52	
6,475.00	3.01	107.53	6,462.83	16.19	260.11	34.31	0.54	-0.40	6.80	
6,500.00	2.98	107.75	6,487.79	15.80	261.36	34.00	0.13	-0.12	0.88	
6,525.00	3.02	106.30	6,512.76	15.42	262.61	33.71	0.34	0.16	-5.80	
6,550.00	3.31	104.69	6,537.72	15.05	263.94	33.43	1.21	1.16	-6.44	
6,575.00	4.11	103.53	6,562.67	14.65	265.51	33.15	3.21	3.20	-4.64	
6,600.00	4.35	102.19	6,587.60	14.24	267.31	32.87	1.04	0.96	-5.36	
6,625.00	4.40	101.91	6,612.53	13.85	269.17	32.60	0.22	0.20	-1.12	
6,650.00	4.45	101.22	6,637.45	13.46	271.06	32.35	0.29	0.20	-2.76	
6,675.00	4.47	101.20	6,662.38	13.08	272.97	32.10	0.08	0.08	-0.08	
6,700.00	4.36	100.61	6,687.30	12.72	274.86	31.87	0.48	-0.44	-2.36	
6,725.00	4.00	100.74	6,712.24	12.38	276.65	31.66	1.44	-1.44	0.52	
6,750.00	3.68	102.24	6,737.18	12.05	278.29	31.44	1.34	-1.28	6.00	
6,775.00	3.41	103.51	6,762.13	11.70	279.80	31.20	1.12	-1.08	5.08	
6,800.00	3.30	105.34	6,787.09	11.34	281.21	30.94	0.61	-0.44	7.32	



Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 701H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	RKB @ 2939.40usft (Pioneer 84)
Site:	Hambone Federal Com	MD Reference:	RKB @ 2939.40usft (Pioneer 84)
Well:	701H	North Reference:	Grid
Wellbore:	OH / 66455	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Pioneer 84)	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	3.24	110.88	6,812.05	10.90	282.57	30.59	1.29	-0.24	22.16
6,850.00	3.23	110.51	6,837.01	10.40	283.89	30.19	0.09	-0.04	-1.48
6,875.00	3.25	110.36	6,861.97	9.91	285.21	29.79	0.09	0.08	-0.60
6,900.00	3.26	110.48	6,886.93	9.41	286.54	29.39	0.05	0.04	0.48
6,925.00	3.28	110.18	6,911.89	8.92	287.88	28.99	0.11	0.08	-1.20
6,950.00	3.43	102.09	6,936.85	8.51	289.28	28.68	1.98	0.60	-32.36
6,975.00	3.49	96.93	6,961.80	8.26	290.77	28.54	1.27	0.24	-20.64
7,000.00	3.43	94.77	6,986.75	8.11	292.27	28.49	0.57	-0.24	-8.64
7,025.00	3.42	94.23	7,011.71	7.99	293.76	28.48	0.14	-0.04	-2.16
7,050.00	3.19	91.75	7,036.67	7.92	295.20	28.50	1.08	-0.92	-9.92
7,075.00	2.85	90.60	7,061.63	7.89	296.51	28.56	1.38	-1.36	-4.60
7,100.00	2.65	90.34	7,086.61	7.88	297.71	28.64	0.80	-0.80	-1.04
7,125.00	2.50	91.01	7,111.58	7.87	298.84	28.70	0.61	-0.60	2.68
7,150.00	2.31	92.69	7,136.56	7.83	299.88	28.74	0.81	-0.76	6.72
7,175.00	2.41	90.39	7,161.54	7.80	300.91	28.79	0.55	0.40	-9.20
7,200.00	2.41	90.88	7,186.51	7.79	301.96	28.85	0.08	0.00	1.96
7,225.00	2.44	92.37	7,211.49	7.76	303.02	28.89	0.28	0.12	5.96
7,250.00	2.50	89.50	7,236.47	7.75	304.10	28.95	0.55	0.24	-11.48
7,275.00	2.33	91.66	7,261.45	7.74	305.15	29.02	0.77	-0.68	8.64
7,300.00	2.01	86.09	7,286.43	7.75	306.10	29.10	1.53	-1.28	-22.28
7,325.00	1.75	62.64	7,311.42	7.96	306.87	29.36	3.22	-1.04	-93.80
7,350.00	2.36	17.21	7,336.40	8.62	307.37	30.06	6.73	2.44	-181.72
7,375.00	2.84	10.15	7,361.38	9.72	307.63	31.17	2.30	1.92	-28.24
7,400.00	2.93	10.11	7,386.34	10.96	307.85	32.42	0.36	0.36	-0.16
7,425.00	2.79	28.85	7,411.31	12.13	308.25	33.61	3.76	-0.56	74.96
7,450.00	2.92	64.01	7,436.28	12.94	309.12	34.48	6.91	0.52	140.64
7,475.00	3.11	73.75	7,461.25	13.41	310.34	35.03	2.18	0.76	38.96
7,500.00	3.19	75.27	7,486.21	13.77	311.67	35.49	0.46	0.32	6.08
7,525.00	3.16	75.14	7,511.17	14.13	313.01	35.94	0.12	-0.12	-0.52
7,550.00	3.55	77.72	7,536.13	14.47	314.43	36.38	1.67	1.56	10.32
7,575.00	4.33	84.25	7,561.07	14.73	316.12	36.76	3.59	3.12	26.12
7,600.00	4.68	84.79	7,585.99	14.91	318.08	37.08	1.41	1.40	2.16
7,625.00	4.73	84.66	7,610.91	15.10	320.12	37.41	0.20	0.20	-0.52
7,650.00	4.57	85.23	7,635.83	15.28	322.14	37.73	0.67	-0.64	2.28
7,675.00	4.38	83.70	7,660.75	15.47	324.08	38.05	0.90	-0.76	-6.12
7,700.00	4.17	83.34	7,685.68	15.68	325.93	38.39	0.85	-0.84	-1.44
7,725.00	4.02	84.29	7,710.62	15.87	327.71	38.71	0.66	-0.60	3.80
7,750.00	3.97	85.52	7,735.56	16.03	329.44	38.98	0.40	-0.20	4.92
7,775.00	3.80	85.63	7,760.50	16.16	331.13	39.23	0.68	-0.68	0.44
7,800.00	3.41	85.65	7,785.45	16.28	332.70	39.46	1.56	-1.56	0.08
7,825.00	3.34	86.12	7,810.41	16.38	334.17	39.67	0.30	-0.28	1.88
7,850.00	3.41	87.48	7,835.36	16.46	335.63	39.85	0.43	0.28	5.44
7,875.00	3.51	89.23	7,860.32	16.51	337.14	40.00	0.58	0.40	7.00



Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 701H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	RKB @ 2939.40usft (Pioneer 84)
Site:	Hambone Federal Com	MD Reference:	RKB @ 2939.40usft (Pioneer 84)
Well:	701H	North Reference:	Grid
Wellbore:	OH / 66455	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Pioneer 84)	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	3.45	89.55	7,885.27	16.52	338.66	40.12	0.25	-0.24	1.28
7,925.00	3.54	89.91	7,910.23	16.53	340.18	40.23	0.37	0.36	1.44
7,950.00	3.76	96.84	7,935.17	16.43	341.77	40.25	1.97	0.88	27.72
7,975.00	4.02	101.79	7,960.12	16.16	343.44	40.09	1.70	1.04	19.80
8,000.00	4.02	102.80	7,985.06	15.78	345.15	39.84	0.28	0.00	4.04
8,025.00	4.10	102.90	8,009.99	15.39	346.88	39.56	0.32	0.32	0.40
8,050.00	4.11	103.19	8,034.93	14.99	348.62	39.28	0.09	0.04	1.16
8,075.00	4.59	102.18	8,059.86	14.57	350.47	39.00	1.94	1.92	-4.04
8,100.00	5.11	101.41	8,084.77	14.14	352.54	38.71	2.10	2.08	-3.08
8,125.00	5.16	101.62	8,109.67	13.69	354.73	38.42	0.21	0.20	0.84
8,150.00	5.09	102.30	8,134.57	13.23	356.92	38.11	0.37	-0.28	2.72
8,175.00	4.74	102.05	8,159.47	12.78	359.01	37.81	1.40	-1.40	-1.00
8,200.00	4.66	101.76	8,184.39	12.36	361.02	37.52	0.33	-0.32	-1.16
8,225.00	4.69	101.72	8,209.31	11.94	363.01	37.25	0.12	0.12	-0.16
8,250.00	5.21	98.10	8,234.21	11.57	365.14	37.03	2.43	2.08	-14.48
8,275.00	5.85	101.50	8,259.10	11.16	367.51	36.78	2.87	2.56	13.60
8,300.00	6.40	101.78	8,283.96	10.62	370.12	36.43	2.20	2.20	1.12
8,325.00	6.40	102.28	8,308.80	10.04	372.85	36.04	0.22	0.00	2.00
8,350.00	6.32	103.73	8,333.65	9.42	375.55	35.61	0.72	-0.32	5.80
8,375.00	6.23	105.57	8,358.50	8.73	378.19	35.10	0.88	-0.36	7.36
8,400.00	5.66	107.82	8,383.36	7.99	380.67	34.54	2.46	-2.28	9.00
8,425.00	5.23	112.26	8,408.25	7.18	382.90	33.88	2.41	-1.72	17.76
8,450.00	4.91	114.26	8,433.15	6.31	384.93	33.16	1.46	-1.28	8.00
8,475.00	4.88	116.17	8,458.06	5.40	386.86	32.39	0.66	-0.12	7.64
8,500.00	4.99	116.85	8,482.97	4.44	388.78	31.56	0.50	0.44	2.72
8,525.00	5.53	116.77	8,507.86	3.40	390.83	30.67	2.16	2.16	-0.32
8,550.00	5.72	118.28	8,532.74	2.27	393.00	29.70	0.96	0.76	6.04
8,575.00	5.70	118.80	8,557.62	1.08	395.18	28.66	0.22	-0.08	2.08
8,600.00	5.23	116.87	8,582.50	-0.03	397.29	27.70	2.02	-1.88	-7.72
8,625.00	4.73	111.71	8,607.41	-0.93	399.26	26.94	2.68	-2.00	-20.64
8,650.00	4.78	106.29	8,632.32	-1.60	401.22	26.41	1.81	0.20	-21.68
8,675.00	4.95	100.24	8,657.23	-2.08	403.28	26.07	2.16	0.68	-24.20
8,700.00	4.99	92.39	8,682.14	-2.32	405.43	25.98	2.72	0.16	-31.40
8,725.00	4.76	85.52	8,707.05	-2.29	407.55	26.17	2.51	-0.92	-27.48
8,750.00	4.48	80.84	8,731.97	-2.05	409.55	26.54	1.88	-1.12	-18.72
8,775.00	4.25	75.79	8,756.90	-1.67	411.41	27.05	1.79	-0.92	-20.20
8,800.00	3.96	43.36	8,781.83	-0.81	412.90	28.01	9.23	-1.16	-129.72
8,825.00	3.65	59.82	8,806.78	0.22	414.18	29.12	4.52	-1.24	65.84
8,850.00	3.44	55.07	8,831.73	1.05	415.48	30.04	1.44	-0.84	-19.00
8,875.00	3.31	49.77	8,856.69	1.94	416.65	31.02	1.35	-0.52	-21.20
8,900.00	3.27	42.67	8,881.65	2.93	417.68	32.08	1.64	-0.16	-28.40
8,925.00	3.24	38.76	8,906.61	4.01	418.61	33.21	0.90	-0.12	-15.64
8,950.00	3.05	34.62	8,931.57	5.11	419.43	34.37	1.18	-0.76	-16.56



Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 701H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	RKB @ 2939.40usft (Pioneer 84)
Site:	Hambone Federal Com	MD Reference:	RKB @ 2939.40usft (Pioneer 84)
Well:	701H	North Reference:	Grid
Wellbore:	OH / 66455	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Pioneer 84)	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	2.84	34.91	8,956.54	6.16	420.16	35.47	0.84	-0.84	1.16	
9,000.00	2.68	38.71	8,981.51	7.12	420.88	36.48	0.97	-0.64	15.20	
9,025.00	2.61	35.70	9,006.48	8.04	421.58	37.45	0.62	-0.28	-12.04	
9,050.00	2.37	39.02	9,031.46	8.91	422.24	38.36	1.12	-0.96	13.28	
9,075.00	2.36	33.74	9,056.44	9.74	422.85	39.23	0.87	-0.04	-21.12	
9,076.00	2.36	33.49	9,057.44	9.77	422.87	39.26	1.03	0.00	-25.00	
9,106.00	1.94	25.90	9,087.41	10.74	423.43	40.27	1.69	-1.40	-25.30	
First Phoenix MWD Survey										
9,120.00	1.87	23.77	9,101.41	11.16	423.63	40.71	0.71	-0.50	-15.21	
9,236.00	1.82	357.92	9,217.35	14.74	424.33	44.32	0.71	-0.04	-22.28	
9,331.00	1.10	349.65	9,312.32	17.14	424.11	46.70	0.79	-0.76	-8.71	
9,426.00	8.00	29.75	9,406.97	23.79	427.23	53.55	7.57	7.26	42.21	
9,473.00	17.47	32.45	9,452.76	32.60	432.65	62.72	20.18	20.15	5.74	
9,521.00	24.26	21.80	9,497.60	47.86	440.19	78.47	16.15	14.15	-22.19	
9,616.00	29.27	16.04	9,582.41	88.33	453.86	119.80	5.93	5.27	-6.06	
9,657.00	30.42	16.78	9,617.98	107.91	459.63	139.72	2.96	2.81	1.82	
FTP: 9657' MD										
9,711.00	31.95	17.69	9,664.17	134.61	467.92	166.94	2.96	2.83	1.68	
9,807.00	36.62	18.55	9,743.47	185.98	484.76	219.36	4.89	4.86	0.90	
9,901.00	47.78	16.44	9,813.00	246.14	503.59	280.69	11.97	11.87	-2.24	
9,996.00	52.41	13.14	9,873.93	316.58	522.11	352.25	5.55	4.87	-3.47	
10,090.00	64.39	13.25	9,923.10	394.39	540.36	431.14	12.75	12.74	0.12	
10,185.00	68.22	12.88	9,961.27	479.11	560.02	517.03	4.05	4.03	-0.39	
10,239.00	74.63	13.99	9,978.46	528.87	571.91	567.50	12.03	11.87	2.06	
10,267.00	77.50	15.24	9,985.21	555.16	578.77	594.20	11.13	10.25	4.46	
10,288.00	80.09	16.09	9,989.29	574.99	584.33	614.38	12.96	12.33	4.05	
10,320.00	83.40	16.53	9,993.88	605.38	593.23	645.31	10.43	10.34	1.38	
10,415.00	88.59	16.61	10,000.51	696.18	620.24	737.78	5.46	5.46	0.08	
10,509.00	89.18	16.76	10,002.34	786.21	647.23	829.47	0.65	0.63	0.16	
10,604.00	89.64	16.39	10,003.32	877.26	674.33	922.18	0.62	0.48	-0.39	
10,699.00	89.38	16.66	10,004.13	968.33	701.35	1,014.92	0.39	-0.27	0.28	
10,794.00	91.15	14.35	10,003.69	1,059.86	726.74	1,108.00	3.06	1.86	-2.43	
10,888.00	91.21	12.64	10,001.76	1,151.24	748.67	1,200.69	1.82	0.06	-1.82	
10,983.00	87.86	11.01	10,002.53	1,244.21	768.13	1,294.79	3.92	-3.53	-1.72	
11,078.00	86.79	6.14	10,006.96	1,338.01	782.28	1,389.35	5.24	-1.13	-5.13	
11,173.00	86.38	3.22	10,012.62	1,432.52	790.02	1,484.16	3.10	-0.43	-3.07	
11,268.00	92.16	1.95	10,013.83	1,527.37	794.30	1,579.09	6.23	6.08	-1.34	
11,362.00	92.09	1.95	10,010.35	1,621.25	797.50	1,672.96	0.07	-0.07	0.00	
11,457.00	93.03	2.36	10,006.11	1,716.09	801.06	1,767.81	1.08	0.99	0.43	
11,552.00	91.88	2.00	10,002.04	1,810.93	804.67	1,862.68	1.27	-1.21	-0.38	
11,646.00	86.36	1.64	10,003.48	1,904.84	807.66	1,956.56	5.88	-5.87	-0.38	
11,741.00	87.57	1.29	10,008.51	1,999.67	810.08	2,051.33	1.33	1.27	-0.37	
11,836.00	86.87	1.23	10,013.12	2,094.53	812.17	2,146.11	0.74	-0.74	-0.06	
11,931.00	89.90	2.08	10,015.79	2,189.45	814.91	2,240.98	3.31	3.19	0.89	



Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 701H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	RKB @ 2939.40usft (Pioneer 84)
Site:	Hambone Federal Com	MD Reference:	RKB @ 2939.40usft (Pioneer 84)
Well:	701H	North Reference:	Grid
Wellbore:	OH / 66455	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Pioneer 84)	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)	
12,025.00	90.56	1.69	10,015.42	2,283.39	818.01	2,334.92	0.82	0.70	-0.41	
12,120.00	89.73	0.23	10,015.18	2,378.38	819.60	2,429.78	1.77	-0.87	-1.54	
12,215.00	87.73	358.58	10,017.28	2,473.34	818.61	2,524.44	2.73	-2.11	-1.74	
12,311.00	90.62	358.45	10,018.66	2,569.29	816.12	2,619.98	3.01	3.01	-0.14	
12,406.00	92.35	359.81	10,016.20	2,664.24	814.68	2,714.60	2.32	1.82	1.43	
12,501.00	92.33	359.78	10,012.32	2,759.16	814.34	2,809.27	0.04	-0.02	-0.03	
12,596.00	94.00	359.30	10,007.08	2,854.01	813.58	2,903.83	1.83	1.76	-0.51	
12,691.00	92.01	358.97	10,002.10	2,948.86	812.15	2,998.35	2.12	-2.09	-0.35	
12,786.00	92.64	359.06	9,998.24	3,043.77	810.52	3,092.92	0.67	0.66	0.09	
12,881.00	93.21	359.77	9,993.40	3,138.64	809.55	3,187.49	0.96	0.60	0.75	
12,976.00	90.78	358.80	9,990.09	3,233.56	808.36	3,282.10	2.75	-2.56	-1.02	
13,071.00	91.12	359.00	9,988.51	3,328.53	806.54	3,376.71	0.42	0.36	0.21	
13,165.00	88.71	359.15	9,988.65	3,422.51	805.02	3,470.36	2.57	-2.56	0.16	
13,260.00	91.44	1.89	9,988.53	3,517.49	805.88	3,565.16	4.07	2.87	2.88	
13,355.00	87.93	1.17	9,989.05	3,612.44	808.42	3,660.06	3.77	-3.69	-0.76	
13,450.00	87.19	0.47	9,993.10	3,707.34	809.78	3,754.82	1.07	-0.78	-0.74	
13,545.00	86.10	0.19	9,998.66	3,802.18	810.32	3,849.46	1.18	-1.15	-0.29	
13,641.00	88.81	359.97	10,002.92	3,898.08	810.46	3,945.14	2.83	2.82	-0.23	
13,736.00	88.95	0.13	10,004.78	3,993.06	810.54	4,039.89	0.22	0.15	0.17	
13,830.00	90.30	0.19	10,005.39	4,087.05	810.80	4,133.68	1.44	1.44	0.06	
13,926.00	92.47	1.18	10,003.07	4,183.01	811.95	4,229.48	2.48	2.26	1.03	
14,020.00	90.96	0.27	10,000.26	4,276.96	813.14	4,323.28	1.88	-1.61	-0.97	
14,116.00	89.13	359.33	10,000.18	4,372.95	812.80	4,419.02	2.14	-1.91	-0.98	
14,211.00	90.00	359.64	10,000.90	4,467.94	811.95	4,513.72	0.97	0.92	0.33	
14,306.00	88.83	355.39	10,001.87	4,562.83	807.83	4,608.08	4.64	-1.23	-4.47	
14,401.00	90.20	356.52	10,002.68	4,657.58	801.13	4,702.14	1.87	1.44	1.19	
14,497.00	92.10	357.54	10,000.75	4,753.43	796.16	4,797.40	2.25	1.98	1.06	
14,591.00	91.00	356.09	9,998.21	4,847.24	790.94	4,890.63	1.94	-1.17	-1.54	
14,687.00	91.15	354.73	9,996.41	4,942.92	783.26	4,985.53	1.43	0.16	-1.42	
14,781.00	92.27	354.86	9,993.60	5,036.49	774.73	5,078.28	1.20	1.19	0.14	
14,876.00	92.28	355.34	9,989.83	5,131.07	766.63	5,172.06	0.50	0.01	0.51	
14,971.00	92.46	356.98	9,985.90	5,225.77	760.27	5,266.09	1.74	0.19	1.73	
15,066.00	90.58	358.23	9,983.38	5,320.64	756.30	5,360.46	2.38	-1.98	1.32	
15,161.00	92.01	0.42	9,981.23	5,415.61	755.18	5,455.11	2.75	1.51	2.31	
15,256.00	90.13	1.13	9,979.46	5,510.58	756.47	5,549.94	2.12	-1.98	0.75	
15,351.00	89.48	0.98	9,979.78	5,605.56	758.22	5,644.81	0.70	-0.68	-0.16	
15,446.00	89.06	0.82	9,980.99	5,700.54	759.71	5,739.66	0.47	-0.44	-0.17	
15,542.00	90.04	0.41	9,981.75	5,796.53	760.74	5,835.49	1.11	1.02	-0.43	
15,637.00	89.81	358.45	9,981.87	5,891.52	759.79	5,930.18	2.08	-0.24	-2.06	
15,732.00	88.41	358.83	9,983.35	5,986.48	757.54	6,024.75	1.53	-1.47	0.40	
15,828.00	87.06	357.82	9,987.14	6,082.36	754.74	6,120.20	1.76	-1.41	-1.05	
15,923.00	87.47	358.18	9,991.68	6,177.19	751.42	6,214.57	0.57	0.43	0.38	
16,018.00	87.43	357.78	9,995.90	6,272.04	748.08	6,308.96	0.42	-0.04	-0.42	



Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 701H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	RKB @ 2939.40usft (Pioneer 84)
Site:	Hambone Federal Com	MD Reference:	RKB @ 2939.40usft (Pioneer 84)
Well:	701H	North Reference:	Grid
Wellbore:	OH / 66455	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Pioneer 84)	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)
16,113.00	90.67	359.51	9,997.48	6,366.98	745.83	6,403.51	3.87	3.41	1.82
16,208.00	90.62	359.11	9,996.41	6,461.97	744.69	6,498.19	0.42	-0.05	-0.42
16,301.00	91.45	358.65	9,994.73	6,554.94	742.87	6,590.80	1.02	0.89	-0.49
16,395.00	92.21	358.62	9,991.73	6,648.86	740.63	6,684.34	0.81	0.81	-0.03
16,490.00	93.08	359.02	9,987.34	6,743.74	738.68	6,778.85	1.01	0.92	0.42
16,585.00	91.11	0.53	9,983.87	6,838.67	738.31	6,873.52	2.61	-2.07	1.59
16,679.00	89.50	0.10	9,983.37	6,932.66	738.82	6,967.32	1.77	-1.71	-0.46
16,774.00	89.11	359.09	9,984.52	7,027.65	738.15	7,062.03	1.14	-0.41	-1.06
16,869.00	87.65	359.35	9,987.21	7,122.60	736.86	7,156.66	1.56	-1.54	0.27
16,964.00	87.94	359.43	9,990.86	7,217.53	735.85	7,251.28	0.32	0.31	0.08
17,059.00	85.72	358.48	9,996.12	7,312.36	734.12	7,345.76	2.54	-2.34	-1.00
17,155.00	88.65	358.22	10,000.83	7,408.19	731.36	7,441.17	3.06	3.05	-0.27
17,250.00	89.79	359.47	10,002.12	7,503.16	729.45	7,535.77	1.78	1.20	1.32
17,345.00	89.90	0.56	10,002.38	7,598.16	729.47	7,630.54	1.15	0.12	1.15
17,439.00	92.56	2.71	10,000.36	7,692.08	732.15	7,724.43	3.64	2.83	2.29
17,534.00	93.19	2.89	9,995.60	7,786.85	736.78	7,819.29	0.69	0.66	0.19
17,628.00	90.60	0.62	9,992.49	7,880.74	739.66	7,913.15	3.66	-2.76	-2.41
17,723.00	91.08	0.44	9,991.10	7,975.73	740.54	8,007.96	0.54	0.51	-0.19
17,816.00	93.67	3.24	9,987.24	8,068.58	743.52	8,100.80	4.10	2.78	3.01
17,910.00	90.54	359.96	9,983.79	8,162.46	746.14	8,194.63	4.82	-3.33	-3.49
18,004.00	88.73	359.13	9,984.39	8,256.45	745.39	8,288.34	2.12	-1.93	-0.88
18,100.00	90.08	358.82	9,985.38	8,352.42	743.68	8,383.96	1.44	1.41	-0.32
18,194.00	89.19	358.28	9,985.98	8,446.39	741.30	8,477.53	1.11	-0.95	-0.57
18,289.00	90.23	358.82	9,986.46	8,541.36	738.89	8,572.10	1.23	1.09	0.57
18,384.00	91.34	359.43	9,985.16	8,636.34	737.44	8,666.74	1.33	1.17	0.64
18,479.00	93.78	0.12	9,980.92	8,731.23	737.07	8,761.38	2.67	2.57	0.73
18,574.00	92.84	359.58	9,975.43	8,826.07	736.82	8,855.98	1.14	-0.99	-0.57
18,669.00	88.08	358.50	9,974.67	8,921.03	735.23	8,950.59	5.14	-5.01	-1.14
18,763.00	88.48	358.63	9,977.49	9,014.96	732.88	9,044.12	0.45	0.43	0.14
18,858.00	86.62	357.99	9,981.55	9,109.82	730.08	9,138.56	2.07	-1.96	-0.67
18,953.00	85.97	358.14	9,987.69	9,204.57	726.88	9,232.86	0.70	-0.68	0.16
19,047.00	86.85	357.68	9,993.58	9,298.32	723.46	9,326.14	1.06	0.94	-0.49
19,142.00	89.28	357.99	9,996.79	9,393.19	719.87	9,420.53	2.58	2.56	0.33
19,237.00	90.56	358.45	9,996.92	9,488.14	716.92	9,515.04	1.43	1.35	0.48
19,332.00	95.79	2.52	9,991.66	9,582.94	717.71	9,609.67	6.97	5.51	4.28
19,427.00	92.05	1.62	9,985.16	9,677.64	721.13	9,704.37	4.05	-3.94	-0.95
19,521.00	91.00	1.28	9,982.66	9,771.58	723.51	9,798.24	1.17	-1.12	-0.36
19,615.00	89.00	0.57	9,982.66	9,865.56	725.03	9,892.10	2.26	-2.13	-0.76
19,709.00	86.83	1.40	9,986.08	9,959.47	726.64	9,985.90	2.47	-2.31	0.88
19,803.00	87.82	1.87	9,990.47	10,053.33	729.32	10,079.72	1.17	1.05	0.50
19,862.00	87.96	2.11	9,992.64	10,112.26	731.37	10,138.64	0.48	0.24	0.41
LTP: 19862' MD									
19,895.00	88.04	2.25	9,993.79	10,145.21	732.63	10,171.61	0.48	0.24	0.41
19,933.00	88.04	2.33	9,995.09	10,183.16	734.14	10,209.57	0.21	0.00	0.21



Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 701H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	RKB @ 2939.40usft (Pioneer 84)
Site:	Hambone Federal Com	MD Reference:	RKB @ 2939.40usft (Pioneer 84)
Well:	701H	North Reference:	Grid
Wellbore:	OH / 66455	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Pioneer 84)	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)
Final Phoenix MWD Survey									
19,991.00	88.04	2.33	9,997.07	10,241.08	736.50	10,267.51	0.00	0.00	0.00
Projection to TD									

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
9,106.00	9,087.41	10.74	423.43	First Phoenix MWD Survey	
9,657.00	9,617.98	107.91	459.63	FTP: 9657' MD	
19,862.00	9,992.64	10,112.26	731.37	LTP: 19862' MD	
19,933.00	9,995.09	10,183.16	734.14	Final Phoenix MWD Survey	
19,991.00	9,997.07	10,241.08	736.50	Projection to TD	

Checked By: _____ Approved By: _____ Date: _____

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

COMMENTS

Action 16068

COMMENTS

Operator:	COG OPERATING LLC	600 W Illinois Ave	Midland, TX79701	OGRID:	229137	Action Number:	16068	Action Type:	C-104C
Created By	Comment					Comment Date			
abustamante	C-104 RT EXPIRES: 4/15/2021					02/05/2021			

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 16068

CONDITIONS OF APPROVAL

Operator:	COG OPERATING LLC	600 W Illinois Ave	Midland, TX79701	OGRID:	229137	Action Number:	16068	Action Type:	C-104C
OCD Reviewer									Condition
abustamante									None