

REC'D: 4/28/2020

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

DISTRICT II
611 S. FIRST ST., ARTESIA, NM 88210
Phone: (575) 746-1283 Fax: (575) 746-8720

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) 478-3460 Fax: (505) 478-3462

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 30-015-45542	Pool Code 98220	Pool Name Purple Sage; Wolfcamp (Gas)
Property Code 308269	Property Name WAY SOUTH STATE COM	Well Number 702H
OGRID No. 229137	Operator Name COG OPERATING, LLC	Elevation 3081.4'

Surface Location

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
5	31	26-S	28-E		265	SOUTH	660	EAST	EDDY

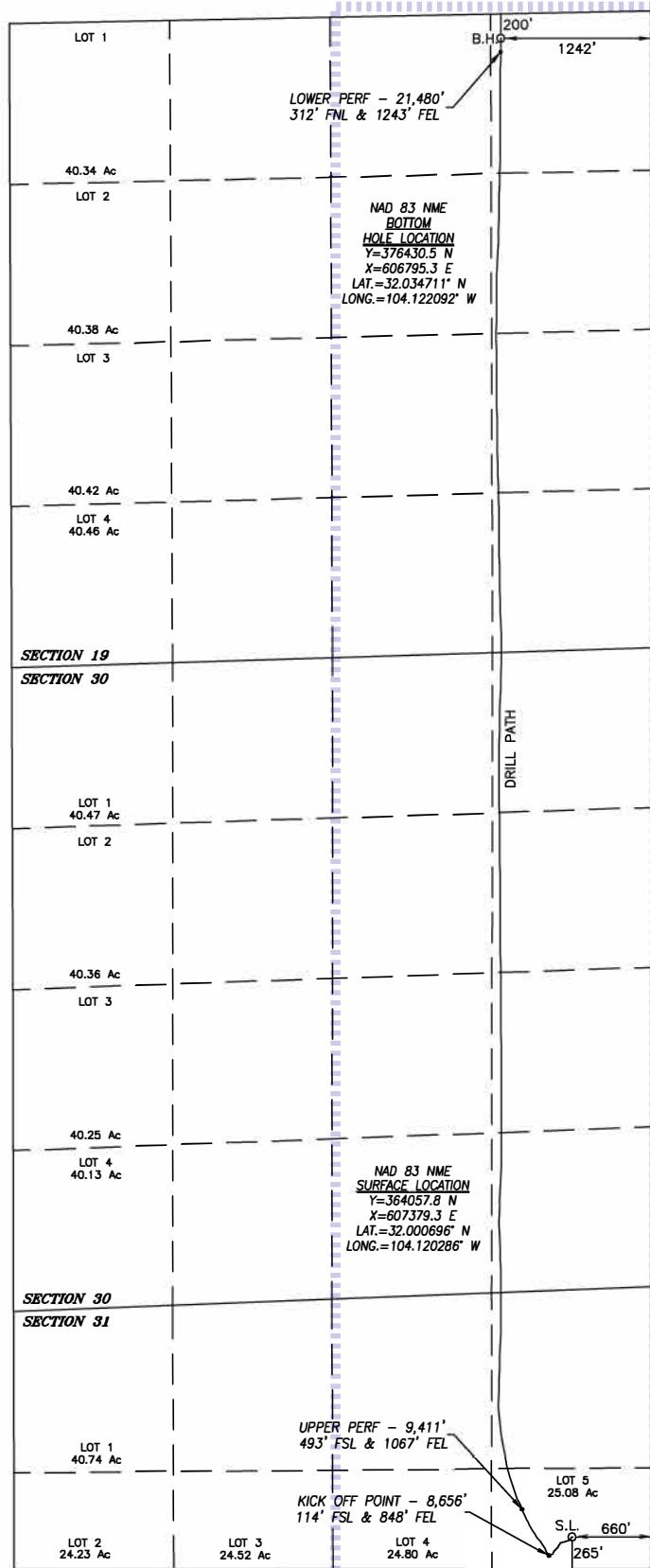
Bottom Hole Location If Different From Surface

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
A	19	26-S	28-E		200	NORTH	1242	EAST	EDDY
Dedicated Acres 767.59	Joint or Infill	Consolidation Code	Order No.						

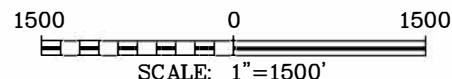
NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED
OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION

SEE PAGE 2

Property Code 308269	Property Name WAY SOUTH STATE COM	Well Number 702H
OGRID No. 229137	Operator Name COG OPERATING, LLC	Elevation 3081.4'



SURFACE INFO AND BOREPATH SHOWN HEREON IS BASED ON DIRECTIONAL SURVEY REPORT PROVIDED BY COG OPERATING, LLC FOR THE WAY SOUTH STATE COM #702H SUPPLIED TO HARCROW SURVEYING, LLC ON MARCH 16, 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.

03/19/20

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 18, 2018/

Date of Survey/Date of Geographic Survey

Signature & Seal of Professional Surveyor



Chad Hargrow 3/17/20
Certificate No. CHAD HARCROW 17777

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

COG Operating LLC

Eddy County, NM (NAD 27 NME)

Way South State Com

#702H

OH

Design: OH

Standard Survey Report

24 September, 2019

LEAM Drilling Systems

Survey Report

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #702H
Project:	Eddy County, NM (NAD 27 NME)	TVD Reference:	GE 3081.4' + 27' @ 3108.40usft (ICD 201)
Site:	Way South State Com	MD Reference:	GE 3081.4' + 27' @ 3108.40usft (ICD 201)
Well:	#702H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	LEAM Multi_User Db

Project	Eddy County, NM (NAD 27 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	Way South State Com		
Site Position:		Northing:	364,000.90 usft
From:	Map	Easting:	566,224.50 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 0' 2.060 N
		Longitude:	104° 7' 10.924 W
		Grid Convergence:	0.11 °

Well	#702H		
Well Position	+N/-S	0.00 usft	Northing: 364,000.90 usft
	+E/-W	0.00 usft	Easting: 566,194.60 usft
Position Uncertainty	0.00 usft	Wellhead Elevation:	usft
		Latitude:	32° 0' 2.060 N
		Longitude:	104° 7' 11.271 W
		Ground Level:	3,081.00 usft

Wellbore	OH		
Magnetics	Model Name	Sample Date	Declination (°)
	HDGM	7/8/2019	7.05
			Dip Angle (°)
			59.60
			Field Strength (nT)
			47,763.40000000

Design	OH		
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 (°)
			357.24

Survey Program	Date	9/24/2019		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
100.00	8,506.00	Survey #3 (OH)	SDI Standard Keeper	Scientific Drilling Intl. Standard Wireline Keeper
8,594.00	21,560.00	Survey #5 (OH)	Superior QC	OWSG MWD + IFR1 + FDIR Correction
21,592.00	21,592.00	Projection (OH)	Project	Projection

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
SHL (Way South State Com #702H)									
100.00	0.33	220.73	100.00	-0.22	-0.19	-0.21	0.33	0.33	0.00
125.00	0.45	239.45	125.00	-0.32	-0.32	-0.31	0.69	0.48	74.88
150.00	0.64	240.96	150.00	-0.44	-0.53	-0.41	0.76	0.76	6.04
175.00	0.74	244.23	175.00	-0.58	-0.79	-0.54	0.43	0.40	13.08
200.00	0.73	231.62	199.99	-0.75	-1.06	-0.70	0.65	-0.04	-50.44
225.00	0.85	232.59	224.99	-0.96	-1.34	-0.89	0.48	0.48	3.88
250.00	1.01	231.88	249.99	-1.21	-1.66	-1.13	0.64	0.64	-2.84

LEAM Drilling Systems

Survey Report

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #702H
Project:	Eddy County, NM (NAD 27 NME)	TVD Reference:	GE 3081.4' + 27' @ 3108.40usft (ICD 201)
Site:	Way South State Com	MD Reference:	GE 3081.4' + 27' @ 3108.40usft (ICD 201)
Well:	#702H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	LEAM Multi_User Db

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)
275.00	1.17	230.66	274.98	-1.51	-2.03	-1.41	0.65	0.64	-4.88
300.00	1.21	231.37	299.98	-1.83	-2.43	-1.71	0.17	0.16	2.84
325.00	1.07	227.74	324.97	-2.15	-2.81	-2.02	0.63	-0.56	-14.52
350.00	0.87	232.13	349.97	-2.43	-3.13	-2.27	0.85	-0.80	17.56
375.00	1.09	233.81	374.97	-2.68	-3.47	-2.51	0.89	0.88	6.72
400.00	1.20	234.50	399.96	-2.98	-3.88	-2.79	0.44	0.44	2.76
425.00	1.27	233.28	424.96	-3.29	-4.31	-3.08	0.30	0.28	-4.88
450.00	1.43	233.33	449.95	-3.65	-4.79	-3.41	0.64	0.64	0.20
475.00	0.91	225.47	474.94	-3.97	-5.18	-3.72	2.17	-2.08	-31.44
500.00	0.90	223.43	499.94	-4.25	-5.45	-3.99	0.13	-0.04	-8.16
525.00	0.79	221.40	524.94	-4.53	-5.70	-4.25	0.46	-0.44	-8.12
550.00	0.77	211.58	549.93	-4.80	-5.91	-4.51	0.54	-0.08	-39.28
575.00	0.89	218.38	574.93	-5.09	-6.11	-4.79	0.62	0.48	27.20
600.00	0.56	216.39	599.93	-5.34	-6.31	-5.03	1.32	-1.32	-7.96
625.00	0.90	221.75	624.93	-5.59	-6.51	-5.27	1.39	1.36	21.44
650.00	0.97	221.77	649.92	-5.89	-6.78	-5.56	0.28	0.28	0.08
675.00	0.73	215.81	674.92	-6.18	-7.02	-5.83	1.02	-0.96	-23.84
700.00	0.63	214.07	699.92	-6.42	-7.19	-6.07	0.41	-0.40	-6.96
725.00	0.74	226.25	724.92	-6.65	-7.38	-6.29	0.73	0.44	48.72
750.00	0.76	220.89	749.92	-6.89	-7.61	-6.51	0.29	0.08	-21.44
775.00	0.68	224.01	774.91	-7.12	-7.82	-6.73	0.36	-0.32	12.48
800.00	0.63	221.82	799.91	-7.33	-8.01	-6.93	0.22	-0.20	-8.76
825.00	0.61	226.29	824.91	-7.52	-8.20	-7.12	0.21	-0.08	17.88
850.00	0.60	215.80	849.91	-7.72	-8.37	-7.31	0.44	-0.04	-41.96
875.00	0.67	225.13	874.91	-7.93	-8.55	-7.51	0.50	0.28	37.32
900.00	0.56	230.67	899.91	-8.11	-8.75	-7.68	0.50	-0.44	22.16
925.00	0.62	234.85	924.91	-8.26	-8.96	-7.82	0.30	0.24	16.72
950.00	0.52	218.75	949.90	-8.43	-9.14	-7.98	0.75	-0.40	-64.40
975.00	0.44	220.99	974.90	-8.59	-9.27	-8.13	0.33	-0.32	8.96
1,000.00	0.38	227.57	999.90	-8.72	-9.40	-8.26	0.30	-0.24	26.32
1,025.00	0.14	281.15	1,024.90	-8.77	-9.49	-8.30	1.27	-0.96	214.32
1,050.00	0.22	226.63	1,049.90	-8.80	-9.55	-8.33	0.72	0.32	-218.08
1,075.00	0.18	238.05	1,074.90	-8.85	-9.62	-8.38	0.23	-0.16	45.68
1,100.00	0.03	278.74	1,099.90	-8.87	-9.66	-8.39	0.63	-0.60	162.76
1,125.00	0.10	351.65	1,124.90	-8.85	-9.67	-8.37	0.38	0.28	291.64
1,150.00	0.34	329.58	1,149.90	-8.76	-9.71	-8.28	1.00	0.96	-88.28
1,175.00	0.18	257.70	1,174.90	-8.71	-9.79	-8.23	1.33	-0.64	-287.52
1,200.00	0.08	267.21	1,199.90	-8.72	-9.84	-8.23	0.41	-0.40	38.04
1,225.00	0.10	312.05	1,224.90	-8.70	-9.88	-8.22	0.28	0.08	179.36
1,250.00	0.13	108.59	1,249.90	-8.70	-9.86	-8.21	0.90	0.12	626.16
1,275.00	0.04	183.38	1,274.90	-8.71	-9.84	-8.23	0.50	-0.36	299.16
1,300.00	0.09	243.08	1,299.90	-8.73	-9.86	-8.25	0.31	0.20	238.80
1,325.00	0.03	339.25	1,324.90	-8.73	-9.88	-8.25	0.39	-0.24	384.68

LEAM Drilling Systems

Survey Report

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #702H
Project:	Eddy County, NM (NAD 27 NME)	TVD Reference:	GE 3081.4' + 27' @ 3108.40usft (ICD 201)
Site:	Way South State Com	MD Reference:	GE 3081.4' + 27' @ 3108.40usft (ICD 201)
Well:	#702H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	LEAM Multi_User Db

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)
1,350.00	0.13	320.17	1,349.90	-8.71	-9.90	-8.22	0.41	0.40	-76.32
1,375.00	0.16	269.02	1,374.90	-8.69	-9.95	-8.20	0.51	0.12	-204.60
1,400.00	0.17	249.99	1,399.90	-8.70	-10.02	-8.21	0.22	0.04	-76.12
1,425.00	0.11	258.38	1,424.90	-8.72	-10.08	-8.22	0.25	-0.24	33.56
1,450.00	0.13	277.88	1,449.90	-8.72	-10.13	-8.22	0.18	0.08	78.00
1,475.00	0.13	310.80	1,474.90	-8.69	-10.18	-8.19	0.29	0.00	131.68
1,500.00	0.02	79.74	1,499.90	-8.68	-10.20	-8.17	0.57	-0.44	515.76
1,525.00	0.07	19.29	1,524.90	-8.66	-10.19	-8.16	0.25	0.20	-241.80
1,550.00	0.06	357.27	1,549.90	-8.63	-10.18	-8.13	0.11	-0.04	-88.08
1,575.00	0.09	352.96	1,574.90	-8.60	-10.19	-8.10	0.12	0.12	-17.24
1,600.00	0.12	57.25	1,599.90	-8.57	-10.17	-8.07	0.46	0.12	257.16
1,625.00	0.19	51.79	1,624.90	-8.53	-10.11	-8.03	0.29	0.28	-21.84
1,650.00	0.36	52.64	1,649.90	-8.45	-10.02	-7.96	0.68	0.68	3.40
1,675.00	0.52	67.23	1,674.90	-8.36	-9.85	-7.88	0.78	0.64	58.36
1,700.00	0.48	70.66	1,699.90	-8.28	-9.65	-7.81	0.20	-0.16	13.72
1,725.00	0.52	70.40	1,724.90	-8.21	-9.44	-7.75	0.16	0.16	-1.04
1,750.00	0.63	81.95	1,749.90	-8.15	-9.20	-7.70	0.64	0.44	46.20
1,775.00	0.77	81.07	1,774.90	-8.11	-8.89	-7.67	0.56	0.56	-3.52
1,800.00	0.73	82.79	1,799.89	-8.06	-8.57	-7.64	0.18	-0.16	6.88
1,825.00	0.85	82.52	1,824.89	-8.02	-8.23	-7.61	0.48	0.48	-1.08
1,850.00	0.87	84.01	1,849.89	-7.97	-7.86	-7.59	0.12	0.08	5.96
1,875.00	0.76	87.41	1,874.89	-7.95	-7.50	-7.58	0.48	-0.44	13.60
1,900.00	0.87	177.91	1,899.88	-8.13	-7.33	-7.77	4.64	0.44	362.00
1,925.00	1.41	189.87	1,924.88	-8.62	-7.38	-8.26	2.35	2.16	47.84
1,950.00	1.52	190.77	1,949.87	-9.25	-7.49	-8.88	0.45	0.44	3.60
1,975.00	1.49	189.53	1,974.86	-9.90	-7.61	-9.52	0.18	-0.12	-4.96
2,000.00	1.54	194.04	1,999.85	-10.54	-7.74	-10.16	0.52	0.20	18.04
2,025.00	1.55	192.20	2,024.84	-11.20	-7.89	-10.81	0.20	0.04	-7.36
2,050.00	1.63	182.93	2,049.83	-11.88	-7.98	-11.49	1.08	0.32	-37.08
2,075.00	1.81	173.87	2,074.82	-12.63	-7.96	-12.23	1.30	0.72	-36.24
2,100.00	1.96	167.07	2,099.81	-13.44	-7.82	-13.05	1.08	0.60	-27.20
2,125.00	1.85	171.74	2,124.80	-14.26	-7.67	-13.87	0.76	-0.44	18.68
2,150.00	1.88	174.94	2,149.78	-15.07	-7.57	-14.68	0.43	0.12	12.80
2,175.00	1.76	174.74	2,174.77	-15.86	-7.50	-15.48	0.48	-0.48	-0.80
2,200.00	1.73	186.01	2,199.76	-16.61	-7.51	-16.23	1.38	-0.12	45.08
2,225.00	1.72	198.43	2,224.75	-17.35	-7.67	-16.96	1.49	-0.04	49.68
2,250.00	1.88	209.35	2,249.73	-18.06	-7.98	-17.65	1.51	0.64	43.68
2,275.00	2.21	229.17	2,274.72	-18.73	-8.55	-18.30	3.10	1.32	79.28
2,300.00	2.58	240.33	2,299.70	-19.32	-9.40	-18.85	2.37	1.48	44.64
2,325.00	2.62	243.98	2,324.67	-19.85	-10.41	-19.33	0.68	0.16	14.60
2,350.00	2.97	243.03	2,349.64	-20.40	-11.50	-19.82	1.41	1.40	-3.80
2,375.00	2.72	244.76	2,374.61	-20.95	-12.61	-20.31	1.06	-1.00	6.92
2,400.00	2.79	244.86	2,399.58	-21.46	-13.70	-20.77	0.28	0.28	0.40
2,425.00	2.72	246.87	2,424.55	-21.95	-14.79	-21.21	0.48	-0.28	8.04

LEAM Drilling Systems

Survey Report

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #702H
Project:	Eddy County, NM (NAD 27 NME)	TVD Reference:	GE 3081.4' + 27' @ 3108.40usft (ICD 201)
Site:	Way South State Com	MD Reference:	GE 3081.4' + 27' @ 3108.40usft (ICD 201)
Well:	#702H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	LEAM Multi_User Db

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)
2,450.00	2.80	245.99	2,449.52	-22.43	-15.90	-21.64	0.36	0.32	-3.52
2,475.00	2.87	246.00	2,474.49	-22.93	-17.03	-22.09	0.28	0.28	0.04
2,500.00	2.87	245.88	2,499.46	-23.44	-18.17	-22.54	0.02	0.00	-0.48
2,525.00	2.66	248.75	2,524.43	-23.91	-19.28	-22.95	1.01	-0.84	11.48
2,550.00	2.61	249.17	2,549.41	-24.32	-20.36	-23.31	0.21	-0.20	1.68
2,575.00	2.70	249.57	2,574.38	-24.73	-21.44	-23.67	0.37	0.36	1.60
2,600.00	2.70	250.50	2,599.35	-25.13	-22.55	-24.02	0.18	0.00	3.72
2,625.00	2.62	250.57	2,624.33	-25.52	-23.64	-24.35	0.32	-0.32	0.28
2,650.00	2.50	251.15	2,649.30	-25.88	-24.69	-24.67	0.49	-0.48	2.32
2,675.00	2.50	251.02	2,674.28	-26.24	-25.73	-24.97	0.02	0.00	-0.52
2,700.00	2.74	251.80	2,699.25	-26.60	-26.81	-25.28	0.97	0.96	3.12
2,725.00	2.47	249.79	2,724.22	-26.97	-27.88	-25.60	1.14	-1.08	-8.04
2,750.00	2.61	249.49	2,749.20	-27.36	-28.92	-25.94	0.56	0.56	-1.20
2,775.00	2.57	251.55	2,774.17	-27.74	-29.99	-26.26	0.41	-0.16	8.24
2,800.00	2.77	250.62	2,799.15	-28.12	-31.09	-26.59	0.82	0.80	-3.72
2,825.00	2.63	247.87	2,824.12	-28.53	-32.19	-26.95	0.76	-0.56	-11.00
2,850.00	2.63	249.80	2,849.09	-28.95	-33.26	-27.31	0.35	0.00	7.72
2,875.00	2.59	250.26	2,874.07	-29.33	-34.33	-27.65	0.18	-0.16	1.84
2,900.00	2.63	250.74	2,899.04	-29.71	-35.40	-27.98	0.18	0.16	1.92
2,925.00	2.79	250.73	2,924.01	-30.10	-36.52	-28.31	0.64	0.64	-0.04
2,950.00	2.85	250.73	2,948.98	-30.51	-37.68	-28.66	0.24	0.24	0.00
2,975.00	2.56	252.67	2,973.96	-30.88	-38.80	-28.98	1.22	-1.16	7.76
3,000.00	2.64	250.42	2,998.93	-31.24	-39.87	-29.28	0.52	0.32	-9.00
3,025.00	2.66	251.53	3,023.90	-31.62	-40.97	-29.61	0.22	0.08	4.44
3,050.00	2.72	252.13	3,048.88	-31.98	-42.08	-29.92	0.27	0.24	2.40
3,075.00	2.79	251.78	3,073.85	-32.36	-43.22	-30.24	0.29	0.28	-1.40
3,100.00	2.72	252.36	3,098.82	-32.73	-44.37	-30.55	0.30	-0.28	2.32
3,125.00	2.74	250.92	3,123.79	-33.10	-45.50	-30.87	0.29	0.08	-5.76
3,150.00	2.77	251.73	3,148.76	-33.49	-46.64	-31.20	0.20	0.12	3.24
3,175.00	2.81	250.26	3,173.73	-33.88	-47.79	-31.54	0.33	0.16	-5.88
3,200.00	2.97	250.06	3,198.70	-34.31	-48.97	-31.91	0.64	0.64	-0.80
3,225.00	2.92	250.83	3,223.67	-34.74	-50.18	-32.28	0.26	-0.20	3.08
3,250.00	2.76	250.92	3,248.64	-35.15	-51.35	-32.63	0.64	-0.64	0.36
3,275.00	2.78	250.75	3,273.61	-35.54	-52.49	-32.97	0.09	0.08	-0.68
3,300.00	2.78	251.04	3,298.58	-35.94	-53.64	-33.31	0.06	0.00	1.16
3,325.00	2.88	249.65	3,323.55	-36.35	-54.80	-33.67	0.49	0.40	-5.56
3,350.00	2.80	251.05	3,348.52	-36.77	-55.97	-34.03	0.42	-0.32	5.60
3,375.00	2.83	252.03	3,373.49	-37.16	-57.13	-34.37	0.23	0.12	3.92
3,400.00	2.89	251.00	3,398.45	-37.56	-58.31	-34.70	0.32	0.24	-4.12
3,425.00	2.95	250.24	3,423.42	-37.98	-59.52	-35.07	0.29	0.24	-3.04
3,450.00	2.88	250.24	3,448.39	-38.41	-60.71	-35.44	0.28	-0.28	0.00
3,475.00	2.72	252.56	3,473.36	-38.80	-61.87	-35.77	0.78	-0.64	9.28
3,500.00	2.85	253.77	3,498.33	-39.15	-63.03	-36.07	0.57	0.52	4.84

LEAM Drilling Systems

Survey Report

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #702H
Project:	Eddy County, NM (NAD 27 NME)	TVD Reference:	GE 3081.4' + 27' @ 3108.40usft (ICD 201)
Site:	Way South State Com	MD Reference:	GE 3081.4' + 27' @ 3108.40usft (ICD 201)
Well:	#702H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	LEAM Multi_User Db

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)	
3,525.00	2.82	252.71	3,523.30	-39.51	-64.22	-36.37	0.24	-0.12	-4.24	
3,550.00	2.65	253.30	3,548.27	-39.86	-65.36	-36.66	0.69	-0.68	2.36	
3,575.00	2.86	253.06	3,573.24	-40.20	-66.51	-36.95	0.84	0.84	-0.96	
3,600.00	2.67	253.21	3,598.21	-40.55	-67.66	-37.25	0.76	-0.76	0.60	
3,625.00	2.70	253.44	3,623.19	-40.89	-68.78	-37.53	0.13	0.12	0.92	
3,650.00	2.52	255.51	3,648.16	-41.19	-69.88	-37.78	0.81	-0.72	8.28	
3,675.00	2.62	254.61	3,673.13	-41.48	-70.96	-38.02	0.43	0.40	-3.60	
3,700.00	2.59	255.67	3,698.11	-41.77	-72.06	-38.26	0.23	-0.12	4.24	
3,725.00	2.54	255.27	3,723.08	-42.06	-73.14	-38.48	0.21	-0.20	-1.60	
3,750.00	2.45	256.02	3,748.06	-42.33	-74.20	-38.70	0.38	-0.36	3.00	
3,775.00	2.54	256.66	3,773.04	-42.58	-75.26	-38.91	0.38	0.36	2.56	
3,800.00	2.59	254.92	3,798.01	-42.86	-76.34	-39.13	0.37	0.20	-6.96	
3,825.00	2.65	254.66	3,822.98	-43.16	-77.44	-39.38	0.24	0.24	-1.04	
3,850.00	2.44	255.40	3,847.96	-43.44	-78.52	-39.61	0.85	-0.84	2.96	
3,875.00	2.51	254.96	3,872.94	-43.72	-79.56	-39.84	0.29	0.28	-1.76	
3,900.00	2.65	256.42	3,897.91	-44.00	-80.65	-40.06	0.62	0.56	5.84	
3,925.00	2.42	255.56	3,922.89	-44.27	-81.72	-40.28	0.93	-0.92	-3.44	
3,950.00	2.59	253.70	3,947.86	-44.56	-82.78	-40.52	0.75	0.68	-7.44	
3,975.00	2.58	252.36	3,972.84	-44.88	-83.85	-40.79	0.25	-0.04	-5.36	
4,000.00	2.53	252.48	3,997.81	-45.22	-84.92	-41.08	0.20	-0.20	0.48	
4,025.00	2.73	254.70	4,022.79	-45.54	-86.02	-41.35	0.90	0.80	8.88	
4,050.00	2.71	251.03	4,047.76	-45.89	-87.15	-41.64	0.70	-0.08	-14.68	
4,075.00	2.62	251.76	4,072.73	-46.26	-88.25	-41.96	0.38	-0.36	2.92	
4,100.00	2.48	250.60	4,097.71	-46.62	-89.30	-42.27	0.60	-0.56	-4.64	
4,125.00	2.55	250.38	4,122.68	-46.99	-90.34	-42.58	0.28	0.28	-0.88	
4,150.00	2.64	248.11	4,147.66	-47.39	-91.40	-42.93	0.55	0.36	-9.08	
4,175.00	2.66	231.31	4,172.63	-47.97	-92.38	-43.46	3.10	0.08	-67.20	
4,200.00	2.79	225.24	4,197.60	-48.76	-93.27	-44.21	1.27	0.52	-24.28	
4,225.00	2.86	218.11	4,222.57	-49.68	-94.09	-45.09	1.43	0.28	-28.52	
4,250.00	2.84	216.48	4,247.54	-50.67	-94.84	-46.04	0.33	-0.08	-6.52	
4,275.00	2.98	211.97	4,272.51	-51.72	-95.55	-47.06	1.07	0.56	-18.04	
4,300.00	2.92	217.66	4,297.48	-52.77	-96.28	-48.07	1.20	-0.24	22.76	
4,325.00	2.96	214.31	4,322.44	-53.81	-97.04	-49.07	0.71	0.16	-13.40	
4,350.00	2.88	215.90	4,347.41	-54.85	-97.77	-50.08	0.46	-0.32	6.36	
4,375.00	2.92	215.76	4,372.38	-55.88	-98.51	-51.07	0.16	0.16	-0.56	
4,400.00	2.89	212.96	4,397.35	-56.92	-99.22	-52.08	0.58	-0.12	-11.20	
4,425.00	2.88	211.91	4,422.31	-57.98	-99.90	-53.11	0.22	-0.04	-4.20	
4,450.00	2.77	213.34	4,447.28	-59.02	-100.56	-54.11	0.52	-0.44	5.72	
4,475.00	2.83	214.58	4,472.25	-60.03	-101.25	-55.09	0.34	0.24	4.96	
4,500.00	2.84	213.97	4,497.22	-61.06	-101.94	-56.08	0.13	0.04	-2.44	
4,525.00	2.70	209.21	4,522.19	-62.08	-102.58	-57.07	1.08	-0.56	-19.04	
4,550.00	2.63	211.11	4,547.17	-63.09	-103.16	-58.05	0.45	-0.28	7.60	
4,575.00	2.60	212.96	4,572.14	-64.06	-103.76	-58.98	0.36	-0.12	7.40	

LEAM Drilling Systems

Survey Report

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #702H
Project:	Eddy County, NM (NAD 27 NME)	TVD Reference:	GE 3081.4' + 27' @ 3108.40usft (ICD 201)
Site:	Way South State Com	MD Reference:	GE 3081.4' + 27' @ 3108.40usft (ICD 201)
Well:	#702H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	LEAM Multi_User Db

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)	
4,600.00	2.66	212.46	4,597.12	-65.02	-104.38	-59.92	0.26	0.24	-2.00	
4,625.00	2.63	208.62	4,622.09	-66.01	-104.97	-60.88	0.72	-0.12	-15.36	
4,650.00	2.59	206.51	4,647.06	-67.02	-105.50	-61.87	0.42	-0.16	-8.44	
4,675.00	2.55	210.11	4,672.04	-68.01	-106.03	-62.82	0.67	-0.16	14.40	
4,700.00	2.54	210.09	4,697.01	-68.97	-106.58	-63.76	0.04	-0.04	-0.08	
4,725.00	2.59	212.86	4,721.99	-69.92	-107.17	-64.68	0.53	0.20	11.08	
4,750.00	2.69	209.52	4,746.96	-70.91	-107.76	-65.64	0.73	0.40	-13.36	
4,775.00	2.57	207.85	4,771.93	-71.91	-108.32	-66.62	0.57	-0.48	-6.68	
4,800.00	2.68	208.46	4,796.91	-72.92	-108.86	-67.60	0.45	0.44	2.44	
4,825.00	2.51	207.50	4,821.88	-73.92	-109.39	-68.57	0.70	-0.68	-3.84	
4,850.00	2.51	209.76	4,846.86	-74.88	-109.91	-69.50	0.40	0.00	9.04	
4,875.00	2.47	209.55	4,871.84	-75.83	-110.45	-70.42	0.16	-0.16	-0.84	
4,900.00	2.50	210.78	4,896.81	-76.77	-110.99	-71.33	0.24	0.12	4.92	
4,925.00	2.50	211.22	4,921.79	-77.70	-111.56	-72.24	0.08	0.00	1.76	
4,950.00	2.48	208.39	4,946.76	-78.64	-112.09	-73.15	0.50	-0.08	-11.32	
4,975.00	2.42	209.88	4,971.74	-79.58	-112.61	-74.06	0.35	-0.24	5.96	
5,000.00	2.53	214.21	4,996.72	-80.49	-113.19	-74.95	0.87	0.44	17.32	
5,025.00	2.48	210.28	5,021.69	-81.41	-113.77	-75.84	0.72	-0.20	-15.72	
5,050.00	2.40	209.95	5,046.67	-82.33	-114.31	-76.73	0.32	-0.32	-1.32	
5,075.00	2.41	209.08	5,071.65	-83.25	-114.82	-77.62	0.15	0.04	-3.48	
5,100.00	2.53	211.99	5,096.63	-84.17	-115.37	-78.52	0.69	0.48	11.64	
5,125.00	2.63	212.29	5,121.60	-85.13	-115.97	-79.44	0.40	0.40	1.20	
5,150.00	2.55	211.06	5,146.58	-86.09	-116.56	-80.38	0.39	-0.32	-4.92	
5,175.00	2.56	212.97	5,171.55	-87.03	-117.15	-81.29	0.34	0.04	7.64	
5,200.00	2.55	213.71	5,196.53	-87.96	-117.77	-82.19	0.14	-0.04	2.96	
5,225.00	2.69	220.40	5,221.50	-88.87	-118.45	-83.07	1.34	0.56	26.76	
5,250.00	2.77	225.31	5,246.47	-89.74	-119.26	-83.90	0.99	0.32	19.64	
5,275.00	2.88	227.71	5,271.44	-90.59	-120.16	-84.70	0.65	0.44	9.60	
5,300.00	2.86	227.32	5,296.41	-91.44	-121.08	-85.50	0.11	-0.08	-1.56	
5,325.00	2.90	228.60	5,321.38	-92.28	-122.01	-86.30	0.30	0.16	5.12	
5,350.00	3.09	230.39	5,346.34	-93.13	-123.01	-87.10	0.85	0.76	7.16	
5,375.00	2.88	229.10	5,371.31	-93.97	-124.00	-87.89	0.88	-0.84	-5.16	
5,400.00	2.93	228.13	5,396.28	-94.80	-124.95	-88.68	0.28	0.20	-3.88	
5,425.00	2.82	228.13	5,421.25	-95.64	-125.89	-89.47	0.44	-0.44	0.00	
5,450.00	2.92	230.14	5,446.22	-96.46	-126.83	-90.24	0.57	0.40	8.04	
5,475.00	3.24	231.08	5,471.18	-97.31	-127.87	-91.04	1.30	1.28	3.76	
5,500.00	3.07	225.23	5,496.14	-98.23	-128.90	-91.91	1.46	-0.68	-23.40	
5,525.00	2.89	228.70	5,521.11	-99.12	-129.84	-92.75	1.02	-0.72	13.88	
5,550.00	2.78	226.85	5,546.08	-99.95	-130.76	-93.53	0.57	-0.44	-7.40	
5,575.00	2.81	224.89	5,571.05	-100.79	-131.63	-94.34	0.40	0.12	-7.84	
5,600.00	2.82	226.74	5,596.02	-101.65	-132.52	-95.15	0.37	0.04	7.40	
5,625.00	2.95	225.68	5,620.99	-102.52	-133.42	-95.98	0.56	0.52	-4.24	
5,650.00	2.75	224.15	5,645.95	-103.40	-134.30	-96.81	0.86	-0.80	-6.12	
5,675.00	2.70	225.89	5,670.93	-104.24	-135.14	-97.61	0.39	-0.20	6.96	

LEAM Drilling Systems

Survey Report

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #702H
Project:	Eddy County, NM (NAD 27 NME)	TVD Reference:	GE 3081.4' + 27' @ 3108.40usft (ICD 201)
Site:	Way South State Com	MD Reference:	GE 3081.4' + 27' @ 3108.40usft (ICD 201)
Well:	#702H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	LEAM Multi_User Db

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)
5,700.00	2.74	224.85	5,695.90	-105.07	-135.99	-98.40	0.25	0.16	-4.16
5,725.00	2.77	223.29	5,720.87	-105.94	-136.82	-99.23	0.32	0.12	-6.24
5,750.00	2.79	223.22	5,745.84	-106.82	-137.65	-100.07	0.08	0.08	-0.28
5,775.00	2.74	225.64	5,770.81	-107.68	-138.50	-100.89	0.51	-0.20	9.68
5,800.00	2.72	224.13	5,795.78	-108.53	-139.34	-101.69	0.30	-0.08	-6.04
5,825.00	2.64	222.19	5,820.75	-109.38	-140.14	-102.50	0.48	-0.32	-7.76
5,850.00	2.70	218.19	5,845.73	-110.27	-140.89	-103.36	0.78	0.24	-16.00
5,875.00	2.58	220.38	5,870.70	-111.16	-141.62	-104.21	0.63	-0.48	8.76
5,900.00	2.68	221.05	5,895.67	-112.03	-142.36	-105.04	0.42	0.40	2.68
5,925.00	2.62	222.31	5,920.65	-112.89	-143.13	-105.87	0.33	-0.24	5.04
5,950.00	2.73	220.60	5,945.62	-113.77	-143.90	-106.70	0.54	0.44	-6.84
5,975.00	2.56	220.54	5,970.59	-114.64	-144.65	-107.54	0.68	-0.68	-0.24
6,000.00	2.54	217.26	5,995.57	-115.51	-145.35	-108.37	0.59	-0.08	-13.12
6,025.00	2.51	217.36	6,020.55	-116.38	-146.02	-109.22	0.12	-0.12	0.40
6,050.00	2.47	214.74	6,045.52	-117.26	-146.66	-110.06	0.48	-0.16	-10.48
6,075.00	2.59	208.18	6,070.50	-118.20	-147.23	-110.98	1.25	0.48	-26.24
6,100.00	2.74	205.81	6,095.47	-119.24	-147.76	-111.98	0.74	0.60	-9.48
6,125.00	2.31	205.22	6,120.45	-120.23	-148.24	-112.95	1.72	-1.72	-2.36
6,150.00	2.37	207.05	6,145.43	-121.15	-148.69	-113.85	0.38	0.24	7.32
6,175.00	2.34	205.53	6,170.40	-122.07	-149.14	-114.75	0.28	-0.12	-6.08
6,200.00	2.48	202.59	6,195.38	-123.03	-149.57	-115.68	0.75	0.56	-11.76
6,225.00	2.44	201.60	6,220.36	-124.02	-149.97	-116.66	0.23	-0.16	-3.96
6,250.00	2.21	201.71	6,245.34	-124.97	-150.35	-117.58	0.92	-0.92	0.44
6,275.00	2.12	201.82	6,270.32	-125.84	-150.70	-118.44	0.36	-0.36	0.44
6,300.00	1.99	197.48	6,295.30	-126.69	-151.00	-119.27	0.81	-0.52	-17.36
6,325.00	2.01	193.96	6,320.29	-127.53	-151.23	-120.09	0.50	0.08	-14.08
6,350.00	1.94	193.40	6,345.27	-128.36	-151.44	-120.92	0.29	-0.28	-2.24
6,375.00	1.76	191.68	6,370.26	-129.15	-151.61	-121.70	0.75	-0.72	-6.88
6,400.00	1.74	195.52	6,395.25	-129.89	-151.79	-122.43	0.48	-0.08	15.36
6,425.00	1.79	193.77	6,420.24	-130.64	-151.99	-123.17	0.29	0.20	-7.00
6,450.00	1.69	203.47	6,445.23	-131.35	-152.23	-123.87	1.24	-0.40	38.80
6,475.00	1.70	200.00	6,470.22	-132.04	-152.50	-124.54	0.41	0.04	-13.88
6,500.00	1.61	204.16	6,495.20	-132.71	-152.77	-125.20	0.60	-0.36	16.64
6,525.00	1.72	204.69	6,520.19	-133.37	-153.07	-125.85	0.44	0.44	2.12
6,550.00	1.65	201.18	6,545.18	-134.05	-153.36	-126.51	0.50	-0.28	-14.04
6,575.00	1.72	202.97	6,570.17	-134.73	-153.64	-127.17	0.35	0.28	7.16
6,600.00	1.94	203.10	6,595.16	-135.46	-153.95	-127.89	0.88	0.88	0.52
6,625.00	1.77	201.18	6,620.15	-136.21	-154.25	-128.63	0.72	-0.68	-7.68
6,650.00	1.60	214.08	6,645.14	-136.86	-154.59	-129.26	1.66	-0.68	51.60
6,675.00	1.64	227.72	6,670.13	-137.39	-155.05	-129.77	1.55	0.16	54.56
6,700.00	1.62	232.79	6,695.12	-137.85	-155.59	-130.19	0.58	-0.08	20.28
6,725.00	1.60	238.71	6,720.11	-138.24	-156.17	-130.56	0.67	-0.08	23.68
6,750.00	1.59	239.19	6,745.10	-138.60	-156.77	-130.89	0.07	-0.04	1.92

LEAM Drilling Systems

Survey Report

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #702H
Project:	Eddy County, NM (NAD 27 NME)	TVD Reference:	GE 3081.4' + 27' @ 3108.40usft (ICD 201)
Site:	Way South State Com	MD Reference:	GE 3081.4' + 27' @ 3108.40usft (ICD 201)
Well:	#702H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	LEAM Multi_User Db

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)	
6,775.00	1.58	239.75	6,770.09	-138.95	-157.37	-131.21	0.07	-0.04	2.24	
6,800.00	1.94	239.84	6,795.08	-139.34	-158.03	-131.57	1.44	1.44	0.36	
6,825.00	1.55	241.32	6,820.06	-139.71	-158.69	-131.91	1.57	-1.56	5.92	
6,850.00	1.58	244.86	6,845.05	-140.02	-159.30	-132.19	0.40	0.12	14.16	
6,875.00	1.38	248.26	6,870.05	-140.28	-159.89	-132.42	0.87	-0.80	13.60	
6,900.00	1.46	252.74	6,895.04	-140.48	-160.48	-132.59	0.55	0.32	17.92	
6,925.00	1.45	252.71	6,920.03	-140.67	-161.08	-132.75	0.04	-0.04	-0.12	
6,950.00	1.47	260.13	6,945.02	-140.82	-161.70	-132.87	0.76	0.08	29.68	
6,975.00	1.44	257.63	6,970.01	-140.94	-162.32	-132.96	0.28	-0.12	-10.00	
7,000.00	1.39	259.87	6,995.01	-141.06	-162.93	-133.06	0.30	-0.20	8.96	
7,025.00	1.47	260.49	7,020.00	-141.17	-163.54	-133.13	0.33	0.32	2.48	
7,050.00	1.42	257.99	7,044.99	-141.29	-164.16	-133.22	0.32	-0.20	-10.00	
7,075.00	1.56	258.36	7,069.98	-141.42	-164.80	-133.32	0.56	0.56	1.48	
7,100.00	1.28	259.32	7,094.97	-141.54	-165.41	-133.41	1.12	-1.12	3.84	
7,125.00	1.28	259.84	7,119.97	-141.64	-165.96	-133.49	0.05	0.00	2.08	
7,150.00	1.26	259.43	7,144.96	-141.74	-166.50	-133.56	0.09	-0.08	-1.64	
7,175.00	1.33	267.56	7,169.96	-141.81	-167.06	-133.60	0.79	0.28	32.52	
7,200.00	1.27	253.34	7,194.95	-141.90	-167.62	-133.66	1.31	-0.24	-56.88	
7,225.00	1.23	253.83	7,219.94	-142.05	-168.14	-133.79	0.17	-0.16	1.96	
7,250.00	1.26	253.56	7,244.94	-142.20	-168.66	-133.92	0.12	0.12	-1.08	
7,275.00	1.30	252.40	7,269.93	-142.37	-169.19	-134.06	0.19	0.16	-4.64	
7,300.00	1.36	246.97	7,294.92	-142.57	-169.74	-134.23	0.56	0.24	-21.72	
7,325.00	1.29	251.60	7,319.92	-142.77	-170.28	-134.41	0.51	-0.28	18.52	
7,350.00	1.21	254.50	7,344.91	-142.93	-170.80	-134.54	0.41	-0.32	11.60	
7,375.00	1.25	255.68	7,369.91	-143.07	-171.32	-134.66	0.19	0.16	4.72	
7,400.00	1.23	254.09	7,394.90	-143.21	-171.84	-134.77	0.16	-0.08	-6.36	
7,425.00	1.22	253.11	7,419.89	-143.36	-172.35	-134.90	0.09	-0.04	-3.92	
7,450.00	1.16	254.85	7,444.89	-143.51	-172.85	-135.02	0.28	-0.24	6.96	
7,475.00	1.06	254.16	7,469.88	-143.64	-173.32	-135.12	0.40	-0.40	-2.76	
7,500.00	0.91	260.12	7,494.88	-143.73	-173.74	-135.20	0.73	-0.60	23.84	
7,525.00	0.81	267.12	7,519.88	-143.78	-174.11	-135.23	0.58	-0.40	28.00	
7,550.00	0.67	269.28	7,544.88	-143.79	-174.43	-135.22	0.57	-0.56	8.64	
7,575.00	0.66	270.64	7,569.87	-143.79	-174.72	-135.21	0.07	-0.04	5.44	
7,600.00	0.65	270.48	7,594.87	-143.78	-175.01	-135.19	0.04	-0.04	-0.64	
7,625.00	0.64	271.68	7,619.87	-143.78	-175.29	-135.17	0.07	-0.04	4.80	
7,650.00	0.63	268.01	7,644.87	-143.78	-175.57	-135.16	0.17	-0.04	-14.68	
7,675.00	0.57	257.48	7,669.87	-143.81	-175.82	-135.18	0.50	-0.24	-42.12	
7,700.00	0.61	255.04	7,694.87	-143.87	-176.07	-135.23	0.19	0.16	-9.76	
7,725.00	0.62	255.84	7,719.87	-143.94	-176.33	-135.28	0.05	0.04	3.20	
7,750.00	0.63	255.53	7,744.86	-144.01	-176.60	-135.34	0.04	0.04	-1.24	
7,775.00	0.63	253.27	7,769.86	-144.08	-176.86	-135.40	0.10	0.00	-9.04	
7,800.00	0.64	256.44	7,794.86	-144.15	-177.13	-135.46	0.15	0.04	12.68	
7,825.00	0.65	254.00	7,819.86	-144.23	-177.40	-135.52	0.12	0.04	-9.76	

LEAM Drilling Systems

Survey Report

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #702H
Project:	Eddy County, NM (NAD 27 NME)	TVD Reference:	GE 3081.4' + 27' @ 3108.40usft (ICD 201)
Site:	Way South State Com	MD Reference:	GE 3081.4' + 27' @ 3108.40usft (ICD 201)
Well:	#702H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	LEAM Multi_User Db

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)
7,850.00	0.63	258.08	7,844.86	-144.29	-177.67	-135.57	0.20	-0.08	16.32
7,875.00	0.76	259.28	7,869.86	-144.35	-177.97	-135.62	0.52	0.52	4.80
7,900.00	0.74	254.01	7,894.85	-144.43	-178.29	-135.68	0.29	-0.08	-21.08
7,925.00	0.75	254.78	7,919.85	-144.52	-178.60	-135.75	0.06	0.04	3.08
7,950.00	0.71	254.59	7,944.85	-144.60	-178.91	-135.82	0.16	-0.16	-0.76
7,975.00	0.75	258.89	7,969.85	-144.67	-179.22	-135.87	0.27	0.16	17.20
8,000.00	0.78	255.20	7,994.85	-144.75	-179.54	-135.93	0.23	0.12	-14.76
8,025.00	0.85	257.78	8,019.84	-144.83	-179.89	-136.00	0.32	0.28	10.32
8,050.00	0.80	255.32	8,044.84	-144.91	-180.24	-136.07	0.25	-0.20	-9.84
8,075.00	0.81	259.10	8,069.84	-144.99	-180.58	-136.13	0.22	0.04	15.12
8,100.00	0.80	251.01	8,094.84	-145.08	-180.92	-136.20	0.46	-0.04	-32.36
8,125.00	0.81	240.67	8,119.83	-145.22	-181.24	-136.33	0.58	0.04	-41.36
8,150.00	0.91	237.41	8,144.83	-145.42	-181.56	-136.51	0.45	0.40	-13.04
8,175.00	0.88	228.35	8,169.83	-145.65	-181.87	-136.73	0.58	-0.12	-36.24
8,200.00	0.98	231.90	8,194.82	-145.91	-182.18	-136.97	0.46	0.40	14.20
8,225.00	1.01	232.92	8,219.82	-146.18	-182.53	-137.22	0.14	0.12	4.08
8,250.00	1.04	233.46	8,244.82	-146.44	-182.89	-137.47	0.13	0.12	2.16
8,275.00	1.09	232.32	8,269.81	-146.72	-183.26	-137.73	0.22	0.20	-4.56
8,300.00	1.08	231.10	8,294.81	-147.02	-183.63	-138.01	0.10	-0.04	-4.88
8,325.00	1.17	231.19	8,319.80	-147.33	-184.01	-138.29	0.36	0.36	0.36
8,350.00	1.18	231.63	8,344.80	-147.65	-184.41	-138.59	0.05	0.04	1.76
8,375.00	1.13	226.74	8,369.79	-147.97	-184.79	-138.90	0.44	-0.20	-19.56
8,400.00	1.02	224.68	8,394.79	-148.30	-185.13	-139.22	0.47	-0.44	-8.24
8,425.00	1.04	224.34	8,419.78	-148.62	-185.44	-139.52	0.08	0.08	-1.36
8,450.00	1.03	222.22	8,444.78	-148.95	-185.75	-139.83	0.16	-0.04	-8.48
8,475.00	1.04	222.63	8,469.78	-149.28	-186.06	-140.15	0.05	0.04	1.64
8,500.00	1.05	223.16	8,494.77	-149.62	-186.37	-140.47	0.06	0.04	2.12
8,506.00	1.05	220.62	8,500.77	-149.70	-186.44	-140.55	0.78	0.00	-42.33
8,594.00	0.69	213.84	8,588.76	-150.75	-187.26	-141.56	0.42	-0.41	-7.70
8,626.00	0.74	209.08	8,620.76	-151.09	-187.47	-141.89	0.24	0.16	-14.88
8,657.00	0.72	279.82	8,651.76	-151.23	-187.76	-142.02	2.73	-0.06	228.19
8,689.00	3.23	314.89	8,683.73	-150.56	-188.59	-141.31	8.35	7.84	109.59
8,720.00	6.69	318.58	8,714.61	-148.59	-190.41	-139.25	11.20	11.16	11.90
8,752.00	10.40	324.30	8,746.25	-144.85	-193.33	-135.37	11.88	11.59	17.88
8,783.00	14.68	327.70	8,776.51	-139.25	-197.06	-129.60	14.00	13.81	10.97
8,814.00	17.39	332.44	8,806.30	-131.82	-201.31	-121.98	9.70	8.74	15.29
8,846.00	19.46	332.88	8,836.66	-122.84	-205.95	-112.78	6.48	6.47	1.38
8,877.00	22.46	331.80	8,865.60	-113.02	-211.10	-102.73	9.76	9.68	-3.48
8,909.00	25.29	331.53	8,894.86	-101.62	-217.25	-91.05	8.85	8.84	-0.84
8,940.00	28.10	331.04	8,922.56	-89.41	-223.94	-78.53	9.09	9.06	-1.58
8,972.00	31.39	327.84	8,950.34	-75.76	-232.03	-64.50	11.41	10.28	-10.00
9,003.00	34.70	325.27	8,976.32	-61.67	-241.36	-49.98	11.59	10.68	-8.29
9,034.00	37.58	324.04	9,001.35	-46.76	-251.94	-34.58	9.58	9.29	-3.97
9,066.00	41.30	323.67	9,026.06	-30.35	-263.93	-17.61	11.65	11.63	-1.16

LEAM Drilling Systems

Survey Report

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #702H
Project:	Eddy County, NM (NAD 27 NME)	TVD Reference:	GE 3081.4' + 27' @ 3108.40usft (ICD 201)
Site:	Way South State Com	MD Reference:	GE 3081.4' + 27' @ 3108.40usft (ICD 201)
Well:	#702H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	LEAM Multi_User Db

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
9,097.00	45.26	323.65	9,048.63	-13.24	-276.52	0.10	12.77	12.77	-0.06
9,129.00	49.12	324.05	9,070.37	5.72	-290.36	19.69	12.10	12.06	1.25
9,160.00	53.98	324.54	9,089.64	25.43	-304.52	40.06	15.73	15.68	1.58
9,191.00	56.87	326.34	9,107.23	46.45	-319.00	61.76	10.48	9.32	5.81
9,217.00	58.52	328.99	9,121.13	65.02	-330.74	80.87	10.71	6.35	10.20
330' Heel Hard Line Crossing									
9,223.00	58.91	329.59	9,124.24	69.43	-333.36	85.40	10.71	6.48	9.97
9,254.00	63.27	332.38	9,139.23	93.15	-346.51	109.73	16.12	14.06	9.00
9,285.00	65.68	333.95	9,152.58	118.11	-359.13	135.27	9.02	7.77	5.06
9,317.00	68.37	335.30	9,165.07	144.73	-371.75	162.47	9.26	8.41	4.22
9,329.05	69.89	335.72	9,169.37	154.98	-376.42	172.92	13.02	12.61	3.47
FTP (Way South State Com #702H)									
9,348.00	72.28	336.36	9,175.51	171.36	-383.70	189.64	13.02	12.62	3.39
9,379.00	74.40	336.76	9,184.40	198.61	-395.51	217.42	6.95	6.84	1.29
9,411.00	75.43	336.55	9,192.73	226.97	-407.75	246.34	3.28	3.22	-0.66
9,442.00	77.25	335.27	9,200.05	254.47	-420.05	274.40	7.11	5.87	-4.13
9,474.00	79.75	335.60	9,206.43	282.99	-433.08	303.51	7.88	7.81	1.03
9,505.00	82.11	335.95	9,211.31	310.90	-445.64	332.00	7.69	7.61	1.13
9,536.00	84.13	338.70	9,215.03	339.30	-457.51	360.93	10.96	6.52	8.87
9,568.00	86.08	340.00	9,217.76	369.13	-468.75	391.27	7.32	6.09	4.06
9,599.00	87.56	341.74	9,219.48	398.37	-478.89	420.97	7.36	4.77	5.61
9,693.00	88.80	342.74	9,222.46	487.84	-507.55	511.72	1.69	1.32	1.06
9,787.00	92.07	348.93	9,221.75	578.93	-530.54	603.80	7.45	3.48	6.59
9,882.00	89.79	349.75	9,220.21	672.27	-548.11	697.88	2.55	-2.40	0.86
9,976.00	89.96	349.00	9,220.41	764.65	-565.44	790.99	0.82	0.18	-0.80
10,070.00	88.84	351.16	9,221.39	857.24	-581.63	884.25	2.59	-1.19	2.30
10,164.00	90.64	353.70	9,221.82	950.41	-594.01	977.91	3.31	1.91	2.70
10,258.00	90.06	357.53	9,221.25	1,044.11	-601.20	1,071.85	4.12	-0.62	4.07
10,352.00	87.79	0.60	9,223.01	1,138.06	-602.73	1,165.77	4.06	-2.41	3.27
10,446.00	88.04	3.24	9,226.43	1,231.94	-599.58	1,259.38	2.82	0.27	2.81
10,541.00	88.02	1.72	9,229.70	1,326.79	-595.48	1,353.93	1.60	-0.02	-1.60
10,635.00	88.34	1.32	9,232.68	1,420.71	-592.98	1,447.62	0.54	0.34	-0.43
10,729.00	88.04	1.69	9,235.65	1,514.63	-590.52	1,541.31	0.51	-0.32	0.39
10,823.00	90.28	1.56	9,237.03	1,608.58	-587.85	1,635.02	2.39	2.38	-0.14
10,917.00	89.35	2.38	9,237.33	1,702.52	-584.62	1,728.70	1.32	-0.99	0.87
11,011.00	91.66	359.79	9,236.50	1,796.49	-582.84	1,822.47	3.69	2.46	-2.76
11,105.00	92.38	0.69	9,233.19	1,890.42	-582.45	1,916.28	1.23	0.77	0.96
11,199.00	92.81	1.39	9,228.94	1,984.31	-580.74	2,009.97	0.87	0.46	0.74
11,293.00	91.42	358.89	9,225.47	2,078.24	-580.51	2,103.78	3.04	-1.48	-2.66
11,388.00	86.32	357.83	9,227.34	2,173.15	-583.23	2,198.71	5.48	-5.37	-1.12
11,482.00	93.65	358.31	9,227.36	2,267.03	-586.39	2,292.64	7.81	7.80	0.51
11,576.00	89.76	357.09	9,224.57	2,360.89	-590.16	2,386.57	4.34	-4.14	-1.30
11,670.00	89.06	357.11	9,225.53	2,454.77	-594.92	2,480.57	0.74	-0.74	0.02

LEAM Drilling Systems

Survey Report

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #702H
Project:	Eddy County, NM (NAD 27 NME)	TVD Reference:	GE 3081.4' + 27' @ 3108.40usft (ICD 201)
Site:	Way South State Com	MD Reference:	GE 3081.4' + 27' @ 3108.40usft (ICD 201)
Well:	#702H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	LEAM Multi_User Db

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
11,764.00	87.67	0.33	9,228.22	2,548.69	-597.02	2,574.48	3.73	-1.48	3.43
11,858.00	91.39	0.43	9,228.99	2,642.67	-596.40	2,668.32	3.96	3.96	0.11
11,953.00	87.12	1.72	9,230.22	2,737.62	-594.61	2,763.08	4.70	-4.49	1.36
12,029.00	87.64	2.10	9,233.70	2,813.50	-592.08	2,838.75	0.85	0.68	0.50
12,123.00	87.24	3.09	9,237.90	2,907.31	-587.83	2,932.24	1.13	-0.43	1.05
12,218.00	89.08	2.66	9,240.95	3,002.13	-583.07	3,026.73	1.99	1.94	-0.45
12,312.00	89.31	2.37	9,242.27	3,096.03	-578.95	3,120.32	0.39	0.24	-0.31
12,406.00	89.18	359.02	9,243.51	3,190.01	-577.81	3,214.13	3.57	-0.14	-3.56
12,500.00	89.40	359.48	9,244.67	3,283.99	-579.04	3,308.06	0.54	0.23	0.49
12,594.00	90.68	1.10	9,244.61	3,377.98	-578.56	3,401.92	2.20	1.36	1.72
12,688.00	90.20	0.48	9,243.88	3,471.97	-577.27	3,495.74	0.83	-0.51	-0.66
12,782.00	90.14	359.93	9,243.60	3,565.97	-576.93	3,589.61	0.59	-0.06	-0.59
12,876.00	90.22	0.60	9,243.31	3,659.97	-576.49	3,683.48	0.72	0.09	0.71
12,970.00	89.35	359.21	9,243.66	3,753.96	-576.65	3,777.38	1.74	-0.93	-1.48
13,064.00	89.39	359.97	9,244.70	3,847.96	-577.32	3,871.29	0.81	0.04	0.81
13,158.00	89.35	358.88	9,245.73	3,941.94	-578.27	3,965.22	1.16	-0.04	-1.16
13,252.00	89.18	359.10	9,246.93	4,035.92	-579.92	4,059.16	0.30	-0.18	0.23
13,346.00	89.41	359.92	9,248.09	4,129.91	-580.73	4,153.08	0.91	0.24	0.87
13,440.00	89.16	359.14	9,249.26	4,223.90	-581.50	4,247.00	0.87	-0.27	-0.83
13,534.00	89.85	0.28	9,250.08	4,317.89	-581.97	4,340.91	1.42	0.73	1.21
13,628.00	89.23	359.47	9,250.83	4,411.89	-582.18	4,434.80	1.09	-0.66	-0.86
13,722.00	89.39	359.29	9,251.96	4,505.87	-583.20	4,528.73	0.26	0.17	-0.19
13,816.00	89.93	359.51	9,252.52	4,599.87	-584.18	4,622.66	0.62	0.57	0.23
13,911.00	89.02	359.49	9,253.39	4,694.86	-585.01	4,717.58	0.96	-0.96	-0.02
14,004.00	89.63	0.16	9,254.49	4,787.85	-585.29	4,810.48	0.97	0.66	0.72
14,099.00	89.25	359.96	9,255.42	4,882.85	-585.19	4,905.36	0.45	-0.40	-0.21
14,193.00	89.31	359.53	9,256.60	4,976.84	-585.61	4,999.26	0.46	0.06	-0.46
14,287.00	89.37	359.18	9,257.68	5,070.83	-586.67	5,093.19	0.38	0.06	-0.37
14,381.00	89.36	359.68	9,258.72	5,164.81	-587.60	5,187.12	0.53	-0.01	0.53
14,475.00	89.35	0.02	9,259.78	5,258.81	-587.85	5,281.01	0.36	-0.01	0.36
14,569.00	89.23	359.08	9,260.94	5,352.80	-588.59	5,374.93	1.01	-0.13	-1.00
14,663.00	89.59	359.65	9,261.91	5,446.79	-589.63	5,468.86	0.72	0.38	0.61
14,757.00	89.17	359.22	9,262.93	5,540.78	-590.56	5,562.78	0.64	-0.45	-0.46
14,851.00	89.29	359.52	9,264.19	5,634.76	-591.59	5,656.71	0.34	0.13	0.32
14,945.00	89.33	359.61	9,265.32	5,728.75	-592.30	5,750.63	0.10	0.04	0.10
15,039.00	89.35	359.45	9,266.41	5,822.74	-593.08	5,844.55	0.17	0.02	-0.17
15,133.00	89.21	359.28	9,267.59	5,916.73	-594.12	5,938.47	0.23	-0.15	-0.18
15,228.00	89.24	359.14	9,268.87	6,011.71	-595.43	6,033.41	0.15	0.03	-0.15
15,322.00	89.24	359.58	9,270.12	6,105.70	-596.48	6,127.34	0.47	0.00	0.47
15,416.00	89.29	359.27	9,271.33	6,199.68	-597.42	6,221.26	0.33	0.05	-0.33
15,510.00	89.61	359.92	9,272.23	6,293.68	-598.08	6,315.18	0.77	0.34	0.69
15,605.00	90.72	1.24	9,271.96	6,388.67	-597.12	6,410.01	1.82	1.17	1.39
15,699.00	86.47	0.26	9,274.26	6,482.61	-595.89	6,503.78	4.64	-4.52	-1.04
15,793.00	81.81	359.79	9,283.85	6,576.09	-595.85	6,597.15	4.98	-4.96	-0.50

LEAM Drilling Systems

Survey Report

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #702H
Project:	Eddy County, NM (NAD 27 NME)	TVD Reference:	GE 3081.4' + 27' @ 3108.40usft (ICD 201)
Site:	Way South State Com	MD Reference:	GE 3081.4' + 27' @ 3108.40usft (ICD 201)
Well:	#702H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	LEAM Multi_User Db

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
15,887.00	89.01	1.33	9,291.37	6,669.72	-594.93	6,690.63	7.83	7.66	1.64
15,981.00	90.29	1.30	9,291.95	6,763.69	-592.77	6,784.39	1.36	1.36	-0.03
16,075.00	90.60	1.73	9,291.22	6,857.66	-590.29	6,878.13	0.56	0.33	0.46
16,170.00	90.61	2.76	9,290.21	6,952.58	-586.56	6,972.76	1.08	0.01	1.08
16,264.00	89.83	1.56	9,289.85	7,046.51	-583.02	7,066.41	1.52	-0.83	-1.28
16,358.00	89.58	1.72	9,290.34	7,140.47	-580.33	7,160.13	0.32	-0.27	0.17
16,452.00	89.38	1.32	9,291.19	7,234.43	-577.84	7,253.86	0.48	-0.21	-0.43
16,546.00	89.40	358.75	9,292.19	7,328.42	-577.78	7,347.74	2.73	0.02	-2.73
16,640.00	88.65	358.64	9,293.79	7,422.38	-579.92	7,441.69	0.81	-0.80	-0.12
16,735.00	89.73	357.74	9,295.13	7,517.32	-582.92	7,536.67	1.48	1.14	-0.95
16,829.00	90.03	358.05	9,295.33	7,611.26	-586.37	7,630.66	0.46	0.32	0.33
16,923.00	90.35	358.41	9,295.02	7,705.21	-589.28	7,724.65	0.51	0.34	0.38
17,017.00	90.73	359.62	9,294.13	7,799.19	-590.89	7,818.60	1.35	0.40	1.29
17,112.00	90.36	359.13	9,293.23	7,894.18	-591.93	7,913.52	0.65	-0.39	-0.52
17,206.00	90.26	358.98	9,292.72	7,988.16	-593.48	8,007.48	0.19	-0.11	-0.16
17,301.00	89.95	358.86	9,292.55	8,083.15	-595.27	8,102.43	0.35	-0.33	-0.13
17,395.00	89.86	359.19	9,292.70	8,177.13	-596.87	8,196.39	0.36	-0.10	0.35
17,489.00	89.52	359.34	9,293.21	8,271.12	-598.08	8,290.33	0.40	-0.36	0.16
17,584.00	89.03	359.32	9,294.41	8,366.11	-599.19	8,385.26	0.52	-0.52	-0.02
17,678.00	90.01	0.20	9,295.20	8,460.10	-599.58	8,479.16	1.40	1.04	0.94
17,772.00	90.23	358.50	9,295.00	8,554.09	-600.65	8,573.09	1.82	0.23	-1.81
17,866.00	90.20	358.34	9,294.65	8,648.06	-603.24	8,667.07	0.17	-0.03	-0.17
17,961.00	90.07	357.85	9,294.43	8,743.00	-606.40	8,762.06	0.53	-0.14	-0.52
18,055.00	90.16	358.34	9,294.24	8,836.95	-609.52	8,856.05	0.53	0.10	0.52
18,149.00	89.13	358.33	9,294.82	8,930.91	-612.25	8,950.03	1.10	-1.10	-0.01
18,243.00	89.18	359.32	9,296.21	9,024.88	-614.18	9,043.98	1.05	0.05	1.05
18,337.00	89.09	1.04	9,297.63	9,118.86	-613.88	9,137.85	1.83	-0.10	1.83
18,431.00	88.95	358.86	9,299.23	9,212.84	-613.97	9,231.72	2.32	-0.15	-2.32
18,525.00	89.37	359.46	9,300.61	9,306.82	-615.34	9,325.66	0.78	0.45	0.64
18,620.00	89.36	359.27	9,301.66	9,401.81	-616.40	9,420.59	0.20	-0.01	-0.20
18,714.00	89.24	359.29	9,302.81	9,495.80	-617.58	9,514.52	0.13	-0.13	0.02
18,808.00	88.66	359.75	9,304.53	9,589.78	-618.37	9,608.43	0.79	-0.62	0.49
18,902.00	88.32	0.31	9,307.01	9,683.74	-618.32	9,702.28	0.70	-0.36	0.60
18,997.00	88.97	358.80	9,309.26	9,778.71	-619.05	9,797.18	1.73	0.68	-1.59
19,091.00	89.27	358.95	9,310.70	9,872.68	-620.90	9,891.13	0.36	0.32	0.16
19,186.00	89.13	0.47	9,312.03	9,967.67	-621.38	9,986.03	1.61	-0.15	1.60
19,280.00	88.79	3.34	9,313.74	10,061.59	-618.26	10,079.69	3.07	-0.36	3.05
19,374.00	87.92	359.50	9,316.43	10,155.51	-615.93	10,173.38	4.19	-0.93	-4.09
19,469.00	87.93	357.94	9,319.87	10,250.42	-618.05	10,268.29	1.64	0.01	-1.64
19,563.00	89.99	0.41	9,321.58	10,344.38	-619.40	10,362.21	3.42	2.19	2.63
19,657.00	90.23	1.59	9,321.40	10,438.36	-617.76	10,456.00	1.28	0.26	1.26
19,751.00	90.24	3.46	9,321.01	10,532.27	-613.62	10,549.60	1.99	0.01	1.99
19,845.00	90.07	3.60	9,320.76	10,626.09	-607.83	10,643.03	0.23	-0.18	0.15

LEAM Drilling Systems

Survey Report

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #702H
Project:	Eddy County, NM (NAD 27 NME)	TVD Reference:	GE 3081.4' + 27' @ 3108.40usft (ICD 201)
Site:	Way South State Com	MD Reference:	GE 3081.4' + 27' @ 3108.40usft (ICD 201)
Well:	#702H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	LEAM Multi_User Db

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
19,939.00	90.25	1.72	9,320.50	10,719.98	-603.47	10,736.61	2.01	0.19	-2.00	
20,033.00	90.14	1.95	9,320.18	10,813.93	-600.46	10,830.30	0.27	-0.12	0.24	
20,127.00	89.22	359.93	9,320.70	10,907.91	-598.92	10,924.10	2.36	-0.98	-2.15	
20,222.00	89.16	0.31	9,322.05	11,002.90	-598.72	11,018.97	0.40	-0.06	0.40	
20,316.00	88.97	2.05	9,323.58	11,096.87	-596.78	11,112.73	1.86	-0.20	1.85	
20,410.00	89.19	2.87	9,325.09	11,190.77	-592.75	11,206.33	0.90	0.23	0.87	
20,505.00	89.12	0.44	9,326.49	11,285.71	-590.01	11,301.03	2.56	-0.07	-2.56	
20,599.00	89.18	0.73	9,327.89	11,379.70	-589.05	11,394.86	0.32	0.06	0.31	
20,693.00	88.76	359.73	9,329.57	11,473.68	-588.67	11,488.71	1.15	-0.45	-1.06	
20,787.00	89.46	1.39	9,331.04	11,567.66	-587.75	11,582.54	1.92	0.74	1.77	
20,882.00	89.08	0.52	9,332.25	11,662.64	-586.17	11,677.33	1.00	-0.40	-0.92	
20,976.00	89.26	0.20	9,333.61	11,756.62	-585.58	11,771.18	0.39	0.19	-0.34	
21,071.00	89.19	359.93	9,334.89	11,851.62	-585.47	11,866.06	0.29	-0.07	-0.28	
21,165.00	88.10	359.19	9,337.11	11,945.58	-586.19	11,959.95	1.40	-1.16	-0.79	
21,260.00	89.15	0.08	9,339.39	12,040.55	-586.80	12,054.84	1.45	1.11	0.94	
21,355.00	89.02	0.96	9,340.91	12,135.54	-585.93	12,149.67	0.94	-0.14	0.93	
21,449.00	88.96	0.54	9,342.57	12,229.51	-584.70	12,243.48	0.45	-0.06	-0.45	
21,461.57	88.99	0.48	9,342.79	12,242.08	-584.59	12,256.03	0.52	0.21	-0.47	
LTP (Way South State Com #702H)										
21,465.00	88.99	0.46	9,342.85	12,245.51	-584.56	12,259.45	0.52	0.21	-0.47	
330' Toe Hard Line Crossing										
21,544.00	89.16	0.09	9,344.13	12,324.50	-584.18	12,338.33	0.52	0.21	-0.47	
21,560.00	89.23	0.51	9,344.35	12,340.50	-584.10	12,354.31	2.66	0.44	2.63	
21,592.00	89.23	0.51	9,344.78	12,372.49	-583.81	12,386.25	0.00	0.00	0.00	
BHL - PBHL (Way South State Com #702H)										

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
SHL (Way South State C - hit/miss target - Shape - Point	0.00	0.00	0.00	0.00	0.00	364,000.90	566,194.60	32° 0' 2.060 N	104° 7' 11.271 W	
FTP (Way South State C - actual wellpath misses target center by 236.50usft at 9329.05usft MD (9169.37 TVD, 154.98 N, -376.42 E) - Point	0.00	0.00	9,151.80	64.20	-594.10	364,065.10	565,600.50	32° 0' 2.707 N	104° 7' 18.169 W	
LTP (Way South State C - actual wellpath misses target center by 31.28usft at 21461.58usft MD (9342.79 TVD, 12242.09 N, -584.59 E) - Point	0.00	0.00	9,313.60	12,242.70	-595.80	376,243.60	565,598.80	32° 2' 3.233 N	104° 7' 17.912 W	
PBHL (Way South State - actual wellpath misses target center by 13.00usft at 21592.00usft MD (9344.78 TVD, 12372.49 N, -583.81 E) - Rectangle (sides W100.00 H0.00 D12,030.00)	89.60	359.99	9,340.00	12,372.70	-595.90	376,373.60	565,598.70	32° 2' 4.520 N	104° 7' 17.910 W	

LEAM Drilling Systems

Survey Report

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #702H
Project:	Eddy County, NM (NAD 27 NME)	TVD Reference:	GE 3081.4' + 27' @ 3108.40usft (ICD 201)
Site:	Way South State Com	MD Reference:	GE 3081.4' + 27' @ 3108.40usft (ICD 201)
Well:	#702H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	LEAM Multi_User Db

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
9,217.00	9,121.13	65.02	-330.74	330' Heel Hard Line Crossing
21,465.00	9,342.85	12,245.51	-584.56	330' Toe Hard Line Crossing
21,592.00	9,344.78	12,372.49	-583.81	BHL

Checked By: _____ Approved By: _____ Date: _____