

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	
API Number 30-015-46671	⁵ Pool Name Purple Sage; Wolfcamp		⁶ Pool Code 98220
⁷ Property Code 323072	⁸ Property Name Hambone Federal Com		⁹ Well Number 706H

II. ¹⁰ Surface Location

Ul or lot no. K	Section 8	Township 26S	Range 29E	Lot Idn	Feet from the 1353	North/South Line South	Feet from the 1695	East/West line West	County Eddy
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¹¹ Bottom Hole Location

Ul or lot no. 4	Section 5	Township 26S	Range 29E	Lot Idn	Feet from the 201	North/South Line North	Feet from the 351	East/West line West	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 2/6/20	²² Ready Date 1/25/21	²³ TD 18,882’	²⁴ PBTD 18,643’	²⁵ Perforations 10,160-18,618’	²⁶ DHC, MC
²⁷ Hole Size		²⁸ Casing & Tubing Size	²⁹ Depth Set		³⁰ Sacks Cement
17 1/2”		13 3/8”	368’		630
12 1/4” 8 3/4”		10 3/4” 7 5/8”	2,752’ 9,335’		505 1075
6 3/4”		5 1/2”	18,858’		1425
		2 7/8”	9,450		

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: <i>Amanda Avery</i>			OIL CONSERVATION DIVISION		
			Approved by: KURT SIMMONS		
			Title: NMOCD, SANTA FE		
			Approval Date: 02/26/2021		
Printed name: Amanda Avery			RT C-104 EXPIRES MAY 26, 2021		
Title: Regulatory Analyst					
E-mail Address:					
Date: 1/21/21		Phone: 575-748-6962			

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) 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 30-015-46671	Pool Code 98220	Pool Name Purple Sage; Wolfcamp
Property Code 323072	Property Name HAMBONE FEDERAL COM	Well Number 706H
OGRID No. 229137	Operator Name COG OPERATING, LLC	Elevation 2895.6'

Surface Location

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
K	8	26-S	29-E		1353	SOUTH	1695	WEST	EDDY

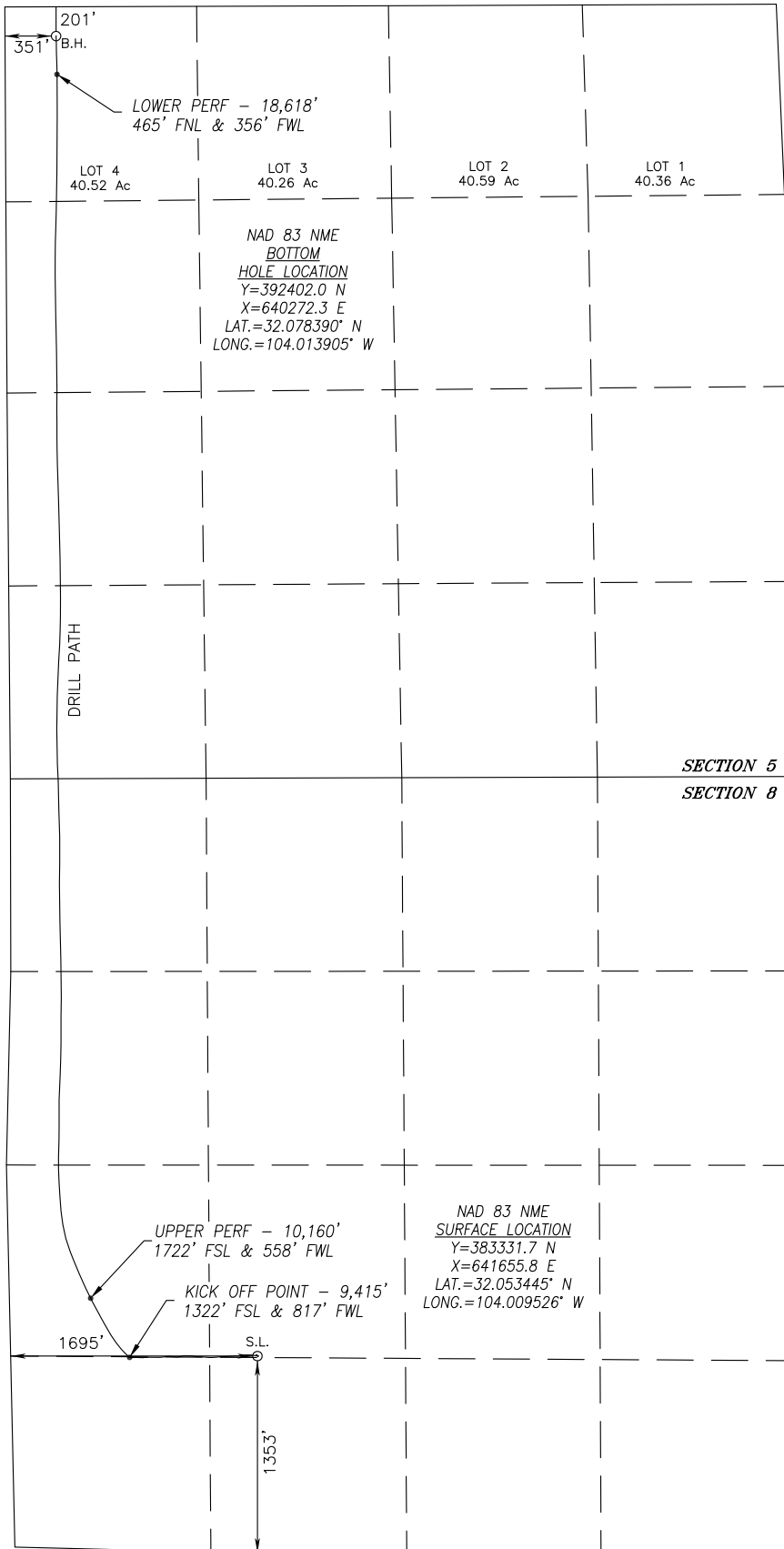
Bottom Hole Location If Different From Surface

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
4	5	26-S	29-E		201	NORTH	351	WEST	EDDY
Dedicated Acres 640	Joint or Infill	Consolidation Code	Order No.						

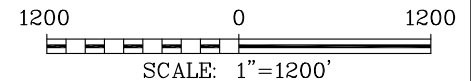
NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED
OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION

SEE PAGE 2

Property Code 2323072	Property Name HAMBONE FEDERAL COM	Well Number 706H
OGRID No. 229137	Operator Name COG OPERATING, LLC	Elevation 2895.6'



SURFACE INFO AND BOREPATH SHOWN HEREON IS BASED ON DIRECTIONAL SURVEY REPORT PROVIDED BY COG OPERATING, LLC FOR THE HAMBONE FEDERAL COM #706H SUPPLIED TO HARCROW SURVEYING, LLC ON JANUARY 6, 2021



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 1/21/20

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/MAR. 17, 2020

Date of Survey/Date of Geographic Survey

Signature & Seal of Professional Surveyor



Chad Harcrow 1/7/21

Certificate No. CHAD HARCROW 17777

PAGE 2 OF 2

W.O. #21-13

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

706H

OH / 66292

Design: Surveys (Ensign 155)

Standard Survey Report

17 March, 2020





Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 706H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	RKB @ 2919.60usft (Ensign 155)
Site:	Hambone Federal Com	MD Reference:	RKB @ 2919.60usft (Ensign 155)
Well:	706H	North Reference:	Grid
Wellbore:	OH / 66292	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Ensign 155)	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	Latitude:	32° 3' 1.622153 N
From:	Map	Easting:	601,211.49 usft	Longitude:	104° 0' 23.979022 W
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.17 °

Well	706H					
Well Position	+N/-S	0.00 usft	Northing:	383,274.00 usft	Latitude:	32° 3' 11.953638 N
	+E/-W	0.00 usft	Easting:	600,470.50 usft	Longitude:	104° 0' 32.552436 W
Position Uncertainty		1.00 usft	Wellhead Elevation:	usft	Ground Level:	2,895.60 usft

Wellbore	OH / 66292				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	User Defined	2/28/2020	6.75	59.64	47,750.90000000

Design	Surveys (Ensign 155)				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00	351.20	

Survey Program	Date	3/17/2020			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
100.00	9,198.00	Scientific Keeper Gyro Surveys (OH / 6629	Scientific Keeper	Scientific Drilling Intl. Standard Wireline Keeper	
9,298.00	18,882.00	Phoenix MWD Surveys (OH / 66292)	MWD+HRGM	OWSG MWD + HRGM	

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	0.65	347.26	100.00	0.55	-0.13	0.57	0.65	0.65	0.00	
125.00	0.52	331.83	125.00	0.79	-0.21	0.81	0.81	-0.52	-61.72	
150.00	0.42	339.60	150.00	0.98	-0.30	1.01	0.47	-0.40	31.08	
175.00	0.53	358.39	174.99	1.18	-0.33	1.22	0.76	0.44	75.16	
200.00	0.53	353.25	199.99	1.41	-0.35	1.45	0.19	0.00	-20.56	
225.00	0.53	0.72	224.99	1.64	-0.36	1.68	0.28	0.00	29.88	
250.00	0.38	8.44	249.99	1.84	-0.35	1.87	0.65	-0.60	30.88	
275.00	0.46	7.69	274.99	2.02	-0.32	2.04	0.32	0.32	-3.00	
300.00	0.50	0.78	299.99	2.23	-0.31	2.25	0.28	0.16	-27.64	



Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 706H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	RKB @ 2919.60usft (Ensign 155)
Site:	Hambone Federal Com	MD Reference:	RKB @ 2919.60usft (Ensign 155)
Well:	706H	North Reference:	Grid
Wellbore:	OH / 66292	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Ensign 155)	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	0.42	11.97	324.99	2.43	-0.28	2.44	0.48	-0.32	44.76
350.00	0.36	8.62	349.99	2.59	-0.25	2.60	0.26	-0.24	-13.40
375.00	0.35	359.97	374.99	2.75	-0.24	2.75	0.22	-0.04	-34.60
400.00	0.35	337.74	399.99	2.89	-0.27	2.90	0.54	0.00	-88.92
425.00	0.37	323.32	424.99	3.03	-0.35	3.05	0.37	0.08	-57.68
450.00	0.38	312.12	449.99	3.15	-0.46	3.18	0.30	0.04	-44.80
475.00	0.44	323.51	474.99	3.28	-0.58	3.33	0.40	0.24	45.56
500.00	0.42	310.87	499.99	3.42	-0.70	3.49	0.39	-0.08	-50.56
525.00	0.61	300.02	524.98	3.55	-0.89	3.64	0.85	0.76	-43.40
550.00	0.64	302.03	549.98	3.69	-1.12	3.82	0.15	0.12	8.04
575.00	0.59	304.96	574.98	3.84	-1.35	4.00	0.24	-0.20	11.72
600.00	0.58	303.10	599.98	3.98	-1.56	4.17	0.09	-0.04	-7.44
625.00	0.66	303.70	624.98	4.13	-1.78	4.35	0.32	0.32	2.40
650.00	0.64	291.85	649.98	4.26	-2.03	4.52	0.54	-0.08	-47.40
675.00	0.44	234.20	674.98	4.25	-2.24	4.55	2.20	-0.80	-230.60
700.00	0.55	206.49	699.98	4.09	-2.37	4.41	1.04	0.44	-110.84
725.00	0.63	178.24	724.97	3.85	-2.42	4.17	1.19	0.32	-113.00
750.00	0.59	176.81	749.97	3.58	-2.41	3.91	0.17	-0.16	-5.72
775.00	0.64	195.82	774.97	3.32	-2.44	3.65	0.84	0.20	76.04
800.00	0.62	194.52	799.97	3.05	-2.51	3.40	0.10	-0.08	-5.20
825.00	0.38	185.66	824.97	2.84	-2.55	3.20	1.01	-0.96	-35.44
850.00	0.32	58.25	849.97	2.79	-2.50	3.14	2.51	-0.24	-509.64
875.00	0.84	41.51	874.97	2.97	-2.32	3.29	2.17	2.08	-66.96
900.00	0.79	33.08	899.96	3.25	-2.11	3.53	0.52	-0.20	-33.72
925.00	0.75	34.06	924.96	3.53	-1.92	3.78	0.17	-0.16	3.92
950.00	0.81	36.21	949.96	3.81	-1.72	4.03	0.27	0.24	8.60
975.00	0.75	41.20	974.96	4.07	-1.51	4.26	0.36	-0.24	19.96
1,000.00	0.65	339.39	999.96	4.33	-1.45	4.50	2.90	-0.40	-247.24
1,025.00	0.61	316.67	1,024.95	4.56	-1.60	4.75	1.01	-0.16	-90.88
1,050.00	0.68	315.34	1,049.95	4.76	-1.79	4.98	0.29	0.28	-5.32
1,075.00	0.65	318.14	1,074.95	4.97	-1.99	5.22	0.18	-0.12	11.20
1,100.00	0.73	312.23	1,099.95	5.18	-2.20	5.46	0.43	0.32	-23.64
1,125.00	0.64	316.16	1,124.95	5.39	-2.42	5.70	0.41	-0.36	15.72
1,150.00	0.42	289.78	1,149.95	5.52	-2.60	5.86	1.29	-0.88	-105.52
1,175.00	0.30	224.89	1,174.95	5.51	-2.73	5.86	1.60	-0.48	-259.56
1,200.00	0.54	184.06	1,199.95	5.34	-2.79	5.71	1.48	0.96	-163.32
1,225.00	0.68	188.90	1,224.94	5.08	-2.82	5.45	0.60	0.56	19.36
1,250.00	0.38	175.06	1,249.94	4.85	-2.83	5.23	1.30	-1.20	-55.36
1,275.00	0.17	99.36	1,274.94	4.76	-2.79	5.13	1.50	-0.84	-302.80
1,300.00	0.05	58.09	1,299.94	4.76	-2.74	5.13	0.55	-0.48	-165.08
1,325.00	0.24	37.28	1,324.94	4.81	-2.70	5.17	0.78	0.76	-83.24
1,350.00	0.28	359.20	1,349.94	4.91	-2.67	5.26	0.70	0.16	-152.32
1,375.00	0.31	21.93	1,374.94	5.04	-2.65	5.38	0.48	0.12	90.92



Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 706H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	RKB @ 2919.60usft (Ensign 155)
Site:	Hambone Federal Com	MD Reference:	RKB @ 2919.60usft (Ensign 155)
Well:	706H	North Reference:	Grid
Wellbore:	OH / 66292	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Ensign 155)	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	0.29	10.10	1,399.94	5.16	-2.61	5.50	0.26	-0.08	-47.32
1,425.00	0.24	357.67	1,424.94	5.28	-2.60	5.61	0.30	-0.20	-49.72
1,450.00	0.26	346.91	1,449.94	5.38	-2.62	5.72	0.20	0.08	-43.04
1,475.00	0.32	350.75	1,474.94	5.51	-2.64	5.85	0.25	0.24	15.36
1,500.00	0.30	321.89	1,499.94	5.63	-2.69	5.97	0.62	-0.08	-115.44
1,525.00	0.47	318.70	1,524.94	5.76	-2.80	6.12	0.69	0.68	-12.76
1,550.00	0.54	320.46	1,549.94	5.92	-2.94	6.30	0.29	0.28	7.04
1,575.00	0.62	312.99	1,574.94	6.11	-3.12	6.51	0.44	0.32	-29.88
1,600.00	0.68	318.92	1,599.94	6.31	-3.31	6.74	0.36	0.24	23.72
1,625.00	0.63	325.73	1,624.94	6.54	-3.49	6.99	0.37	-0.20	27.24
1,650.00	0.77	322.74	1,649.93	6.78	-3.67	7.27	0.58	0.56	-11.96
1,675.00	0.82	315.21	1,674.93	7.04	-3.90	7.56	0.46	0.20	-30.12
1,700.00	0.78	303.96	1,699.93	7.27	-4.16	7.82	0.65	-0.16	-45.00
1,725.00	0.70	289.27	1,724.93	7.41	-4.45	8.01	0.82	-0.32	-58.76
1,750.00	0.76	268.84	1,749.92	7.46	-4.76	8.10	1.06	0.24	-81.72
1,775.00	0.60	267.48	1,774.92	7.45	-5.06	8.14	0.64	-0.64	-5.44
1,800.00	0.77	243.22	1,799.92	7.37	-5.34	8.10	1.33	0.68	-97.04
1,825.00	0.72	245.05	1,824.92	7.23	-5.63	8.00	0.22	-0.20	7.32
1,850.00	0.75	239.92	1,849.92	7.08	-5.91	7.90	0.29	0.12	-20.52
1,875.00	0.76	243.27	1,874.91	6.92	-6.20	7.79	0.18	0.04	13.40
1,900.00	0.75	256.84	1,899.91	6.81	-6.51	7.73	0.71	-0.04	54.28
1,925.00	0.69	239.82	1,924.91	6.70	-6.80	7.66	0.88	-0.24	-68.08
1,950.00	0.74	245.38	1,949.91	6.55	-7.08	7.56	0.34	0.20	22.24
1,975.00	0.73	244.49	1,974.91	6.42	-7.37	7.47	0.06	-0.04	-3.56
2,000.00	0.58	248.53	1,999.90	6.30	-7.63	7.40	0.63	-0.60	16.16
2,025.00	0.41	247.93	2,024.90	6.22	-7.83	7.35	0.68	-0.68	-2.40
2,050.00	0.30	207.82	2,049.90	6.13	-7.94	7.27	1.06	-0.44	-160.44
2,075.00	0.34	160.52	2,074.90	6.00	-7.95	7.15	1.04	0.16	-189.20
2,100.00	0.42	132.20	2,099.90	5.87	-7.86	7.01	0.81	0.32	-113.28
2,125.00	0.74	112.99	2,124.90	5.75	-7.64	6.85	1.48	1.28	-76.84
2,150.00	0.93	116.64	2,149.90	5.59	-7.31	6.65	0.79	0.76	14.60
2,175.00	0.90	115.52	2,174.90	5.42	-6.95	6.42	0.14	-0.12	-4.48
2,200.00	0.84	119.20	2,199.89	5.24	-6.61	6.19	0.33	-0.24	14.72
2,225.00	0.80	122.17	2,224.89	5.06	-6.31	5.97	0.23	-0.16	11.88
2,250.00	0.90	124.88	2,249.89	4.86	-6.00	5.72	0.43	0.40	10.84
2,275.00	0.91	122.37	2,274.88	4.64	-5.67	5.45	0.16	0.04	-10.04
2,300.00	1.03	121.95	2,299.88	4.41	-5.31	5.17	0.48	0.48	-1.68
2,325.00	1.21	120.26	2,324.88	4.16	-4.89	4.86	0.73	0.72	-6.76
2,350.00	1.27	119.15	2,349.87	3.89	-4.42	4.52	0.26	0.24	-4.44
2,375.00	1.41	114.95	2,374.86	3.63	-3.90	4.18	0.68	0.56	-16.80
2,400.00	1.73	113.88	2,399.85	3.35	-3.28	3.81	1.29	1.28	-4.28
2,425.00	1.91	113.45	2,424.84	3.03	-2.55	3.38	0.72	0.72	-1.72
2,450.00	2.16	115.86	2,449.83	2.66	-1.74	2.89	1.06	1.00	9.64



Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 706H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	RKB @ 2919.60usft (Ensign 155)
Site:	Hambone Federal Com	MD Reference:	RKB @ 2919.60usft (Ensign 155)
Well:	706H	North Reference:	Grid
Wellbore:	OH / 66292	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Ensign 155)	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	2.51	115.02	2,474.80	2.22	-0.82	2.32	1.41	1.40	-3.36	
2,500.00	2.62	113.53	2,499.78	1.76	0.20	1.71	0.51	0.44	-5.96	
2,525.00	2.61	111.46	2,524.75	1.32	1.25	1.12	0.38	-0.04	-8.28	
2,550.00	2.59	111.25	2,549.73	0.91	2.31	0.55	0.09	-0.08	-0.84	
2,575.00	2.50	109.91	2,574.70	0.52	3.35	0.00	0.43	-0.36	-5.36	
2,600.00	1.92	108.77	2,599.68	0.20	4.26	-0.45	2.33	-2.32	-4.56	
2,625.00	1.35	102.90	2,624.67	0.00	4.94	-0.76	2.37	-2.28	-23.48	
2,650.00	1.02	96.60	2,649.67	-0.09	5.45	-0.92	1.42	-1.32	-25.20	
2,675.00	0.79	72.46	2,674.67	-0.07	5.83	-0.96	1.76	-0.92	-96.56	
2,700.00	0.69	81.18	2,699.66	0.01	6.15	-0.93	0.60	-0.40	34.88	
2,725.00	0.52	64.23	2,724.66	0.08	6.40	-0.90	0.98	-0.68	-67.80	
2,750.00	0.39	35.55	2,749.66	0.20	6.55	-0.80	1.03	-0.52	-114.72	
2,775.00	0.70	26.63	2,774.66	0.41	6.67	-0.62	1.28	1.24	-35.68	
2,800.00	0.32	18.72	2,799.66	0.61	6.76	-0.43	1.54	-1.52	-31.64	
2,825.00	0.37	23.92	2,824.66	0.75	6.81	-0.30	0.24	0.20	20.80	
2,850.00	0.60	310.68	2,849.66	0.91	6.75	-0.14	2.43	0.92	-292.96	
2,875.00	1.45	290.90	2,874.65	1.11	6.35	0.12	3.63	3.40	-79.12	
2,900.00	2.25	282.78	2,899.64	1.33	5.58	0.46	3.36	3.20	-32.48	
2,925.00	2.76	280.48	2,924.62	1.54	4.51	0.84	2.08	2.04	-9.20	
2,950.00	3.20	279.29	2,949.58	1.77	3.23	1.25	1.78	1.76	-4.76	
2,975.00	4.46	278.36	2,974.53	2.02	1.58	1.76	5.05	5.04	-3.72	
3,000.00	5.32	277.85	2,999.44	2.32	-0.53	2.38	3.44	3.44	-2.04	
3,025.00	5.51	277.61	3,024.32	2.64	-2.87	3.05	0.77	0.76	-0.96	
3,050.00	6.53	276.25	3,049.19	2.95	-5.48	3.75	4.12	4.08	-5.44	
3,075.00	7.66	277.64	3,073.99	3.33	-8.54	4.60	4.57	4.52	5.56	
3,100.00	8.03	276.68	3,098.76	3.75	-11.93	5.53	1.57	1.48	-3.84	
3,125.00	8.18	276.87	3,123.51	4.17	-15.43	6.48	0.61	0.60	0.76	
3,150.00	8.18	276.96	3,148.26	4.60	-18.96	7.44	0.05	0.00	0.36	
3,175.00	8.21	276.34	3,173.00	5.01	-22.50	8.39	0.37	0.12	-2.48	
3,200.00	8.19	276.36	3,197.74	5.40	-26.04	9.32	0.08	-0.08	0.08	
3,225.00	8.09	276.23	3,222.49	5.79	-29.56	10.25	0.41	-0.40	-0.52	
3,250.00	8.06	275.19	3,247.24	6.14	-33.05	11.13	0.60	-0.12	-4.16	
3,275.00	8.13	275.11	3,272.00	6.46	-36.56	11.97	0.28	0.28	-0.32	
3,300.00	8.00	274.51	3,296.75	6.75	-40.05	12.80	0.62	-0.52	-2.40	
3,325.00	7.95	273.42	3,321.51	6.99	-43.51	13.57	0.64	-0.20	-4.36	
3,350.00	7.87	272.63	3,346.27	7.17	-46.95	14.27	0.54	-0.32	-3.16	
3,375.00	7.78	271.76	3,371.04	7.30	-50.35	14.92	0.60	-0.36	-3.48	
3,400.00	7.81	271.55	3,395.81	7.40	-53.74	15.54	0.17	0.12	-0.84	
3,425.00	7.73	270.36	3,420.58	7.46	-57.12	16.11	0.72	-0.32	-4.76	
3,450.00	7.76	270.30	3,445.35	7.48	-60.49	16.64	0.12	0.12	-0.24	
3,475.00	8.01	270.25	3,470.11	7.49	-63.92	17.18	1.00	1.00	-0.20	
3,500.00	7.78	269.79	3,494.87	7.50	-67.35	17.71	0.95	-0.92	-1.84	
3,525.00	7.73	269.13	3,519.65	7.46	-70.72	18.20	0.41	-0.20	-2.64	
3,550.00	7.57	268.09	3,544.42	7.38	-74.05	18.63	0.85	-0.64	-4.16	



Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 706H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	RKB @ 2919.60usft (Ensign 155)
Site:	Hambone Federal Com	MD Reference:	RKB @ 2919.60usft (Ensign 155)
Well:	706H	North Reference:	Grid
Wellbore:	OH / 66292	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Ensign 155)	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	7.53	267.15	3,569.21	7.25	-77.33	18.99	0.52	-0.16	-3.76
3,600.00	7.48	266.30	3,593.99	7.06	-80.59	19.31	0.49	-0.20	-3.40
3,625.00	7.39	265.56	3,618.78	6.83	-83.82	19.57	0.53	-0.36	-2.96
3,650.00	7.31	265.12	3,643.58	6.57	-87.01	19.80	0.39	-0.32	-1.76
3,675.00	7.17	263.71	3,668.38	6.26	-90.14	19.98	0.90	-0.56	-5.64
3,700.00	7.32	263.11	3,693.18	5.90	-93.28	20.10	0.67	0.60	-2.40
3,725.00	7.31	263.31	3,717.97	5.53	-96.44	20.21	0.11	-0.04	0.80
3,750.00	7.40	262.92	3,742.77	5.14	-99.61	20.32	0.41	0.36	-1.56
3,775.00	7.23	262.68	3,767.56	4.74	-102.77	20.41	0.69	-0.68	-0.96
3,800.00	7.21	261.83	3,792.37	4.32	-105.88	20.47	0.43	-0.08	-3.40
3,825.00	7.30	261.81	3,817.17	3.87	-109.01	20.50	0.36	0.36	-0.08
3,850.00	7.31	261.23	3,841.96	3.40	-112.15	20.52	0.30	0.04	-2.32
3,875.00	7.28	261.26	3,866.76	2.92	-115.29	20.52	0.12	-0.12	0.12
3,900.00	7.30	261.20	3,891.56	2.44	-118.43	20.52	0.09	0.08	-0.24
3,925.00	7.30	260.73	3,916.36	1.94	-121.56	20.51	0.24	0.00	-1.88
3,950.00	7.33	260.30	3,941.15	1.41	-124.70	20.47	0.25	0.12	-1.72
3,975.00	7.34	261.33	3,965.95	0.90	-127.85	20.45	0.53	0.04	4.12
4,000.00	7.43	263.65	3,990.74	0.48	-131.04	20.52	1.25	0.36	9.28
4,025.00	7.98	267.97	4,015.52	0.24	-134.38	20.80	3.19	2.20	17.28
4,050.00	8.31	269.84	4,040.26	0.18	-137.92	21.27	1.69	1.32	7.48
4,075.00	8.19	270.22	4,065.00	0.18	-141.51	21.82	0.53	-0.48	1.52
4,100.00	8.29	269.13	4,089.75	0.16	-145.09	22.35	0.74	0.40	-4.36
4,125.00	8.36	269.68	4,114.48	0.12	-148.71	22.87	0.42	0.28	2.20
4,150.00	8.49	268.83	4,139.21	0.07	-152.37	23.38	0.72	0.52	-3.40
4,175.00	8.40	268.40	4,163.94	-0.02	-156.04	23.86	0.44	-0.36	-1.72
4,200.00	8.31	267.55	4,188.68	-0.14	-159.67	24.29	0.61	-0.36	-3.40
4,225.00	8.23	267.95	4,213.42	-0.29	-163.27	24.70	0.39	-0.32	1.60
4,250.00	8.23	267.43	4,238.16	-0.43	-166.84	25.10	0.30	0.00	-2.08
4,275.00	8.19	266.40	4,262.90	-0.62	-170.41	25.46	0.61	-0.16	-4.12
4,300.00	8.20	265.89	4,287.65	-0.86	-173.96	25.76	0.29	0.04	-2.04
4,325.00	8.27	265.36	4,312.39	-1.13	-177.53	26.04	0.41	0.28	-2.12
4,350.00	8.23	265.36	4,337.13	-1.42	-181.11	26.30	0.16	-0.16	0.00
4,375.00	8.04	264.58	4,361.88	-1.73	-184.63	26.53	0.88	-0.76	-3.12
4,400.00	8.06	264.26	4,386.63	-2.08	-188.12	26.73	0.20	0.08	-1.28
4,425.00	8.05	264.36	4,411.39	-2.42	-191.60	26.92	0.07	-0.04	0.40
4,450.00	8.06	264.76	4,436.14	-2.75	-195.09	27.12	0.23	0.04	1.60
4,475.00	8.11	265.39	4,460.89	-3.06	-198.59	27.36	0.41	0.20	2.52
4,500.00	8.72	269.34	4,485.62	-3.22	-202.25	27.76	3.36	2.44	15.80
4,525.00	8.85	270.23	4,510.33	-3.23	-206.06	28.33	0.75	0.52	3.56
4,550.00	8.90	270.22	4,535.03	-3.22	-209.92	28.93	0.20	0.20	-0.04
4,575.00	9.01	270.24	4,559.73	-3.20	-213.81	29.54	0.44	0.44	0.08
4,600.00	8.98	269.76	4,584.42	-3.20	-217.72	30.14	0.32	-0.12	-1.92
4,625.00	8.79	269.65	4,609.12	-3.22	-221.58	30.71	0.76	-0.76	-0.44



Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 706H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	RKB @ 2919.60usft (Ensign 155)
Site:	Hambone Federal Com	MD Reference:	RKB @ 2919.60usft (Ensign 155)
Well:	706H	North Reference:	Grid
Wellbore:	OH / 66292	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Ensign 155)	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	9.00	268.92	4,633.82	-3.27	-225.45	31.26	0.95	0.84	-2.92	
4,675.00	9.12	268.21	4,658.51	-3.37	-229.38	31.76	0.66	0.48	-2.84	
4,700.00	9.00	268.21	4,683.19	-3.49	-233.32	32.24	0.48	-0.48	0.00	
4,725.00	8.84	267.44	4,707.89	-3.64	-237.19	32.69	0.80	-0.64	-3.08	
4,750.00	8.95	267.02	4,732.59	-3.83	-241.05	33.10	0.51	0.44	-1.68	
4,775.00	8.76	266.29	4,757.29	-4.05	-244.89	33.46	0.88	-0.76	-2.92	
4,800.00	8.87	266.16	4,782.00	-4.30	-248.72	33.80	0.45	0.44	-0.52	
4,825.00	8.81	265.48	4,806.70	-4.58	-252.55	34.11	0.48	-0.24	-2.72	
4,850.00	8.76	264.76	4,831.41	-4.91	-256.35	34.37	0.48	-0.20	-2.88	
4,875.00	8.77	263.91	4,856.12	-5.28	-260.14	34.58	0.52	0.04	-3.40	
4,900.00	8.77	263.94	4,880.82	-5.69	-263.93	34.76	0.02	0.00	0.12	
4,925.00	8.53	262.69	4,905.54	-6.13	-267.67	34.90	1.22	-0.96	-5.00	
4,950.00	8.51	262.83	4,930.26	-6.59	-271.34	35.00	0.12	-0.08	0.56	
4,975.00	8.47	262.56	4,954.99	-7.06	-275.00	35.09	0.23	-0.16	-1.08	
5,000.00	8.45	262.28	4,979.72	-7.55	-278.65	35.17	0.18	-0.08	-1.12	
5,025.00	8.44	262.04	5,004.45	-8.05	-282.29	35.23	0.15	-0.04	-0.96	
5,050.00	8.31	263.96	5,029.18	-8.49	-285.90	35.35	1.23	-0.52	7.68	
5,075.00	8.10	267.68	5,053.92	-8.75	-289.46	35.63	2.28	-0.84	14.88	
5,100.00	8.07	268.71	5,078.67	-8.86	-292.97	36.06	0.59	-0.12	4.12	
5,125.00	8.19	268.28	5,103.42	-8.96	-296.50	36.51	0.54	0.48	-1.72	
5,150.00	8.17	268.58	5,128.17	-9.05	-300.06	36.96	0.19	-0.08	1.20	
5,175.00	8.10	268.72	5,152.92	-9.14	-303.60	37.42	0.29	-0.28	0.56	
5,200.00	8.03	267.87	5,177.67	-9.24	-307.10	37.85	0.55	-0.28	-3.40	
5,225.00	8.07	267.85	5,202.42	-9.37	-310.60	38.26	0.16	0.16	-0.08	
5,250.00	7.84	267.09	5,227.18	-9.52	-314.06	38.63	1.01	-0.92	-3.04	
5,275.00	8.15	267.85	5,251.94	-9.68	-317.53	39.01	1.31	1.24	3.04	
5,300.00	8.01	266.85	5,276.69	-9.84	-321.04	39.39	0.79	-0.56	-4.00	
5,325.00	8.15	266.84	5,301.44	-10.03	-324.55	39.74	0.56	0.56	-0.04	
5,350.00	8.45	271.58	5,326.18	-10.08	-328.16	40.24	2.99	1.20	18.96	
5,375.00	8.79	275.32	5,350.90	-9.85	-331.89	41.04	2.62	1.36	14.96	
5,400.00	9.05	276.33	5,375.60	-9.46	-335.75	42.02	1.21	1.04	4.04	
5,425.00	9.00	276.25	5,400.29	-9.03	-339.65	43.04	0.21	-0.20	-0.32	
5,450.00	9.05	276.42	5,424.98	-8.60	-343.55	44.06	0.23	0.20	0.68	
5,475.00	8.81	275.61	5,449.68	-8.19	-347.40	45.06	1.08	-0.96	-3.24	
5,500.00	8.81	275.41	5,474.38	-7.82	-351.22	46.00	0.12	0.00	-0.80	
5,525.00	8.69	275.62	5,499.09	-7.46	-355.00	46.94	0.50	-0.48	0.84	
5,550.00	8.62	276.00	5,523.81	-7.08	-358.74	47.89	0.36	-0.28	1.52	
5,575.00	8.58	275.09	5,548.52	-6.71	-362.47	48.82	0.57	-0.16	-3.64	
5,600.00	8.51	274.27	5,573.25	-6.41	-366.17	49.68	0.56	-0.28	-3.28	
5,625.00	8.32	273.67	5,597.98	-6.16	-369.82	50.49	0.84	-0.76	-2.40	
5,650.00	8.08	273.19	5,622.72	-5.94	-373.38	51.25	1.00	-0.96	-1.92	
5,675.00	8.10	272.62	5,647.47	-5.77	-376.89	51.96	0.33	0.08	-2.28	
5,700.00	8.16	272.85	5,672.22	-5.60	-380.42	52.67	0.27	0.24	0.92	



Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 706H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	RKB @ 2919.60usft (Ensign 155)
Site:	Hambone Federal Com	MD Reference:	RKB @ 2919.60usft (Ensign 155)
Well:	706H	North Reference:	Grid
Wellbore:	OH / 66292	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Ensign 155)	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	7.94	272.65	5,696.98	-5.43	-383.92	53.37	0.89	-0.88	-0.80	
5,750.00	7.89	271.67	5,721.74	-5.30	-387.36	54.02	0.58	-0.20	-3.92	
5,775.00	7.82	271.38	5,746.50	-5.21	-390.77	54.64	0.32	-0.28	-1.16	
5,800.00	7.76	271.14	5,771.27	-5.13	-394.16	55.23	0.27	-0.24	-0.96	
5,825.00	7.78	270.84	5,796.04	-5.07	-397.54	55.80	0.18	0.08	-1.20	
5,850.00	7.83	270.40	5,820.81	-5.04	-400.94	56.36	0.31	0.20	-1.76	
5,875.00	7.70	270.35	5,845.58	-5.02	-404.31	56.90	0.52	-0.52	-0.20	
5,900.00	7.85	270.80	5,870.35	-4.98	-407.70	57.45	0.65	0.60	1.80	
5,925.00	8.05	273.91	5,895.11	-4.84	-411.15	58.12	1.90	0.80	12.44	
5,950.00	8.36	277.47	5,919.86	-4.48	-414.70	59.01	2.38	1.24	14.24	
5,975.00	8.77	277.62	5,944.58	-3.99	-418.39	60.06	1.64	1.64	0.60	
6,000.00	8.58	278.75	5,969.29	-3.46	-422.12	61.16	1.02	-0.76	4.52	
6,025.00	8.62	278.25	5,994.01	-2.91	-425.82	62.27	0.34	0.16	-2.00	
6,050.00	8.62	277.33	6,018.73	-2.40	-429.53	63.34	0.55	0.00	-3.68	
6,075.00	8.42	277.63	6,043.45	-1.92	-433.20	64.38	0.82	-0.80	1.20	
6,100.00	8.22	277.39	6,068.19	-1.44	-436.79	65.40	0.81	-0.80	-0.96	
6,125.00	8.04	276.51	6,092.94	-1.01	-440.30	66.36	0.88	-0.72	-3.52	
6,150.00	8.01	276.67	6,117.69	-0.61	-443.77	67.28	0.15	-0.12	0.64	
6,175.00	7.97	276.64	6,142.45	-0.21	-447.22	68.21	0.16	-0.16	-0.12	
6,200.00	7.85	275.45	6,167.21	0.15	-450.64	69.09	0.81	-0.48	-4.76	
6,225.00	7.66	274.76	6,191.98	0.45	-454.00	69.90	0.85	-0.76	-2.76	
6,250.00	7.51	274.25	6,216.76	0.71	-457.29	70.66	0.66	-0.60	-2.04	
6,275.00	7.61	274.08	6,241.55	0.95	-460.57	71.40	0.41	0.40	-0.68	
6,300.00	7.60	273.44	6,266.33	1.17	-463.87	72.12	0.34	-0.04	-2.56	
6,325.00	7.35	272.52	6,291.11	1.34	-467.12	72.78	1.11	-1.00	-3.68	
6,350.00	7.36	271.88	6,315.91	1.46	-470.32	73.39	0.33	0.04	-2.56	
6,375.00	7.41	272.34	6,340.70	1.58	-473.53	74.00	0.31	0.20	1.84	
6,400.00	7.58	271.33	6,365.49	1.68	-476.79	74.60	0.86	0.68	-4.04	
6,425.00	8.41	269.61	6,390.25	1.71	-480.26	75.16	3.45	3.32	-6.88	
6,450.00	8.70	268.88	6,414.97	1.66	-483.98	75.68	1.24	1.16	-2.92	
6,475.00	8.64	268.92	6,439.68	1.59	-487.75	76.19	0.24	-0.24	0.16	
6,500.00	8.70	268.39	6,464.40	1.50	-491.52	76.67	0.40	0.24	-2.12	
6,525.00	8.59	267.78	6,489.11	1.37	-495.27	77.13	0.57	-0.44	-2.44	
6,550.00	8.45	267.13	6,513.84	1.21	-498.97	77.53	0.68	-0.56	-2.60	
6,575.00	8.25	265.38	6,538.57	0.97	-502.59	77.85	1.29	-0.80	-7.00	
6,600.00	8.20	263.88	6,563.31	0.64	-506.15	78.06	0.88	-0.20	-6.00	
6,625.00	8.16	263.24	6,588.06	0.24	-509.69	78.21	0.40	-0.16	-2.56	
6,650.00	8.15	262.74	6,612.81	-0.20	-513.21	78.32	0.29	-0.04	-2.00	
6,675.00	8.06	261.23	6,637.56	-0.69	-516.70	78.37	0.92	-0.36	-6.04	
6,700.00	7.97	260.43	6,662.31	-1.24	-520.14	78.35	0.57	-0.36	-3.20	
6,725.00	7.80	259.61	6,687.08	-1.84	-523.52	78.28	0.82	-0.68	-3.28	
6,750.00	7.45	258.14	6,711.85	-2.47	-526.77	78.14	1.60	-1.40	-5.88	
6,775.00	7.62	258.04	6,736.64	-3.15	-529.98	77.97	0.68	0.68	-0.40	
6,800.00	7.12	258.04	6,761.43	-3.82	-533.12	77.79	2.00	-2.00	0.00	



Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 706H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	RKB @ 2919.60usft (Ensign 155)
Site:	Hambone Federal Com	MD Reference:	RKB @ 2919.60usft (Ensign 155)
Well:	706H	North Reference:	Grid
Wellbore:	OH / 66292	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Ensign 155)	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	6.63	257.97	6,786.25	-4.44	-536.05	77.62	1.96	-1.96	-0.28
6,850.00	6.60	258.49	6,811.09	-5.03	-538.86	77.47	0.27	-0.12	2.08
6,875.00	6.59	259.56	6,835.92	-5.57	-541.68	77.36	0.49	-0.04	4.28
6,900.00	6.05	264.08	6,860.77	-5.97	-544.40	77.39	2.94	-2.16	18.08
6,925.00	5.85	265.27	6,885.63	-6.21	-546.98	77.55	0.94	-0.80	4.76
6,950.00	5.91	268.59	6,910.50	-6.35	-549.54	77.80	1.38	0.24	13.28
6,975.00	5.97	272.85	6,935.37	-6.31	-552.13	78.23	1.78	0.24	17.04
7,000.00	6.12	273.78	6,960.23	-6.16	-554.75	78.78	0.72	0.60	3.72
7,025.00	6.18	273.56	6,985.09	-5.99	-557.43	79.36	0.26	0.24	-0.88
7,050.00	6.23	273.31	7,009.94	-5.83	-560.12	79.93	0.23	0.20	-1.00
7,075.00	6.11	273.09	7,034.79	-5.68	-562.81	80.49	0.49	-0.48	-0.88
7,100.00	6.29	272.50	7,059.65	-5.55	-565.50	81.03	0.76	0.72	-2.36
7,125.00	6.34	272.61	7,084.50	-5.42	-568.25	81.58	0.21	0.20	0.44
7,150.00	6.39	273.01	7,109.34	-5.29	-571.02	82.13	0.27	0.20	1.60
7,175.00	6.55	274.05	7,134.18	-5.11	-573.83	82.74	0.79	0.64	4.16
7,200.00	6.84	276.20	7,159.01	-4.85	-576.73	83.44	1.53	1.16	8.60
7,225.00	6.83	276.54	7,183.84	-4.52	-579.69	84.22	0.17	-0.04	1.36
7,250.00	6.95	276.49	7,208.65	-4.18	-582.67	85.01	0.48	0.48	-0.20
7,275.00	7.11	277.28	7,233.47	-3.81	-585.71	85.84	0.75	0.64	3.16
7,300.00	7.30	278.00	7,258.27	-3.40	-588.81	86.72	0.84	0.76	2.88
7,325.00	7.47	277.95	7,283.06	-2.95	-592.00	87.65	0.68	0.68	-0.20
7,350.00	8.03	275.24	7,307.83	-2.57	-595.35	88.54	2.67	2.24	-10.84
7,375.00	8.84	271.77	7,332.56	-2.35	-599.00	89.32	3.83	3.24	-13.88
7,400.00	9.11	271.08	7,357.26	-2.25	-602.90	90.01	1.16	1.08	-2.76
7,425.00	9.16	269.71	7,381.94	-2.22	-606.87	90.64	0.89	0.20	-5.48
7,450.00	9.46	267.30	7,406.61	-2.33	-610.91	91.16	1.97	1.20	-9.64
7,475.00	9.63	266.24	7,431.26	-2.56	-615.05	91.56	0.98	0.68	-4.24
7,500.00	9.43	265.40	7,455.92	-2.87	-619.18	91.89	0.97	-0.80	-3.36
7,525.00	9.20	264.22	7,480.59	-3.23	-623.21	92.15	1.20	-0.92	-4.72
7,550.00	8.84	263.01	7,505.28	-3.67	-627.11	92.31	1.63	-1.44	-4.84
7,575.00	8.52	262.17	7,529.99	-4.15	-630.85	92.41	1.38	-1.28	-3.36
7,600.00	8.03	261.61	7,554.73	-4.66	-634.41	92.45	1.99	-1.96	-2.24
7,625.00	8.03	261.95	7,579.49	-5.16	-637.87	92.49	0.19	0.00	1.36
7,650.00	8.11	261.80	7,604.24	-5.66	-641.34	92.53	0.33	0.32	-0.60
7,675.00	8.10	261.80	7,628.99	-6.16	-644.83	92.56	0.04	-0.04	0.00
7,700.00	7.95	262.90	7,653.75	-6.62	-648.29	92.63	0.86	-0.60	4.40
7,725.00	7.88	263.22	7,678.51	-7.04	-651.70	92.75	0.33	-0.28	1.28
7,750.00	7.88	264.91	7,703.27	-7.39	-655.11	92.92	0.93	0.00	6.76
7,775.00	8.09	266.01	7,728.03	-7.67	-658.58	93.18	1.04	0.84	4.40
7,800.00	8.21	266.10	7,752.78	-7.91	-662.11	93.48	0.48	0.48	0.36
7,825.00	8.34	266.28	7,777.52	-8.15	-665.70	93.79	0.53	0.52	0.72
7,850.00	8.78	268.86	7,802.24	-8.31	-669.42	94.20	2.34	1.76	10.32
7,875.00	9.29	270.08	7,826.93	-8.34	-673.34	94.77	2.18	2.04	4.88



Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 706H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	RKB @ 2919.60usft (Ensign 155)
Site:	Hambone Federal Com	MD Reference:	RKB @ 2919.60usft (Ensign 155)
Well:	706H	North Reference:	Grid
Wellbore:	OH / 66292	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Ensign 155)	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	9.46	270.25	7,851.59	-8.33	-677.42	95.40	0.69	0.68	0.68
7,925.00	10.16	270.50	7,876.23	-8.30	-681.68	96.08	2.81	2.80	1.00
7,950.00	11.14	270.79	7,900.80	-8.25	-686.30	96.84	3.93	3.92	1.16
7,975.00	11.65	271.06	7,925.31	-8.17	-691.23	97.68	2.05	2.04	1.08
8,000.00	11.76	270.72	7,949.79	-8.09	-696.31	98.53	0.52	0.44	-1.36
8,025.00	11.59	270.04	7,974.27	-8.06	-701.36	99.34	0.87	-0.68	-2.72
8,050.00	10.80	269.57	7,998.79	-8.07	-706.22	100.06	3.18	-3.16	-1.88
8,075.00	10.08	269.94	8,023.38	-8.09	-710.75	100.74	2.89	-2.88	1.48
8,100.00	9.62	270.16	8,048.01	-8.09	-715.02	101.40	1.85	-1.84	0.88
8,125.00	9.17	270.73	8,072.67	-8.06	-719.11	102.05	1.84	-1.80	2.28
8,150.00	8.83	269.57	8,097.37	-8.05	-723.02	102.66	1.54	-1.36	-4.64
8,175.00	8.48	268.53	8,122.08	-8.11	-726.78	103.17	1.53	-1.40	-4.16
8,200.00	8.29	268.33	8,146.81	-8.21	-730.42	103.63	0.77	-0.76	-0.80
8,225.00	8.32	268.35	8,171.55	-8.31	-734.03	104.08	0.12	0.12	0.08
8,250.00	8.30	268.89	8,196.29	-8.40	-737.64	104.55	0.32	-0.08	2.16
8,275.00	8.26	269.01	8,221.03	-8.47	-741.24	105.03	0.17	-0.16	0.48
8,300.00	8.18	269.06	8,245.77	-8.53	-744.82	105.52	0.32	-0.32	0.20
8,325.00	8.19	269.43	8,270.52	-8.57	-748.38	106.02	0.21	0.04	1.48
8,350.00	7.60	269.19	8,295.28	-8.61	-751.81	106.50	2.36	-2.36	-0.96
8,375.00	7.69	268.46	8,320.06	-8.68	-755.13	106.95	0.53	0.36	-2.92
8,400.00	7.23	268.32	8,344.85	-8.77	-758.38	107.35	1.84	-1.84	-0.56
8,425.00	6.78	267.88	8,369.66	-8.87	-761.43	107.72	1.81	-1.80	-1.76
8,450.00	6.40	267.22	8,394.49	-9.00	-764.29	108.04	1.55	-1.52	-2.64
8,475.00	6.46	266.13	8,419.34	-9.16	-767.09	108.30	0.54	0.24	-4.36
8,500.00	6.18	265.42	8,444.19	-9.36	-769.83	108.52	1.16	-1.12	-2.84
8,525.00	5.96	264.33	8,469.05	-9.60	-772.47	108.69	0.99	-0.88	-4.36
8,550.00	5.57	266.34	8,493.92	-9.80	-774.97	108.87	1.76	-1.56	8.04
8,575.00	5.49	267.27	8,518.80	-9.94	-777.37	109.11	0.48	-0.32	3.72
8,600.00	5.50	267.80	8,543.69	-10.04	-779.76	109.37	0.21	0.04	2.12
8,625.00	5.51	266.65	8,568.57	-10.16	-782.16	109.62	0.44	0.04	-4.60
8,650.00	5.54	264.68	8,593.46	-10.34	-784.56	109.81	0.77	0.12	-7.88
8,675.00	5.45	264.58	8,618.34	-10.56	-786.94	109.95	0.36	-0.36	-0.40
8,700.00	5.92	267.97	8,643.22	-10.72	-789.41	110.18	2.31	1.88	13.56
8,725.00	6.50	268.73	8,668.07	-10.80	-792.12	110.51	2.34	2.32	3.04
8,750.00	6.63	268.97	8,692.91	-10.85	-794.97	110.89	0.53	0.52	0.96
8,775.00	6.71	269.59	8,717.74	-10.89	-797.88	111.30	0.43	0.32	2.48
8,800.00	7.42	272.50	8,742.55	-10.83	-800.95	111.83	3.18	2.84	11.64
8,825.00	8.06	272.66	8,767.32	-10.68	-804.31	112.50	2.56	2.56	0.64
8,850.00	8.59	273.58	8,792.06	-10.48	-807.93	113.24	2.19	2.12	3.68
8,875.00	8.75	273.83	8,816.77	-10.24	-811.69	114.06	0.66	0.64	1.00
8,900.00	9.43	273.98	8,841.46	-9.97	-815.63	114.93	2.72	2.72	0.60
8,925.00	9.54	273.02	8,866.12	-9.72	-819.74	115.81	0.77	0.44	-3.84
8,950.00	9.11	272.36	8,890.79	-9.53	-823.79	116.61	1.77	-1.72	-2.64



Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 706H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	RKB @ 2919.60usft (Ensign 155)
Site:	Hambone Federal Com	MD Reference:	RKB @ 2919.60usft (Ensign 155)
Well:	706H	North Reference:	Grid
Wellbore:	OH / 66292	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Ensign 155)	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	8.83	271.75	8,915.48	-9.39	-827.68	117.35	1.18	-1.12	-2.44	
9,000.00	8.69	270.08	8,940.19	-9.32	-831.49	117.99	1.16	-0.56	-6.68	
9,025.00	8.49	269.12	8,964.91	-9.35	-835.22	118.54	0.98	-0.80	-3.84	
9,050.00	7.93	268.98	8,989.65	-9.41	-838.79	119.02	2.24	-2.24	-0.56	
9,075.00	7.03	269.64	9,014.44	-9.45	-842.05	119.48	3.62	-3.60	2.64	
9,100.00	6.87	269.16	9,039.25	-9.48	-845.07	119.91	0.68	-0.64	-1.92	
9,125.00	6.45	268.24	9,064.09	-9.55	-847.97	120.29	1.73	-1.68	-3.68	
9,150.00	6.25	266.85	9,088.93	-9.66	-850.73	120.60	1.01	-0.80	-5.56	
9,175.00	6.67	268.01	9,113.77	-9.79	-853.54	120.91	1.76	1.68	4.64	
9,198.00	7.08	267.93	9,136.61	-9.89	-856.29	121.23	1.78	1.78	-0.35	
9,355.00	5.07	272.10	9,292.72	-9.98	-872.90	123.68	1.31	-1.28	2.66	
First Phoenix MWD Survey										
9,399.00	4.81	271.35	9,336.56	-9.87	-876.69	124.37	0.61	-0.59	-1.70	
9,430.00	7.44	301.25	9,367.38	-8.80	-879.70	125.89	13.07	8.48	96.45	
9,462.00	13.71	313.86	9,398.83	-5.09	-884.21	130.24	20.77	19.59	39.41	
9,494.00	19.22	315.32	9,429.50	1.29	-890.66	137.53	17.27	17.22	4.56	
9,526.00	23.73	314.28	9,459.28	9.53	-898.97	146.95	14.14	14.09	-3.25	
9,558.00	27.41	315.11	9,488.14	19.25	-908.78	158.06	11.55	11.50	2.59	
9,589.00	30.60	316.92	9,515.25	30.07	-919.21	170.34	10.67	10.29	5.84	
9,621.00	33.63	318.57	9,542.35	42.67	-930.64	184.54	9.86	9.47	5.16	
9,653.00	36.93	320.01	9,568.47	56.68	-942.69	200.23	10.63	10.31	4.50	
9,685.00	39.73	321.63	9,593.57	72.07	-955.22	217.35	9.30	8.75	5.06	
9,717.00	41.99	323.49	9,617.77	88.69	-967.93	235.73	8.02	7.06	5.81	
9,749.00	42.51	324.27	9,641.45	106.07	-980.62	254.84	2.31	1.63	2.44	
9,781.00	44.06	325.59	9,664.75	124.03	-993.22	274.52	5.61	4.84	4.13	
9,812.00	46.06	327.69	9,686.65	142.36	-1,005.28	294.48	8.04	6.45	6.77	
9,844.00	46.92	329.04	9,708.68	162.12	-1,017.45	315.86	4.07	2.69	4.22	
9,876.00	49.25	330.46	9,730.05	182.69	-1,029.44	338.03	7.99	7.28	4.44	
9,908.00	51.33	331.09	9,750.50	204.17	-1,041.45	361.10	6.67	6.50	1.97	
9,940.00	54.99	331.23	9,769.68	226.60	-1,053.81	385.15	11.44	11.44	0.44	
9,972.00	57.06	330.96	9,787.56	249.83	-1,066.63	410.07	6.51	6.47	-0.84	
10,003.00	59.20	330.96	9,803.93	272.85	-1,079.41	434.77	6.90	6.90	0.00	
10,035.00	61.50	331.75	9,819.76	297.25	-1,092.74	460.93	7.50	7.19	2.47	
10,067.00	63.24	331.35	9,834.60	322.18	-1,106.25	487.63	5.55	5.44	-1.25	
10,099.00	65.28	331.72	9,848.50	347.52	-1,119.98	514.77	6.46	6.38	1.16	
10,131.00	68.45	332.15	9,861.07	373.48	-1,133.82	542.54	9.98	9.91	1.34	
10,163.00	71.54	333.04	9,872.01	400.17	-1,147.66	571.04	10.00	9.66	2.78	
10,195.00	74.39	333.91	9,881.39	427.55	-1,161.32	600.18	9.28	8.91	2.72	
10,227.00	78.38	334.74	9,888.92	455.57	-1,174.79	629.93	12.72	12.47	2.59	
10,258.00	81.94	335.43	9,894.22	483.27	-1,187.66	659.27	11.69	11.48	2.23	
10,290.00	85.35	335.71	9,897.76	512.22	-1,200.81	689.90	10.69	10.66	0.88	
10,322.00	88.22	336.13	9,899.55	541.39	-1,213.84	720.71	9.06	8.97	1.31	
10,354.00	89.30	337.33	9,900.24	570.77	-1,226.48	751.69	5.04	3.38	3.75	
10,417.00	88.45	336.96	9,901.48	628.82	-1,250.94	812.79	1.47	-1.35	-0.59	



Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 706H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	RKB @ 2919.60usft (Ensign 155)
Site:	Hambone Federal Com	MD Reference:	RKB @ 2919.60usft (Ensign 155)
Well:	706H	North Reference:	Grid
Wellbore:	OH / 66292	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Ensign 155)	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)	
10,513.00	87.84	339.72	9,904.59	717.98	-1,286.36	906.32	2.94	-0.64	2.88	
10,608.00	89.48	343.77	9,906.81	808.16	-1,316.10	999.99	4.60	1.73	4.26	
10,704.00	91.39	350.99	9,906.08	901.77	-1,337.06	1,095.70	7.78	1.99	7.52	
10,799.00	90.99	354.42	9,904.11	995.96	-1,349.12	1,190.63	3.63	-0.42	3.61	
10,895.00	91.44	357.08	9,902.07	1,091.67	-1,356.23	1,286.30	2.81	0.47	2.77	
10,990.00	90.92	355.69	9,900.12	1,186.46	-1,362.22	1,380.89	1.56	-0.55	-1.46	
11,085.00	90.75	358.99	9,898.73	1,281.33	-1,366.62	1,475.32	3.48	-0.18	3.47	
11,181.00	91.81	1.44	9,896.59	1,377.30	-1,366.26	1,570.10	2.78	1.10	2.55	
11,277.00	93.09	1.66	9,892.48	1,473.17	-1,363.67	1,664.45	1.35	1.33	0.23	
11,372.00	89.08	0.17	9,890.68	1,568.12	-1,362.16	1,758.05	4.50	-4.22	-1.57	
11,468.00	88.24	359.04	9,892.93	1,664.09	-1,362.82	1,852.99	1.47	-0.88	-1.18	
11,564.00	89.58	1.65	9,894.75	1,760.06	-1,362.24	1,947.75	3.06	1.40	2.72	
11,659.00	89.08	2.25	9,895.87	1,855.00	-1,359.01	2,041.07	0.82	-0.53	0.63	
11,755.00	91.22	2.91	9,895.61	1,950.90	-1,354.68	2,135.18	2.33	2.23	0.69	
11,851.00	90.78	1.41	9,893.94	2,046.81	-1,351.07	2,229.41	1.63	-0.46	-1.56	
11,946.00	90.48	359.90	9,892.89	2,141.79	-1,349.98	2,323.11	1.62	-0.32	-1.59	
12,042.00	90.50	0.26	9,892.07	2,237.79	-1,349.85	2,417.96	0.38	0.02	0.38	
12,138.00	90.38	0.14	9,891.34	2,333.79	-1,349.51	2,512.77	0.18	-0.13	-0.13	
12,234.00	91.62	1.44	9,889.66	2,429.76	-1,348.19	2,607.41	1.87	1.29	1.35	
12,329.00	88.13	359.41	9,889.87	2,524.74	-1,347.48	2,701.16	4.25	-3.67	-2.14	
12,425.00	87.82	359.14	9,893.26	2,620.67	-1,348.70	2,796.15	0.43	-0.32	-0.28	
12,520.00	87.77	359.04	9,896.92	2,715.59	-1,350.21	2,890.18	0.12	-0.05	-0.11	
12,616.00	87.00	358.58	9,901.30	2,811.47	-1,352.20	2,985.24	0.93	-0.80	-0.48	
12,711.00	85.94	357.59	9,907.14	2,906.23	-1,355.37	3,079.37	1.53	-1.12	-1.04	
12,806.00	89.04	358.40	9,911.30	3,001.07	-1,358.68	3,173.60	3.37	3.26	0.85	
12,900.00	92.57	0.78	9,909.98	3,095.04	-1,359.36	3,266.56	4.53	3.76	2.53	
12,995.00	92.72	0.41	9,905.60	3,189.93	-1,358.37	3,360.19	0.42	0.16	-0.39	
13,090.00	92.26	359.74	9,901.47	3,284.84	-1,358.25	3,453.96	0.85	-0.48	-0.71	
13,185.00	92.38	359.83	9,897.63	3,379.76	-1,358.60	3,547.82	0.16	0.13	0.09	
13,280.00	92.24	0.52	9,893.80	3,474.68	-1,358.31	3,641.58	0.74	-0.15	0.73	
13,374.00	90.99	358.77	9,891.15	3,568.64	-1,358.90	3,734.52	2.29	-1.33	-1.86	
13,469.00	90.61	357.65	9,889.82	3,663.58	-1,361.86	3,828.80	1.24	-0.40	-1.18	
13,564.00	89.35	358.72	9,889.86	3,758.53	-1,364.87	3,923.09	1.74	-1.33	1.13	
13,659.00	92.18	359.50	9,888.59	3,853.50	-1,366.35	4,017.17	3.09	2.98	0.82	
13,754.00	88.47	357.72	9,888.05	3,948.45	-1,368.65	4,111.35	4.33	-3.91	-1.87	
13,847.00	88.58	356.91	9,890.44	4,041.31	-1,373.01	4,203.79	0.88	0.12	-0.87	
13,942.00	88.36	359.64	9,892.98	4,136.23	-1,375.87	4,298.03	2.88	-0.23	2.87	
14,037.00	86.66	359.34	9,897.11	4,231.13	-1,376.71	4,391.94	1.82	-1.79	-0.32	
14,131.00	86.59	358.80	9,902.64	4,324.96	-1,378.23	4,484.89	0.58	-0.07	-0.57	
14,225.00	88.02	1.31	9,907.06	4,418.84	-1,378.14	4,577.66	3.07	1.52	2.67	
14,319.00	86.45	1.03	9,911.59	4,512.71	-1,376.23	4,670.13	1.70	-1.67	-0.30	
14,414.00	92.44	2.87	9,912.51	4,607.60	-1,372.99	4,763.41	6.60	6.31	1.94	
14,509.00	93.69	3.20	9,907.44	4,702.33	-1,367.97	4,856.26	1.36	1.32	0.35	



Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 706H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	RKB @ 2919.60usft (Ensign 155)
Site:	Hambone Federal Com	MD Reference:	RKB @ 2919.60usft (Ensign 155)
Well:	706H	North Reference:	Grid
Wellbore:	OH / 66292	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Ensign 155)	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)	
14,604.00	93.15	3.46	9,901.77	4,797.00	-1,362.46	4,948.97	0.63	-0.57	0.27	
14,699.00	92.77	1.43	9,896.86	4,891.78	-1,358.42	5,042.02	2.17	-0.40	-2.14	
14,794.00	94.80	1.98	9,890.59	4,986.53	-1,355.60	5,135.22	2.21	2.14	0.58	
14,889.00	92.27	1.13	9,884.73	5,081.31	-1,353.02	5,228.48	2.81	-2.66	-0.89	
14,984.00	89.90	359.05	9,882.93	5,176.28	-1,352.88	5,322.31	3.32	-2.49	-2.19	
15,079.00	86.45	358.89	9,885.96	5,271.20	-1,354.58	5,416.38	3.64	-3.63	-0.17	
15,175.00	87.51	359.60	9,891.02	5,367.05	-1,355.85	5,511.30	1.33	1.10	0.74	
15,270.00	87.97	359.78	9,894.76	5,461.98	-1,356.36	5,605.19	0.52	0.48	0.19	
15,366.00	88.34	359.74	9,897.85	5,557.93	-1,356.76	5,700.07	0.39	0.39	-0.04	
15,461.00	85.98	358.58	9,902.56	5,652.79	-1,358.15	5,794.03	2.77	-2.48	-1.22	
15,557.00	87.28	357.30	9,908.20	5,748.56	-1,361.60	5,889.20	1.90	1.35	-1.33	
15,652.00	90.08	357.44	9,910.39	5,843.43	-1,365.95	5,983.61	2.95	2.95	0.15	
15,748.00	91.24	358.58	9,909.29	5,939.36	-1,369.29	6,078.92	1.69	1.21	1.19	
15,844.00	91.07	358.20	9,907.35	6,035.30	-1,371.98	6,174.15	0.43	-0.18	-0.40	
15,940.00	92.16	359.10	9,904.65	6,131.23	-1,374.25	6,269.30	1.47	1.14	0.94	
16,035.00	92.42	358.78	9,900.85	6,226.14	-1,376.00	6,363.36	0.43	0.27	-0.34	
16,130.00	89.27	359.73	9,899.45	6,321.11	-1,377.24	6,457.40	3.46	-3.32	1.00	
16,225.00	89.73	359.91	9,900.28	6,416.11	-1,377.53	6,551.32	0.52	0.48	0.19	
16,320.00	88.05	359.38	9,902.12	6,511.08	-1,378.12	6,645.27	1.85	-1.77	-0.56	
16,415.00	88.39	359.64	9,905.07	6,606.03	-1,378.93	6,739.23	0.45	0.36	0.27	
16,511.00	89.21	0.66	9,907.08	6,702.01	-1,378.68	6,834.03	1.36	0.85	1.06	
16,605.00	87.63	359.42	9,909.67	6,795.97	-1,378.62	6,926.88	2.14	-1.68	-1.32	
16,700.00	91.21	359.32	9,910.63	6,890.94	-1,379.66	7,020.89	3.77	3.77	-0.11	
16,795.00	91.62	358.98	9,908.29	6,985.90	-1,381.07	7,114.95	0.56	0.43	-0.36	
16,890.00	92.02	358.38	9,905.27	7,080.83	-1,383.26	7,209.10	0.76	0.42	-0.63	
16,985.00	92.73	358.11	9,901.33	7,175.70	-1,386.16	7,303.30	0.80	0.75	-0.28	
17,079.00	90.58	359.42	9,898.62	7,269.63	-1,388.19	7,396.43	2.68	-2.29	1.39	
17,174.00	90.85	359.59	9,897.43	7,364.62	-1,389.01	7,490.43	0.34	0.28	0.18	
17,268.00	91.21	359.57	9,895.74	7,458.60	-1,389.70	7,583.41	0.38	0.38	-0.02	
17,364.00	92.36	0.27	9,892.75	7,554.56	-1,389.83	7,678.25	1.40	1.20	0.73	
17,459.00	90.50	1.58	9,890.38	7,649.51	-1,388.30	7,771.85	2.39	-1.96	1.38	
17,555.00	91.18	2.03	9,888.98	7,745.45	-1,385.28	7,866.20	0.85	0.71	0.47	
17,651.00	89.31	1.19	9,888.56	7,841.41	-1,382.58	7,960.61	2.14	-1.95	-0.88	
17,747.00	86.74	1.09	9,891.87	7,937.32	-1,380.67	8,055.11	2.68	-2.68	-0.10	
17,842.00	85.34	1.15	9,898.43	8,032.07	-1,378.82	8,148.46	1.48	-1.47	0.06	
17,938.00	86.42	0.23	9,905.33	8,127.82	-1,377.67	8,242.90	1.48	1.13	-0.96	
18,034.00	85.47	0.00	9,912.12	8,223.57	-1,377.47	8,337.50	1.02	-0.99	-0.24	
18,129.00	87.85	359.99	9,917.65	8,318.41	-1,377.48	8,431.22	2.51	2.51	-0.01	
18,225.00	89.50	0.43	9,919.87	8,414.38	-1,377.13	8,526.01	1.78	1.72	0.46	
18,320.00	92.12	1.22	9,918.53	8,509.35	-1,375.76	8,619.65	2.88	2.76	0.83	
18,416.00	92.19	1.01	9,914.92	8,605.26	-1,373.90	8,714.15	0.23	0.07	-0.22	
18,511.00	91.15	358.18	9,912.15	8,700.21	-1,374.57	8,808.08	3.17	-1.09	-2.98	
18,607.00	94.94	359.35	9,907.05	8,796.03	-1,376.63	8,903.09	4.13	3.95	1.22	



Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 706H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	RKB @ 2919.60usft (Ensign 155)
Site:	Hambone Federal Com	MD Reference:	RKB @ 2919.60usft (Ensign 155)
Well:	706H	North Reference:	Grid
Wellbore:	OH / 66292	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Ensign 155)	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)	
18,703.00	94.27	358.37	9,899.35	8,891.70	-1,378.54	8,997.93	1.23	-0.70	-1.02	
18,753.00	94.15	358.43	9,895.68	8,941.55	-1,379.93	9,047.40	0.28	-0.25	0.13	
LTP: 18753' MD										
18,799.00	94.03	358.49	9,892.40	8,987.41	-1,381.16	9,092.91	0.28	-0.25	0.12	
18,824.00	93.98	358.55	9,890.65	9,012.34	-1,381.81	9,117.65	0.31	-0.20	0.24	
Final Phoenix MWD Survey										
18,882.00	93.98	358.55	9,886.63	9,070.19	-1,383.27	9,175.04	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	
9,355.00	9,292.72	-9.98	-872.90	First Phoenix MWD Survey	
18,753.00	9,895.68	8,941.55	-1,379.93	LTP: 18753' MD	
18,824.00	9,890.65	9,012.34	-1,381.81	Final Phoenix MWD Survey	
18,882.00	9,886.63	9,070.19	-1,383.27	Projection to TD	

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 16764

CONDITIONS OF APPROVAL

Operator:	COG OPERATING LLC	600 W Illinois Ave	Midland, TX79701	OGRID:	229137	Action Number:	16764	Action Type:	C-104C
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OCD Reviewer	Condition
ksimmons	RT expires May 26, 2021