

Rec'd 10/28/2020 - NMOCD

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

State of New Mexico
Energy, Minerals & Natural Resources

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

Form C-104
Revised August 1, 2011

Submit one copy to appropriate District Office

☒ AMENDED REPORT

I. REQUEST FOR ALLOWABLE AND AUTHORIZATION TO TRANSPORT

¹ Operator name and Address COG Operating LLC 2208 W. Main Street Artesia, NM 88210		² OGRID Number 229137	
		³ Reason for Filing Code/ Effective Date NW	
⁴ API Number 30 – 015-46498	⁵ Pool Name Delaware River; Bone Spring		⁶ Pool Code 16800
⁷ Property Code 308744	⁸ Property Name Myox 31 State Com		⁹ Well Number 502H

II. ¹⁰ Surface Location

Ul or lot no. O	Section 31	Township 25S	Range 28E	Lot Idn	Feet from the 290	North/South Line South	Feet from the 1335	East/West line East	County Eddy
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¹¹ Bottom Hole Location

Ul or lot no. B	Section 30	Township 25S	Range 28E	Lot Idn	Feet from the 50	North/South Line North	Feet from the 1791	East/West line East	County Eddy
¹² Lse Code S	¹³ Producing Method Code F		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 OGRID	¹⁹ Transporter Name and Address	²⁰ O/G/W
	ACC	O
	(Alpha Crude Connector Pipeline)	
282301	Energy Transfer Company 2001 Bryan Street Ste 3700 Dallas, TX 75201	G
278421	Holly Refining and Marketing	O

IV. Well Completion Data

²¹ Spud Date 1/11/20	²² Ready Date 9/14/20	²³ TD 18,103'	²⁴ PBTD 18,025'	²⁵ Perforations 8,040-18,000'	²⁶ DHC, MC
²⁷ Hole Size		²⁸ Casing & Tubing Size	²⁹ Depth Set		³⁰ Sacks Cement
17 1/2"		13 3/8"	518'		550
12 1/4"		9 5/8"	2396'		740
8 3/4"		5 1/2"	18093'		3200
		2 7/8"	7317'		

V. Well Test Data

³¹ Date New Oil 10/7/20	³² Gas Delivery Date 10/7/20	³³ Test Date 10/7/20	³⁴ Test Length 24 Hrs	³⁵ Tbg. Pressure 325#	³⁶ Csg. Pressure 468#
³⁷ Choke Size 48/128	³⁸ Oil 266	³⁹ Water 3475	⁴⁰ Gas 463		⁴¹ Test Method Flowing

⁴² I hereby certify that the rules of the Oil Conservation Division have been complied with and that the information given above is true and complete to the best of my knowledge and belief. Signature: Amanda Avery Printed name: Amanda Avery Title: Regulatory Analyst E-mail Address: aavery@concho.com Date: 10/28/20	OIL CONSERVATION DIVISION	
	Approved by: 	
	Title: BUSINESS OP. SPEC.	
	Approval Date: 12/18/2020	
	Phone: 575-748-6962	

AB

NMOCD - Rec'd 10/05/2020

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 Road, 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, NM 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

¹ API Number 30-015-46498	² Pool Code 16800	³ Pool Name Delaware River; Bone Spring
⁴ Property Code 308744	⁵ Property Name MYOX 31 STATE COM	⁶ Well Number 502H
⁷ OGRID NO. 229137	⁸ Operator Name COG OPERATING, LLC	⁹ Elevation 3038'

¹⁰ Surface Location

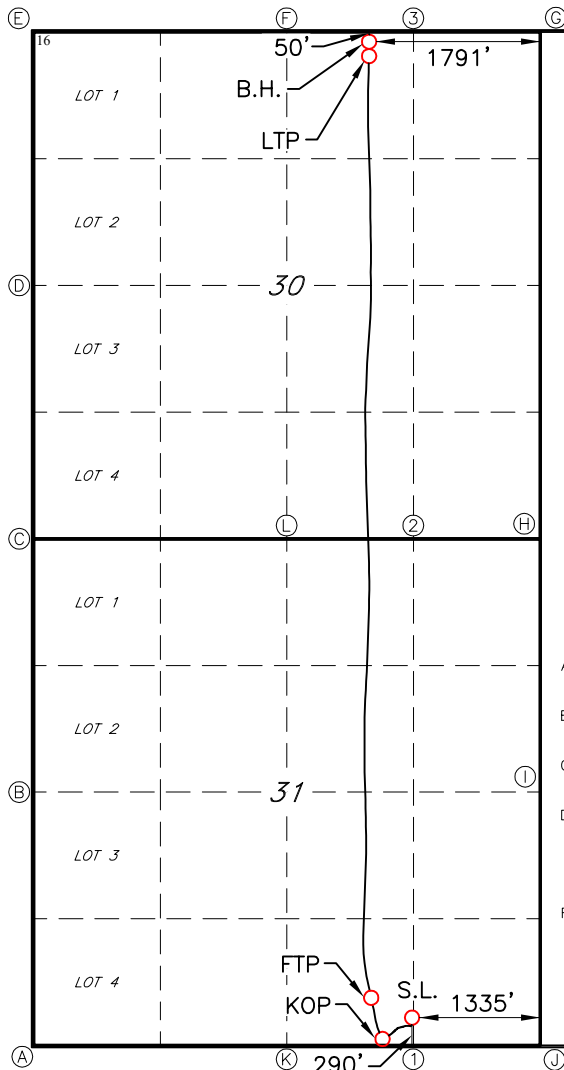
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet From the	East/West line	County
0	31	25S	28E		290	SOUTH	1335	EAST	EDDY

¹¹ 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
B	30	25S	28E		50	NORTH	1791	EAST	EDDY

¹² Dedicated Acres 320	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No.
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No allowable will be assigned to this completion until all interest have been consolidated or a non-standard unit has been approved by the division.



GEODETIC DATA
NAD 83 GRID - NM EAST
SURFACE LOCATION (SL)
N: 392805.2 - E: 606693.0
LAT: 32.0797255° N-LONG: 104.1223184° W
LAT: 32°04'47.0116" N-LONG: 104°07'20.3464" W

KICK OFF POINT (KOP)
66' FSL & 1635' FEL (Sec.31)
N: 392581.1 - E: 606390.9
LAT: 32.0791111° N-LONG: 104.1232951° W
LAT: 32°04'44.7999" N-LONG: 104°07'23.8624" W
MD=7224.00 - TVD=7208.42

FIRST TAKE POINT (FTP)
496' FSL & 1763' FEL (Sec.31)
N: 393011.4 - E: 606267.5
LAT: 32.0802946° N-LONG: 104.1236911° W
LAT: 32°04'49.0607" N-LONG: 104°07'25.2878" W
MD=8040.00 - TVD=7816.88

LAST TAKE POINT (LTP)
153' FNL & 1793' FEL (Sec.30)
N: 402944.7 - E: 606245.7
LAT: 32.1076007° N-LONG: 104.1236989° W
LAT: 32°06'27.3625" N-LONG: 104°07'25.3161" W
MD=18000.00 - TVD=7888.12

BOTTOM HOLE (BH)
N: 403047.6 - E: 606246.7
LAT: 32.1078837° N-LONG: 104.1236951° W
LAT: 32°06'28.3814" N-LONG: 104°07'25.3024" W

CRONER DATA
NAD 83 GRID - NM EAST

A: FOUND BRASS CAP "1940" N 392505.8 - E 602690.5
B: FOUND BRASS CAP "1940" N 395164.6 - E 602682.1
C: FOUND BRASS CAP "1940" N 397822.7 - E 602672.6
D: FOUND BRASS CAP "1940" N 400468.2 - E 602664.3
E: CALCULATED CORNER N 403132.3 - E 602645.7
F: FOUND BRASS CAP "1940" N 403125.4 - E 605277.9
G: FOUND BRASS CAP "1940" N 403046.2 - E 608036.0
H: FOUND BRASS CAP "1940" N 397715.1 - E 608074.9
I: FOUND BRASS CAP "1940" N 395116.5 - E 608050.9
J: FOUND BRASS CAP "1940" N 392514.2 - E 608024.8
K: FOUND BRASS CAP "1940" N 392516.4 - E 605361.5
L: FOUND BRASS CAP "1940" N 397768.3 - E 605379.3

CALCULATED POINTS

1: N 392515.3 - E 606693.2
2: N 397741.7 - E 606727.1
3: N 403085.8 - E 606656.9

¹⁷ OPERATOR CERTIFICATION

I hereby certify that the information contained 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 a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Amanda Avery 10/6/20

Signature Date

Amanda Avery

Printed Name

aavery@concho.com

E-mail Address

¹⁸ 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.

11-13-19

Date of Survey

Signature and Seal of Professional Surveyor

19680

Certificate Number

REV: 9/23/20 AS DRILL

Job No.:

LS19111069AD



COG Operating LLC

Eddy County, NM (NAD83 NME)

Myox 31 State Com

502H

OH

Survey: Phoenix MWD Surveys

Standard Survey Report

13 February, 2020





Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 502H
Project:	Eddy County, NM (NAD83 NME)	TVD Reference:	RKB @ 3063.00usft (Pioneer 84)
Site:	Myox 31 State Com	MD Reference:	RKB @ 3063.00usft (Pioneer 84)
Well:	502H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Pioneer 84)	Database:	USA Compass

Project	Eddy County, NM (NAD83 NME)		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site	Myox 31 State Com		
Site Position:		Northing:	392,805.20 usft
From:	Map	Easting:	606,723.00 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 4' 47.010997 N
		Longitude:	104° 7' 19.997679 W
		Grid Convergence:	0.11 °

Well	502H		
Well Position	+N/-S	0.00 usft	Northing: 392,805.20 usft
	+E/-W	0.00 usft	Easting: 606,693.00 usft
Position Uncertainty	0.00 usft	Wellhead Elevation:	usft
		Latitude:	32° 4' 47.011578 N
		Longitude:	104° 7' 20.346379 W
		Ground Level:	3,038.00 usft

Wellbore	OH		
Magnetics	Model Name	Sample Date	Declination (°)
	HDGM	12/31/2017	7.25
			Dip Angle (°) 59.83
			Field Strength (nT) 47,992.70000000

Design	Surveys (Pioneer 84)		
Audit Notes:			
Version:	1.0	Phase:	ACTUAL
		Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)
	0.00	0.00	0.00
			Direction (°) 357.51

Survey Program	Date	2/13/2020		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
7,161.00	18,103.00	Phoenix MWD Surveys (OH)	MWD+IFR1+FDIR	OWSG MWD + IFR1 + FDIR Correction

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
7,100.00	4.22	234.30	7,084.75	-219.91	-294.67	-206.88	0.00	0.00	0.00
Tie In									
7,161.00	4.37	230.30	7,145.58	-222.70	-298.28	-209.51	0.55	0.25	-6.56
First Phoenix MWD Survey									
7,188.00	4.16	230.65	7,172.50	-223.98	-299.83	-210.72	0.78	-0.78	1.30
7,283.00	4.48	300.38	7,267.29	-224.29	-305.70	-210.78	5.20	0.34	73.40
7,330.00	8.41	321.45	7,313.99	-220.67	-309.43	-207.00	9.62	8.36	44.83
7,378.00	12.96	329.89	7,361.15	-213.27	-314.32	-199.39	10.00	9.48	17.58
7,425.00	17.72	337.03	7,406.47	-202.11	-319.76	-188.01	10.88	10.13	15.19
7,466.32	20.84	335.40	7,445.47	-189.64	-325.27	-175.31	7.66	7.55	-3.94



Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 502H
Project:	Eddy County, NM (NAD83 NME)	TVD Reference:	RKB @ 3063.00usft (Pioneer 84)
Site:	Myox 31 State Com	MD Reference:	RKB @ 3063.00usft (Pioneer 84)
Well:	502H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Pioneer 84)	Database:	USA Compass

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
FTP: 7466.3' MD									
7,473.00	21.35	335.18	7,451.70	-187.46	-326.28	-173.08	7.73	7.63	-3.29
7,520.00	25.05	334.57	7,494.89	-170.70	-334.14	-156.00	7.89	7.87	-1.30
7,568.00	29.88	338.03	7,537.47	-150.42	-342.98	-135.35	10.59	10.06	7.21
7,615.00	34.92	341.06	7,577.14	-126.82	-351.74	-111.40	11.26	10.72	6.45
7,663.00	39.73	343.40	7,615.30	-99.11	-360.58	-83.32	10.45	10.02	4.88
7,710.00	44.16	344.57	7,650.25	-68.92	-369.24	-52.79	9.57	9.43	2.49
7,758.00	48.75	347.73	7,683.32	-35.15	-377.52	-18.69	10.68	9.56	6.58
7,805.00	53.20	350.44	7,712.91	0.70	-384.41	17.42	10.47	9.47	5.77
7,852.00	57.39	348.81	7,739.66	38.69	-391.38	55.68	9.36	8.91	-3.47
7,899.00	63.26	348.36	7,762.92	78.70	-399.46	96.01	12.52	12.49	-0.96
7,947.00	66.01	348.22	7,783.48	121.17	-408.26	138.82	5.74	5.73	-0.29
7,994.00	69.25	348.69	7,801.37	163.74	-416.96	181.73	6.96	6.89	1.00
8,042.00	71.29	348.54	7,817.57	208.04	-425.88	226.37	4.26	4.25	-0.31
8,089.00	72.75	348.09	7,832.08	251.81	-434.93	270.50	3.24	3.11	-0.96
8,137.00	74.14	348.00	7,845.75	296.82	-444.46	315.88	2.90	2.90	-0.19
8,184.00	75.21	348.01	7,858.18	341.16	-453.88	360.59	2.28	2.28	0.02
8,231.00	75.17	347.38	7,870.19	385.56	-463.57	405.36	1.30	-0.09	-1.34
8,278.00	75.52	347.44	7,882.08	429.93	-473.48	450.13	0.75	0.74	0.13
8,326.00	80.07	350.04	7,892.23	475.93	-482.63	496.48	10.86	9.48	5.42
8,421.00	87.22	353.73	7,902.74	569.33	-495.92	590.37	8.46	7.53	3.88
8,516.00	88.45	356.69	7,906.33	663.92	-503.85	685.21	3.37	1.29	3.12
8,611.00	88.71	358.69	7,908.68	758.80	-507.68	780.18	2.12	0.27	2.11
8,706.00	87.81	1.56	7,911.57	853.75	-507.47	875.02	3.16	-0.95	3.02
8,801.00	88.56	1.55	7,914.58	948.67	-504.89	969.74	0.79	0.79	-0.01
8,896.00	89.42	2.09	7,916.25	1,043.60	-501.88	1,064.45	1.07	0.91	0.57
8,990.00	90.68	2.31	7,916.17	1,137.53	-498.27	1,158.13	1.36	1.34	0.23
9,085.00	90.02	2.53	7,915.59	1,232.44	-494.26	1,252.78	0.73	-0.69	0.23
9,180.00	90.18	2.20	7,915.42	1,327.36	-490.34	1,347.44	0.39	0.17	-0.35
9,275.00	91.36	1.86	7,914.15	1,422.29	-486.97	1,442.13	1.29	1.24	-0.36
9,370.00	90.18	2.16	7,912.87	1,517.22	-483.64	1,536.83	1.28	-1.24	0.32
9,464.00	87.10	0.95	7,915.10	1,611.15	-481.09	1,630.56	3.52	-3.28	-1.29
9,559.00	87.56	0.59	7,919.53	1,706.04	-479.81	1,725.30	0.61	0.48	-0.38
9,654.00	88.44	0.35	7,922.84	1,800.98	-479.04	1,820.11	0.96	0.93	-0.25
9,749.00	87.08	359.39	7,926.56	1,895.90	-479.25	1,914.96	1.75	-1.43	-1.01
9,844.00	87.02	359.76	7,931.44	1,990.77	-479.95	2,009.77	0.39	-0.06	0.39
9,939.00	87.51	358.84	7,935.98	2,085.65	-481.11	2,104.61	1.10	0.52	-0.97
10,033.00	88.78	358.34	7,939.02	2,179.57	-483.43	2,198.54	1.45	1.35	-0.53
10,128.00	89.96	358.75	7,940.07	2,274.54	-485.84	2,293.52	1.31	1.24	0.43
10,223.00	90.98	358.24	7,939.29	2,369.50	-488.33	2,388.50	1.20	1.07	-0.54
10,318.00	92.54	357.58	7,936.37	2,464.39	-491.80	2,483.45	1.78	1.64	-0.69
10,412.00	91.64	359.25	7,932.94	2,558.28	-494.39	2,577.37	2.02	-0.96	1.78
10,507.00	88.56	0.01	7,932.77	2,653.27	-495.01	2,672.30	3.34	-3.24	0.80



Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 502H
Project:	Eddy County, NM (NAD83 NME)	TVD Reference:	RKB @ 3063.00usft (Pioneer 84)
Site:	Myox 31 State Com	MD Reference:	RKB @ 3063.00usft (Pioneer 84)
Well:	502H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Pioneer 84)	Database:	USA Compass

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
10,602.00	89.01	0.81	7,934.79	2,748.25	-494.33	2,767.15	0.97	0.47	0.84
10,697.00	90.02	0.26	7,935.59	2,843.24	-493.44	2,862.01	1.21	1.06	-0.58
10,792.00	91.11	359.43	7,934.66	2,938.23	-493.70	2,956.93	1.44	1.15	-0.87
10,887.00	92.70	359.19	7,931.50	3,033.17	-494.84	3,051.83	1.69	1.67	-0.25
10,981.00	89.50	1.23	7,929.69	3,127.13	-494.49	3,145.69	4.04	-3.40	2.17
11,076.00	91.22	1.67	7,929.10	3,222.10	-492.09	3,240.46	1.87	1.81	0.46
11,171.00	89.18	3.23	7,928.76	3,317.00	-488.03	3,335.09	2.70	-2.15	1.64
11,265.00	89.18	3.13	7,930.11	3,410.85	-482.82	3,428.62	0.11	0.00	-0.11
11,360.00	90.54	3.06	7,930.34	3,505.70	-477.69	3,523.17	1.43	1.43	-0.07
11,455.00	90.16	2.65	7,929.76	3,600.58	-472.96	3,617.75	0.59	-0.40	-0.43
11,550.00	89.13	2.47	7,930.35	3,695.49	-468.71	3,712.38	1.10	-1.08	-0.19
11,644.00	90.67	2.49	7,930.51	3,789.40	-464.65	3,806.02	1.64	1.64	0.02
11,739.00	89.93	2.62	7,930.02	3,884.30	-460.41	3,900.65	0.79	-0.78	0.14
11,834.00	89.02	2.03	7,930.89	3,979.22	-456.56	3,995.31	1.14	-0.96	-0.62
11,928.00	90.88	2.01	7,930.97	4,073.15	-453.24	4,089.02	1.98	1.98	-0.02
12,023.00	91.04	1.52	7,929.38	4,168.09	-450.32	4,183.74	0.54	0.17	-0.52
12,118.00	90.54	0.96	7,928.07	4,263.06	-448.26	4,278.53	0.79	-0.53	-0.59
12,213.00	92.05	1.03	7,925.92	4,358.02	-446.61	4,373.33	1.59	1.59	0.07
12,308.00	89.65	0.18	7,924.51	4,453.00	-445.61	4,468.17	2.68	-2.53	-0.89
12,402.00	87.36	359.39	7,926.96	4,546.96	-445.96	4,562.06	2.58	-2.44	-0.84
12,497.00	88.27	359.16	7,930.59	4,641.88	-447.16	4,656.94	0.99	0.96	-0.24
12,592.00	89.04	358.52	7,932.82	4,736.83	-449.09	4,751.89	1.05	0.81	-0.67
12,686.00	86.94	358.43	7,936.11	4,830.74	-451.59	4,845.81	2.24	-2.23	-0.10
12,781.00	86.82	358.95	7,941.28	4,925.57	-453.76	4,940.65	0.56	-0.13	0.55
12,876.00	88.30	357.55	7,945.33	5,020.44	-456.65	5,035.55	2.14	1.56	-1.47
12,971.00	89.81	356.74	7,946.89	5,115.30	-461.39	5,130.53	1.80	1.59	-0.85
13,065.00	89.02	358.26	7,947.85	5,209.20	-465.49	5,224.52	1.82	-0.84	1.62
13,160.00	89.54	358.49	7,949.05	5,304.16	-468.18	5,319.50	0.60	0.55	0.24
13,255.00	90.21	357.35	7,949.26	5,399.09	-471.63	5,414.50	1.39	0.71	-1.20
13,349.00	89.04	358.45	7,949.87	5,493.02	-475.07	5,508.49	1.71	-1.24	1.17
13,444.00	89.42	359.24	7,951.15	5,588.00	-476.99	5,603.46	0.92	0.40	0.83
13,538.00	90.47	358.35	7,951.24	5,681.97	-478.96	5,697.43	1.46	1.12	-0.95
13,633.00	89.36	358.67	7,951.38	5,776.94	-481.43	5,792.41	1.22	-1.17	0.34
13,728.00	88.53	359.87	7,953.13	5,871.91	-482.64	5,887.35	1.54	-0.87	1.26
13,822.00	90.11	359.54	7,954.24	5,965.90	-483.13	5,981.27	1.72	1.68	-0.35
13,917.00	91.53	359.06	7,952.88	6,060.88	-484.29	6,076.21	1.58	1.49	-0.51
14,012.00	93.21	359.42	7,948.96	6,155.79	-485.55	6,171.09	1.81	1.77	0.38
14,107.00	94.79	359.31	7,942.33	6,250.55	-486.60	6,265.80	1.67	1.66	-0.12
14,202.00	93.64	0.81	7,935.35	6,345.29	-486.50	6,360.45	1.99	-1.21	1.58
14,297.00	92.36	2.94	7,930.37	6,440.10	-483.39	6,455.03	2.61	-1.35	2.24
14,391.00	93.15	2.90	7,925.86	6,533.87	-478.61	6,548.50	0.84	0.84	-0.04
14,486.00	94.33	2.37	7,919.66	6,628.56	-474.25	6,642.92	1.36	1.24	-0.56
14,581.00	92.61	2.02	7,913.91	6,723.31	-470.62	6,737.42	1.85	-1.81	-0.37
14,676.00	93.95	2.22	7,908.47	6,818.09	-467.11	6,831.96	1.43	1.41	0.21



Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 502H
Project:	Eddy County, NM (NAD83 NME)	TVD Reference:	RKB @ 3063.00usft (Pioneer 84)
Site:	Myox 31 State Com	MD Reference:	RKB @ 3063.00usft (Pioneer 84)
Well:	502H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Pioneer 84)	Database:	USA Compass

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
14,771.00	92.45	2.94	7,903.17	6,912.84	-462.84	6,926.44	1.75	-1.58	0.76
14,865.00	91.07	5.50	7,900.28	7,006.54	-455.93	7,019.74	3.09	-1.47	2.72
14,960.00	91.47	4.75	7,898.18	7,101.13	-447.44	7,113.87	0.89	0.42	-0.79
15,054.00	90.73	3.89	7,896.37	7,194.85	-440.36	7,207.19	1.21	-0.79	-0.91
15,149.00	91.55	3.17	7,894.48	7,289.64	-434.52	7,301.65	1.15	0.86	-0.76
15,244.00	90.23	2.16	7,893.01	7,384.53	-430.10	7,396.25	1.75	-1.39	-1.06
15,339.00	88.14	359.78	7,894.36	7,479.49	-428.49	7,491.05	3.33	-2.20	-2.51
15,434.00	89.13	359.72	7,896.62	7,574.46	-428.91	7,585.95	1.04	1.04	-0.06
15,529.00	90.43	359.50	7,896.99	7,669.46	-429.55	7,680.89	1.39	1.37	-0.23
15,623.00	92.19	0.02	7,894.84	7,763.43	-429.95	7,774.78	1.95	1.87	0.55
15,718.00	91.18	0.41	7,892.04	7,858.39	-429.59	7,869.64	1.14	-1.06	0.41
15,813.00	91.82	0.82	7,889.56	7,953.35	-428.57	7,964.46	0.80	0.67	0.43
15,908.00	90.47	359.25	7,887.66	8,048.32	-428.51	8,059.35	2.18	-1.42	-1.65
16,003.00	90.86	358.80	7,886.56	8,143.30	-430.13	8,154.31	0.63	0.41	-0.47
16,097.00	91.77	358.94	7,884.40	8,237.26	-431.98	8,248.25	0.98	0.97	0.15
16,192.00	90.49	359.59	7,882.53	8,332.23	-433.20	8,343.19	1.51	-1.35	0.68
16,287.00	89.68	359.79	7,882.39	8,427.23	-433.71	8,438.12	0.88	-0.85	0.21
16,381.00	90.74	359.71	7,882.04	8,521.22	-434.12	8,532.04	1.13	1.13	-0.09
16,476.00	90.10	358.91	7,881.34	8,616.21	-435.27	8,626.99	1.08	-0.67	-0.84
16,571.00	88.23	357.63	7,882.73	8,711.15	-438.14	8,721.97	2.39	-1.97	-1.35
16,666.00	90.40	358.13	7,883.86	8,806.08	-441.65	8,816.95	2.34	2.28	0.53
16,760.00	91.42	357.88	7,882.37	8,900.01	-444.92	8,910.94	1.12	1.09	-0.27
16,855.00	90.22	357.97	7,881.01	8,994.93	-448.36	9,005.92	1.27	-1.26	0.09
16,950.00	89.06	358.60	7,881.61	9,089.89	-451.20	9,100.91	1.39	-1.22	0.66
17,044.00	89.94	358.36	7,882.43	9,183.85	-453.70	9,194.89	0.97	0.94	-0.26
17,139.00	91.36	358.18	7,881.35	9,278.80	-456.56	9,289.87	1.51	1.49	-0.19
17,234.00	91.09	359.30	7,879.32	9,373.75	-458.65	9,384.83	1.21	-0.28	1.18
17,328.00	91.33	0.03	7,877.34	9,467.73	-459.20	9,478.74	0.82	0.26	0.78
17,423.00	91.49	0.56	7,875.00	9,562.70	-458.71	9,573.60	0.58	0.17	0.56
17,518.00	88.76	1.21	7,874.79	9,657.68	-457.25	9,668.42	2.95	-2.87	0.68
17,613.00	90.57	2.03	7,875.35	9,752.63	-454.56	9,763.17	2.09	1.91	0.86
17,708.00	89.14	1.22	7,875.59	9,847.59	-451.87	9,857.92	1.73	-1.51	-0.85
17,802.00	86.41	0.97	7,879.24	9,941.49	-450.07	9,951.66	2.92	-2.90	-0.27
17,897.00	87.38	0.94	7,884.38	10,036.34	-448.49	10,046.35	1.02	1.02	-0.03
17,992.00	88.36	0.69	7,887.91	10,131.26	-447.14	10,141.12	1.06	1.03	-0.26
18,039.00	88.55	0.51	7,889.18	10,178.24	-446.65	10,188.04	0.56	0.40	-0.38
Final Phoenix MWD Survey									
18,052.91	88.55	0.51	7,889.53	10,192.15	-446.52	10,201.92	0.00	0.00	0.00
LTP: 18053' MD									
18,103.00	88.55	0.51	7,890.80	10,242.22	-446.08	10,251.93	0.00	0.00	0.00
Projection to TD									



Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 502H
Project:	Eddy County, NM (NAD83 NME)	TVD Reference:	RKB @ 3063.00usft (Pioneer 84)
Site:	Myox 31 State Com	MD Reference:	RKB @ 3063.00usft (Pioneer 84)
Well:	502H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Pioneer 84)	Database:	USA Compass

Survey Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
7,100.00	7,084.75	-219.91	-294.67	Tie In
7,161.00	7,145.58	-222.70	-298.28	First Phoenix MWD Survey
7,466.32	7,445.47	-189.64	-325.27	FTP: 7466.3' MD
18,039.00	7,889.18	10,178.24	-446.65	Final Phoenix MWD Survey
18,052.91	7,889.53	10,192.15	-446.52	LTP: 18053' MD
18,103.00	7,890.80	10,242.22	-446.08	Projection to TD



COG Operating LLC

Eddy County, NM (NAD27 NME)

Myox 31 State Com

502H

OH/ 66060

Design: Surveys (Pioneer 84)

Standard Survey Report

13 February, 2020





Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 502H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	RKB @ 3063.00usft (Pioneer 84)
Site:	Myox 31 State Com	MD Reference:	RKB @ 3063.00usft (Pioneer 84)
Well:	502H	North Reference:	Grid
Wellbore:	OH/ 66060	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Pioneer 84)	Database:	USA Compass

Project	Eddy County, NM (NAD27 NME)		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site	Myox 31 State Com		
Site Position:		Northing:	392,723.90 usft
From:	Map	Easting:	562,925.20 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 4' 46.382817 N
		Longitude:	104° 7' 48.611719 W
		Grid Convergence:	0.11 °

Well	502H		
Well Position	+N/-S	0.00 usft	Northing: 392,747.80 usft
	+E/-W	0.00 usft	Easting: 565,508.80 usft
Position Uncertainty	1.00 usft	Wellhead Elevation:	usft
		Latitude:	32° 4' 46.570205 N
		Longitude:	104° 7' 18.581807 W
		Ground Level:	3,038.00 usft

Wellbore	OH/ 66060		
Magnetics	Model Name	Sample Date	Declination (°)
	User Defined	2/4/2020	6.94
			Dip Angle (°) 59.72
			Field Strength (nT) 47,784.20000000

Design	Surveys (Pioneer 84)		
Audit Notes:			
Version:	1.0	Phase:	ACTUAL
		Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)
	0.00	0.00	0.00
			Direction (°) 357.37

Survey Program	Date 2/13/2020		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name
100.00	7,100.00	Scientific Gyro Surveys (OH/ 66060)	Scientific Keeper
7,161.00	18,103.00	Phoenix MWD Surveys - SQC (OH/ 66060)	MWD+IFR1+FDIR
			Description
			Scientific Drilling Intl. Standard Wireline Keeper
			OWSG MWD + IFR1 + FDIR Correction

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.32	91.48	100.00	-0.01	0.28	-0.02	0.32	0.32	0.00
125.00	0.51	203.28	125.00	-0.11	0.30	-0.13	2.78	0.76	447.20
150.00	0.58	199.29	150.00	-0.33	0.22	-0.34	0.32	0.28	-15.96
175.00	0.57	203.61	175.00	-0.57	0.13	-0.57	0.18	-0.04	17.28
200.00	0.44	213.60	200.00	-0.76	0.02	-0.76	0.63	-0.52	39.96
225.00	0.62	215.85	224.99	-0.95	-0.11	-0.94	0.72	0.72	9.00
250.00	0.65	218.43	249.99	-1.17	-0.28	-1.16	0.17	0.12	10.32
275.00	0.82	219.39	274.99	-1.42	-0.48	-1.40	0.68	0.68	3.84
300.00	1.19	217.91	299.99	-1.76	-0.75	-1.73	1.48	1.48	-5.92



Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 502H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	RKB @ 3063.00usft (Pioneer 84)
Site:	Myox 31 State Com	MD Reference:	RKB @ 3063.00usft (Pioneer 84)
Well:	502H	North Reference:	Grid
Wellbore:	OH/ 66060	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Pioneer 84)	Database:	USA Compass

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
325.00	1.76	210.81	324.98	-2.30	-1.11	-2.24	2.39	2.28	-28.40
350.00	1.87	211.10	349.97	-2.98	-1.51	-2.90	0.44	0.44	1.16
375.00	1.60	212.91	374.95	-3.62	-1.91	-3.53	1.10	-1.08	7.24
400.00	1.40	213.25	399.95	-4.17	-2.27	-4.06	0.80	-0.80	1.36
425.00	1.20	213.64	424.94	-4.64	-2.58	-4.52	0.80	-0.80	1.56
450.00	1.17	214.14	449.93	-5.07	-2.87	-4.93	0.13	-0.12	2.00
475.00	1.07	204.71	474.93	-5.49	-3.11	-5.34	0.84	-0.40	-37.72
500.00	1.05	200.91	499.93	-5.92	-3.29	-5.76	0.29	-0.08	-15.20
525.00	1.05	195.97	524.92	-6.35	-3.44	-6.19	0.36	0.00	-19.76
550.00	1.12	190.56	549.92	-6.81	-3.54	-6.64	0.50	0.28	-21.64
575.00	1.13	187.40	574.91	-7.30	-3.62	-7.12	0.25	0.04	-12.64
600.00	1.15	184.78	599.91	-7.79	-3.67	-7.62	0.22	0.08	-10.48
625.00	1.17	183.65	624.90	-8.30	-3.71	-8.12	0.12	0.08	-4.52
650.00	1.07	179.25	649.90	-8.79	-3.72	-8.61	0.53	-0.40	-17.60
675.00	1.23	185.07	674.89	-9.29	-3.74	-9.10	0.79	0.64	23.28
700.00	1.26	184.32	699.89	-9.83	-3.79	-9.64	0.14	0.12	-3.00
725.00	1.30	183.25	724.88	-10.38	-3.83	-10.20	0.19	0.16	-4.28
750.00	1.43	185.18	749.87	-10.98	-3.87	-10.79	0.55	0.52	7.72
775.00	1.59	186.17	774.86	-11.63	-3.94	-11.44	0.65	0.64	3.96
800.00	1.75	184.53	799.85	-12.36	-4.00	-12.16	0.67	0.64	-6.56
825.00	1.92	185.71	824.84	-13.16	-4.07	-12.96	0.70	0.68	4.72
850.00	2.14	188.38	849.82	-14.04	-4.18	-13.83	0.96	0.88	10.68
875.00	2.14	187.05	874.81	-14.96	-4.31	-14.75	0.20	0.00	-5.32
900.00	2.25	186.39	899.79	-15.91	-4.42	-15.69	0.45	0.44	-2.64
925.00	2.42	185.31	924.77	-16.92	-4.52	-16.70	0.70	0.68	-4.32
950.00	2.56	186.75	949.74	-18.00	-4.64	-17.77	0.61	0.56	5.76
975.00	2.66	186.46	974.72	-19.14	-4.77	-18.90	0.40	0.40	-1.16
1,000.00	2.86	185.39	999.69	-20.33	-4.89	-20.09	0.83	0.80	-4.28
1,025.00	3.04	185.53	1,024.66	-21.61	-5.02	-21.36	0.72	0.72	0.56
1,050.00	3.25	186.47	1,049.62	-22.98	-5.16	-22.72	0.86	0.84	3.76
1,075.00	3.44	186.82	1,074.58	-24.43	-5.33	-24.16	0.76	0.76	1.40
1,100.00	3.51	187.30	1,099.53	-25.93	-5.52	-25.65	0.30	0.28	1.92
1,125.00	3.44	186.95	1,124.48	-27.43	-5.70	-27.14	0.29	-0.28	-1.40
1,150.00	2.99	188.79	1,149.45	-28.82	-5.89	-28.52	1.85	-1.80	7.36
1,175.00	1.85	189.09	1,174.42	-29.87	-6.06	-29.56	4.56	-4.56	1.20
1,200.00	1.19	193.07	1,199.41	-30.52	-6.18	-30.20	2.67	-2.64	15.92
1,225.00	0.94	201.35	1,224.41	-30.96	-6.31	-30.64	1.17	-1.00	33.12
1,250.00	0.88	209.38	1,249.41	-31.32	-6.48	-30.99	0.56	-0.24	32.12
1,275.00	0.92	222.94	1,274.40	-31.63	-6.71	-31.29	0.86	0.16	54.24
1,300.00	0.98	229.81	1,299.40	-31.92	-7.01	-31.56	0.51	0.24	27.48
1,325.00	1.24	233.83	1,324.39	-32.22	-7.39	-31.84	1.09	1.04	16.08
1,350.00	1.26	236.64	1,349.39	-32.53	-7.84	-32.13	0.26	0.08	11.24
1,375.00	1.35	235.77	1,374.38	-32.84	-8.32	-32.43	0.37	0.36	-3.48



Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 502H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	RKB @ 3063.00usft (Pioneer 84)
Site:	Myox 31 State Com	MD Reference:	RKB @ 3063.00usft (Pioneer 84)
Well:	502H	North Reference:	Grid
Wellbore:	OH/ 66060	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Pioneer 84)	Database:	USA Compass

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
1,400.00	1.44	238.49	1,399.37	-33.17	-8.83	-32.73	0.45	0.36	10.88
1,425.00	1.46	238.53	1,424.37	-33.50	-9.37	-33.04	0.08	0.08	0.16
1,450.00	1.47	241.28	1,449.36	-33.82	-9.92	-33.33	0.28	0.04	11.00
1,475.00	1.58	244.43	1,474.35	-34.13	-10.51	-33.61	0.55	0.44	12.60
1,500.00	1.61	246.39	1,499.34	-34.42	-11.14	-33.87	0.25	0.12	7.84
1,525.00	1.76	245.25	1,524.33	-34.72	-11.81	-34.14	0.61	0.60	-4.56
1,550.00	1.68	245.34	1,549.32	-35.03	-12.50	-34.42	0.32	-0.32	0.36
1,575.00	1.76	245.75	1,574.31	-35.34	-13.18	-34.70	0.32	0.32	1.64
1,600.00	1.78	242.05	1,599.29	-35.68	-13.87	-35.01	0.46	0.08	-14.80
1,625.00	1.70	238.31	1,624.28	-36.06	-14.53	-35.35	0.56	-0.32	-14.96
1,650.00	1.61	231.54	1,649.27	-36.47	-15.12	-35.74	0.86	-0.36	-27.08
1,675.00	1.48	218.87	1,674.26	-36.94	-15.60	-36.19	1.46	-0.52	-50.68
1,700.00	1.51	212.75	1,699.26	-37.47	-15.98	-36.70	0.65	0.12	-24.48
1,725.00	1.52	197.47	1,724.25	-38.06	-16.26	-37.28	1.61	0.04	-61.12
1,750.00	1.62	189.46	1,749.24	-38.73	-16.42	-37.93	0.96	0.40	-32.04
1,775.00	1.54	184.88	1,774.23	-39.41	-16.50	-38.61	0.60	-0.32	-18.32
1,800.00	1.60	182.39	1,799.22	-40.09	-16.54	-39.29	0.36	0.24	-9.96
1,825.00	1.60	180.58	1,824.21	-40.79	-16.56	-39.99	0.20	0.00	-7.24
1,850.00	1.60	173.16	1,849.20	-41.49	-16.52	-40.69	0.83	0.00	-29.68
1,875.00	1.58	171.59	1,874.19	-42.18	-16.43	-41.38	0.19	-0.08	-6.28
1,900.00	1.75	164.94	1,899.18	-42.88	-16.28	-42.09	1.03	0.68	-26.60
1,925.00	1.96	154.71	1,924.17	-43.64	-16.00	-42.86	1.57	0.84	-40.92
1,950.00	2.22	149.03	1,949.15	-44.44	-15.57	-43.68	1.33	1.04	-22.72
1,975.00	2.47	145.57	1,974.13	-45.30	-15.02	-44.56	1.15	1.00	-13.84
2,000.00	2.86	141.84	1,999.10	-46.24	-14.33	-45.53	1.71	1.56	-14.92
2,025.00	3.18	137.18	2,024.07	-47.24	-13.47	-46.57	1.61	1.28	-18.64
2,050.00	3.56	134.80	2,049.02	-48.29	-12.45	-47.67	1.62	1.52	-9.52
2,075.00	4.05	132.76	2,073.97	-49.44	-11.25	-48.87	2.03	1.96	-8.16
2,100.00	4.40	130.02	2,098.90	-50.65	-9.87	-50.15	1.62	1.40	-10.96
2,125.00	4.30	129.65	2,123.83	-51.87	-8.41	-51.43	0.42	-0.40	-1.48
2,150.00	4.11	134.85	2,148.76	-53.10	-7.05	-52.72	1.70	-0.76	20.80
2,175.00	3.41	141.71	2,173.71	-54.31	-5.96	-53.98	3.32	-2.80	27.44
2,200.00	2.77	153.51	2,198.67	-55.44	-5.23	-55.14	3.60	-2.56	47.20
2,225.00	2.38	160.26	2,223.65	-56.47	-4.78	-56.19	1.97	-1.56	27.00
2,250.00	2.18	163.01	2,248.63	-57.41	-4.47	-57.14	0.91	-0.80	11.00
2,275.00	2.22	167.53	2,273.61	-58.34	-4.22	-58.08	0.71	0.16	18.08
2,300.00	2.25	168.21	2,298.59	-59.29	-4.02	-59.04	0.16	0.12	2.72
2,325.00	2.25	169.53	2,323.57	-60.25	-3.83	-60.01	0.21	0.00	5.28
2,350.00	2.21	169.46	2,348.55	-61.21	-3.65	-60.98	0.16	-0.16	-0.28
2,375.00	2.36	170.33	2,373.53	-62.19	-3.48	-61.97	0.62	0.60	3.48
2,400.00	2.47	169.42	2,398.51	-63.23	-3.29	-63.01	0.47	0.44	-3.64
2,425.00	2.55	168.47	2,423.48	-64.30	-3.08	-64.09	0.36	0.32	-3.80
2,450.00	2.51	169.74	2,448.46	-65.39	-2.87	-65.19	0.28	-0.16	5.08



Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 502H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	RKB @ 3063.00usft (Pioneer 84)
Site:	Myox 31 State Com	MD Reference:	RKB @ 3063.00usft (Pioneer 84)
Well:	502H	North Reference:	Grid
Wellbore:	OH/ 66060	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Pioneer 84)	Database:	USA Compass

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
2,475.00	2.60	167.43	2,473.44	-66.48	-2.65	-66.29	0.55	0.36	-9.24
2,500.00	2.67	168.55	2,498.41	-67.60	-2.41	-67.42	0.35	0.28	4.48
2,525.00	2.90	177.57	2,523.38	-68.81	-2.27	-68.63	1.98	0.92	36.08
2,550.00	3.10	188.98	2,548.35	-70.10	-2.35	-69.92	2.51	0.80	45.64
2,575.00	3.23	196.06	2,573.31	-71.45	-2.65	-71.25	1.65	0.52	28.32
2,600.00	3.30	195.02	2,598.27	-72.82	-3.03	-72.61	0.37	0.28	-4.16
2,625.00	3.25	195.51	2,623.23	-74.20	-3.41	-73.96	0.23	-0.20	1.96
2,650.00	3.26	195.90	2,648.19	-75.57	-3.79	-75.31	0.10	0.04	1.56
2,675.00	3.30	195.59	2,673.14	-76.94	-4.18	-76.67	0.18	0.16	-1.24
2,700.00	3.32	196.93	2,698.10	-78.33	-4.58	-78.03	0.32	0.08	5.36
2,725.00	3.21	195.54	2,723.06	-79.69	-4.98	-79.38	0.54	-0.44	-5.56
2,750.00	3.32	195.75	2,748.02	-81.07	-5.37	-80.73	0.44	0.44	0.84
2,775.00	3.34	195.09	2,772.98	-82.47	-5.75	-82.11	0.17	0.08	-2.64
2,800.00	3.35	205.46	2,797.94	-83.83	-6.26	-83.45	2.42	0.04	41.48
2,825.00	3.85	226.45	2,822.89	-85.07	-7.18	-84.65	5.60	2.00	83.96
2,850.00	3.91	232.75	2,847.83	-86.16	-8.47	-85.68	1.72	0.24	25.20
2,875.00	3.97	234.61	2,872.77	-87.18	-9.85	-86.63	0.56	0.24	7.44
2,900.00	4.13	249.63	2,897.71	-87.99	-11.40	-87.38	4.28	0.64	60.08
2,925.00	4.73	265.70	2,922.64	-88.38	-13.27	-87.68	5.49	2.40	64.28
2,950.00	5.30	273.69	2,947.54	-88.39	-15.45	-87.58	3.60	2.28	31.96
2,975.00	5.42	273.77	2,972.43	-88.23	-17.78	-87.32	0.48	0.48	0.32
3,000.00	5.42	273.69	2,997.32	-88.08	-20.14	-87.06	0.03	0.00	-0.32
3,025.00	5.39	273.06	3,022.21	-87.94	-22.49	-86.82	0.27	-0.12	-2.52
3,050.00	5.38	272.39	3,047.10	-87.83	-24.83	-86.60	0.25	-0.04	-2.68
3,075.00	5.30	272.52	3,071.99	-87.73	-27.16	-86.39	0.32	-0.32	0.52
3,100.00	5.25	272.67	3,096.88	-87.63	-29.45	-86.18	0.21	-0.20	0.60
3,125.00	5.03	271.88	3,121.78	-87.54	-31.69	-85.99	0.92	-0.88	-3.16
3,150.00	4.78	272.52	3,146.69	-87.46	-33.83	-85.81	1.02	-1.00	2.56
3,175.00	4.50	272.93	3,171.61	-87.36	-35.85	-85.62	1.13	-1.12	1.64
3,200.00	4.36	272.47	3,196.54	-87.27	-37.78	-85.44	0.58	-0.56	-1.84
3,225.00	4.34	272.02	3,221.46	-87.19	-39.67	-85.28	0.16	-0.08	-1.80
3,250.00	4.30	271.03	3,246.39	-87.14	-41.55	-85.15	0.34	-0.16	-3.96
3,275.00	4.24	270.47	3,271.32	-87.12	-43.41	-85.04	0.29	-0.24	-2.24
3,300.00	4.30	272.37	3,296.25	-87.07	-45.27	-84.90	0.61	0.24	7.60
3,325.00	4.26	270.46	3,321.18	-87.03	-47.14	-84.77	0.59	-0.16	-7.64
3,350.00	4.13	271.32	3,346.12	-87.00	-48.97	-84.66	0.58	-0.52	3.44
3,375.00	4.06	270.40	3,371.05	-86.97	-50.75	-84.55	0.38	-0.28	-3.68
3,400.00	4.09	270.77	3,395.99	-86.95	-52.53	-84.45	0.16	0.12	1.48
3,425.00	4.19	269.21	3,420.92	-86.95	-54.33	-84.37	0.60	0.40	-6.24
3,450.00	4.11	269.85	3,445.86	-86.97	-56.14	-84.30	0.37	-0.32	2.56
3,475.00	4.06	269.58	3,470.80	-86.98	-57.92	-84.23	0.21	-0.20	-1.08
3,500.00	3.99	268.39	3,495.73	-87.01	-59.68	-84.18	0.44	-0.28	-4.76
3,525.00	3.97	269.44	3,520.67	-87.04	-61.41	-84.13	0.30	-0.08	4.20
3,550.00	4.06	269.10	3,545.61	-87.06	-63.16	-84.07	0.37	0.36	-1.36



Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 502H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	RKB @ 3063.00usft (Pioneer 84)
Site:	Myox 31 State Com	MD Reference:	RKB @ 3063.00usft (Pioneer 84)
Well:	502H	North Reference:	Grid
Wellbore:	OH/ 66060	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Pioneer 84)	Database:	USA Compass

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
3,575.00	4.08	269.08	3,570.55	-87.09	-64.94	-84.02	0.08	0.08	-0.08
3,600.00	4.02	269.58	3,595.49	-87.11	-66.70	-83.96	0.28	-0.24	2.00
3,625.00	4.12	265.66	3,620.42	-87.19	-68.48	-83.95	1.18	0.40	-15.68
3,650.00	4.46	260.30	3,645.35	-87.42	-70.33	-84.10	2.10	1.36	-21.44
3,675.00	5.13	254.00	3,670.27	-87.89	-72.36	-84.48	3.40	2.68	-25.20
3,700.00	5.13	252.65	3,695.17	-88.53	-74.50	-85.02	0.48	0.00	-5.40
3,725.00	5.16	252.77	3,720.07	-89.20	-76.64	-85.59	0.13	0.12	0.48
3,750.00	5.10	252.90	3,744.97	-89.86	-78.78	-86.15	0.24	-0.24	0.52
3,775.00	5.16	253.05	3,769.87	-90.51	-80.92	-86.70	0.25	0.24	0.60
3,800.00	5.11	253.29	3,794.77	-91.16	-83.06	-87.25	0.22	-0.20	0.96
3,825.00	5.02	254.31	3,819.67	-91.78	-85.18	-87.77	0.51	-0.36	4.08
3,850.00	5.07	253.71	3,844.57	-92.38	-87.29	-88.28	0.29	0.20	-2.40
3,875.00	5.06	253.45	3,869.47	-93.01	-89.41	-88.81	0.10	-0.04	-1.04
3,900.00	5.12	253.73	3,894.37	-93.63	-91.54	-89.33	0.26	0.24	1.12
3,925.00	5.03	254.62	3,919.28	-94.24	-93.66	-89.84	0.48	-0.36	3.56
3,950.00	4.90	253.56	3,944.18	-94.83	-95.74	-90.34	0.64	-0.52	-4.24
3,975.00	4.79	253.89	3,969.09	-95.42	-97.77	-90.83	0.45	-0.44	1.32
4,000.00	4.67	254.40	3,994.01	-95.98	-99.75	-91.31	0.51	-0.48	2.04
4,025.00	4.68	253.23	4,018.92	-96.55	-101.71	-91.78	0.38	0.04	-4.68
4,050.00	4.60	255.31	4,043.84	-97.10	-103.66	-92.24	0.75	-0.32	8.32
4,075.00	4.57	255.21	4,068.76	-97.61	-105.59	-92.66	0.12	-0.12	-0.40
4,100.00	4.54	255.76	4,093.68	-98.11	-107.51	-93.07	0.21	-0.12	2.20
4,125.00	4.54	255.39	4,118.61	-98.60	-109.43	-93.47	0.12	0.00	-1.48
4,150.00	4.60	255.19	4,143.53	-99.11	-111.35	-93.89	0.25	0.24	-0.80
4,175.00	4.62	255.43	4,168.45	-99.61	-113.30	-94.31	0.11	0.08	0.96
4,200.00	4.65	255.46	4,193.36	-100.12	-115.25	-94.73	0.12	0.12	0.12
4,225.00	4.73	255.12	4,218.28	-100.64	-117.23	-95.16	0.34	0.32	-1.36
4,250.00	4.66	256.60	4,243.20	-101.14	-119.21	-95.56	0.56	-0.28	5.92
4,275.00	4.61	256.29	4,268.11	-101.61	-121.18	-95.95	0.22	-0.20	-1.24
4,300.00	4.62	255.98	4,293.03	-102.10	-123.13	-96.34	0.11	0.04	-1.24
4,325.00	4.66	256.22	4,317.95	-102.58	-125.09	-96.73	0.18	0.16	0.96
4,350.00	4.63	255.52	4,342.87	-103.08	-127.06	-97.14	0.26	-0.12	-2.80
4,375.00	4.60	255.43	4,367.79	-103.58	-129.01	-97.55	0.12	-0.12	-0.36
4,400.00	4.44	257.62	4,392.71	-104.04	-130.92	-97.92	0.94	-0.64	8.76
4,425.00	4.44	256.50	4,417.64	-104.47	-132.81	-98.27	0.35	0.00	-4.48
4,450.00	4.28	255.92	4,442.56	-104.93	-134.65	-98.64	0.66	-0.64	-2.32
4,475.00	4.18	255.61	4,467.49	-105.38	-136.44	-99.01	0.41	-0.40	-1.24
4,500.00	4.09	255.50	4,492.43	-105.83	-138.19	-99.38	0.36	-0.36	-0.44
4,525.00	3.87	255.58	4,517.37	-106.26	-139.87	-99.73	0.88	-0.88	0.32
4,550.00	3.80	252.40	4,542.31	-106.72	-141.47	-100.12	0.90	-0.28	-12.72
4,575.00	3.74	253.54	4,567.26	-107.21	-143.04	-100.53	0.38	-0.24	4.56
4,600.00	3.93	249.08	4,592.20	-107.74	-144.63	-100.99	1.41	0.76	-17.84
4,625.00	4.65	236.91	4,617.13	-108.60	-146.28	-101.78	4.63	2.88	-48.68



Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 502H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	RKB @ 3063.00usft (Pioneer 84)
Site:	Myox 31 State Com	MD Reference:	RKB @ 3063.00usft (Pioneer 84)
Well:	502H	North Reference:	Grid
Wellbore:	OH/ 66060	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Pioneer 84)	Database:	USA Compass

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,650.00	5.22	233.77	4,642.04	-109.83	-148.04	-102.92	2.52	2.28	-12.56
4,675.00	5.27	234.15	4,666.94	-111.17	-149.89	-104.18	0.24	0.20	1.52
4,700.00	5.26	234.34	4,691.83	-112.51	-151.75	-105.43	0.08	-0.04	0.76
4,725.00	5.12	233.32	4,716.73	-113.85	-153.58	-106.68	0.67	-0.56	-4.08
4,750.00	5.06	233.49	4,741.63	-115.17	-155.36	-107.92	0.25	-0.24	0.68
4,775.00	4.78	231.72	4,766.54	-116.47	-157.06	-109.14	1.27	-1.12	-7.08
4,800.00	4.67	230.82	4,791.45	-117.76	-158.67	-110.35	0.53	-0.44	-3.60
4,825.00	4.54	229.93	4,816.37	-119.04	-160.21	-111.56	0.59	-0.52	-3.56
4,850.00	4.31	229.13	4,841.30	-120.29	-161.68	-112.74	0.95	-0.92	-3.20
4,875.00	4.03	226.97	4,866.23	-121.50	-163.03	-113.90	1.28	-1.12	-8.64
4,900.00	3.87	227.72	4,891.17	-122.67	-164.30	-115.00	0.67	-0.64	3.00
4,925.00	3.81	226.87	4,916.12	-123.81	-165.53	-116.08	0.33	-0.24	-3.40
4,950.00	3.83	226.46	4,941.06	-124.95	-166.74	-117.17	0.14	0.08	-1.64
4,975.00	4.17	226.23	4,966.00	-126.15	-168.00	-118.31	1.36	1.36	-0.92
5,000.00	5.49	230.42	4,990.91	-127.54	-169.58	-119.63	5.46	5.28	16.76
5,025.00	5.61	230.29	5,015.79	-129.09	-171.44	-121.08	0.48	0.48	-0.52
5,050.00	5.71	227.89	5,040.67	-130.70	-173.31	-122.61	1.03	0.40	-9.60
5,075.00	5.65	228.48	5,065.55	-132.35	-175.15	-124.18	0.33	-0.24	2.36
5,100.00	5.54	229.17	5,090.43	-133.96	-176.99	-125.69	0.52	-0.44	2.76
5,125.00	5.21	227.01	5,115.32	-135.52	-178.73	-127.18	1.55	-1.32	-8.64
5,150.00	5.01	227.44	5,140.22	-137.03	-180.36	-128.61	0.81	-0.80	1.72
5,175.00	4.98	226.86	5,165.12	-138.51	-181.96	-130.02	0.23	-0.12	-2.32
5,200.00	4.93	227.41	5,190.03	-139.98	-183.54	-131.41	0.28	-0.20	2.20
5,225.00	4.73	227.30	5,214.94	-141.41	-185.09	-132.76	0.80	-0.80	-0.44
5,250.00	4.68	226.69	5,239.86	-142.81	-186.59	-134.09	0.28	-0.20	-2.44
5,275.00	4.63	226.96	5,264.78	-144.19	-188.07	-135.41	0.22	-0.20	1.08
5,300.00	4.64	227.13	5,289.69	-145.57	-189.55	-136.72	0.07	0.04	0.68
5,325.00	4.61	226.86	5,314.61	-146.95	-191.02	-138.03	0.15	-0.12	-1.08
5,350.00	4.61	226.41	5,339.53	-148.32	-192.48	-139.34	0.14	0.00	-1.80
5,375.00	4.49	227.38	5,364.45	-149.68	-193.93	-140.62	0.57	-0.48	3.88
5,400.00	4.56	227.45	5,389.38	-151.01	-195.38	-141.89	0.28	0.28	0.28
5,425.00	4.52	227.16	5,414.30	-152.36	-196.84	-143.16	0.18	-0.16	-1.16
5,450.00	4.40	226.93	5,439.22	-153.68	-198.26	-144.42	0.49	-0.48	-0.92
5,475.00	4.38	227.63	5,464.15	-154.98	-199.67	-145.65	0.23	-0.08	2.80
5,500.00	4.36	227.55	5,489.07	-156.26	-201.07	-146.87	0.08	-0.08	-0.32
5,525.00	4.40	227.86	5,514.00	-157.55	-202.49	-148.09	0.19	0.16	1.24
5,550.00	4.38	226.13	5,538.93	-158.85	-203.88	-149.33	0.54	-0.08	-6.92
5,575.00	4.20	227.88	5,563.86	-160.13	-205.25	-150.54	0.89	-0.72	7.00
5,600.00	3.95	226.76	5,588.80	-161.33	-206.56	-151.69	1.05	-1.00	-4.48
5,625.00	4.02	226.43	5,613.73	-162.53	-207.82	-152.82	0.29	0.28	-1.32
5,650.00	3.87	224.67	5,638.68	-163.73	-209.05	-153.97	0.77	-0.60	-7.04
5,675.00	3.76	224.48	5,663.62	-164.92	-210.22	-155.10	0.44	-0.44	-0.76
5,700.00	3.80	226.81	5,688.57	-166.07	-211.39	-156.19	0.63	0.16	9.32



Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 502H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	RKB @ 3063.00usft (Pioneer 84)
Site:	Myox 31 State Com	MD Reference:	RKB @ 3063.00usft (Pioneer 84)
Well:	502H	North Reference:	Grid
Wellbore:	OH/ 66060	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Pioneer 84)	Database:	USA Compass

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
5,725.00	3.85	225.15	5,713.51	-167.23	-212.59	-157.30	0.49	0.20	-6.64
5,750.00	4.85	231.03	5,738.44	-168.48	-214.01	-158.49	4.37	4.00	23.52
5,775.00	5.54	234.99	5,763.34	-169.84	-215.82	-159.76	3.11	2.76	15.84
5,800.00	5.89	236.76	5,788.21	-171.24	-217.88	-161.06	1.57	1.40	7.08
5,825.00	5.85	236.81	5,813.08	-172.64	-220.02	-162.36	0.16	-0.16	0.20
5,850.00	5.63	236.86	5,837.95	-174.00	-222.11	-163.63	0.88	-0.88	0.20
5,875.00	5.39	237.57	5,862.84	-175.30	-224.13	-164.84	1.00	-0.96	2.84
5,900.00	5.68	237.41	5,887.72	-176.60	-226.16	-166.04	1.16	1.16	-0.64
5,925.00	5.23	237.70	5,912.61	-177.88	-228.17	-167.22	1.80	-1.80	1.16
5,950.00	5.22	237.83	5,937.51	-179.09	-230.10	-168.34	0.06	-0.04	0.52
5,975.00	5.32	235.84	5,962.40	-180.35	-232.02	-169.51	0.83	0.40	-7.96
6,000.00	5.35	235.51	5,987.29	-181.66	-233.94	-170.73	0.17	0.12	-1.32
6,025.00	5.46	234.96	6,012.18	-183.00	-235.87	-171.98	0.49	0.44	-2.20
6,050.00	5.33	235.36	6,037.07	-184.34	-237.80	-173.24	0.54	-0.52	1.60
6,075.00	5.18	235.51	6,061.96	-185.64	-239.69	-174.45	0.60	-0.60	0.60
6,100.00	4.84	235.95	6,086.87	-186.87	-241.49	-175.59	1.37	-1.36	1.76
6,125.00	4.55	237.09	6,111.78	-188.00	-243.20	-176.64	1.22	-1.16	4.56
6,150.00	4.28	235.18	6,136.71	-189.07	-244.79	-177.64	1.23	-1.08	-7.64
6,175.00	4.23	235.91	6,161.64	-190.12	-246.32	-178.62	0.29	-0.20	2.92
6,200.00	3.97	235.68	6,186.58	-191.13	-247.80	-179.55	1.04	-1.04	-0.92
6,225.00	4.02	235.21	6,211.52	-192.11	-249.24	-180.48	0.24	0.20	-1.88
6,250.00	3.73	232.23	6,236.46	-193.11	-250.60	-181.41	1.41	-1.16	-11.92
6,275.00	3.36	227.13	6,261.41	-194.11	-251.78	-182.35	1.94	-1.48	-20.40
6,300.00	3.23	226.97	6,286.37	-195.09	-252.83	-183.28	0.52	-0.52	-0.64
6,325.00	3.96	229.75	6,311.32	-196.13	-254.00	-184.26	3.00	2.92	11.12
6,350.00	4.43	229.65	6,336.25	-197.31	-255.40	-185.38	1.88	1.88	-0.40
6,375.00	4.46	229.69	6,361.18	-198.56	-256.88	-186.57	0.12	0.12	0.16
6,400.00	4.17	228.72	6,386.11	-199.79	-258.30	-187.73	1.20	-1.16	-3.88
6,425.00	3.77	229.52	6,411.05	-200.93	-259.61	-188.80	1.62	-1.60	3.20
6,450.00	3.28	224.94	6,436.00	-201.97	-260.74	-189.79	2.26	-1.96	-18.32
6,475.00	3.13	222.01	6,460.96	-202.98	-261.70	-190.76	0.89	-0.60	-11.72
6,500.00	2.66	217.57	6,485.93	-203.95	-262.51	-191.69	2.08	-1.88	-17.76
6,525.00	2.47	218.21	6,510.90	-204.83	-263.20	-192.54	0.77	-0.76	2.56
6,550.00	2.31	215.06	6,535.88	-205.66	-263.82	-193.34	0.83	-0.64	-12.60
6,575.00	2.10	223.23	6,560.86	-206.41	-264.42	-194.06	1.51	-0.84	32.68
6,600.00	2.54	236.48	6,585.84	-207.05	-265.20	-194.66	2.76	1.76	53.00
6,625.00	3.45	241.88	6,610.81	-207.71	-266.33	-195.27	3.81	3.64	21.60
6,650.00	3.41	247.42	6,635.77	-208.35	-267.68	-195.85	1.33	-0.16	22.16
6,675.00	3.27	253.27	6,660.72	-208.84	-269.04	-196.28	1.47	-0.56	23.40
6,700.00	3.09	257.10	6,685.68	-209.20	-270.38	-196.57	1.11	-0.72	15.32
6,725.00	3.03	262.24	6,710.65	-209.44	-271.70	-196.75	1.12	-0.24	20.56
6,750.00	2.85	268.06	6,735.62	-209.55	-272.97	-196.80	1.39	-0.72	23.28
6,775.00	2.97	265.96	6,760.58	-209.61	-274.24	-196.81	0.64	0.48	-8.40
6,800.00	3.68	258.80	6,785.54	-209.81	-275.67	-196.94	3.28	2.84	-28.64



Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 502H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	RKB @ 3063.00usft (Pioneer 84)
Site:	Myox 31 State Com	MD Reference:	RKB @ 3063.00usft (Pioneer 84)
Well:	502H	North Reference:	Grid
Wellbore:	OH/ 66060	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Pioneer 84)	Database:	USA Compass

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
6,825.00	4.65	252.18	6,810.48	-210.28	-277.42	-197.33	4.32	3.88	-26.48
6,850.00	4.83	251.87	6,835.39	-210.92	-279.39	-197.88	0.73	0.72	-1.24
6,875.00	4.96	249.65	6,860.30	-211.62	-281.40	-198.49	0.92	0.52	-8.88
6,900.00	4.50	246.71	6,885.21	-212.39	-283.32	-199.16	2.08	-1.84	-11.76
6,925.00	3.99	243.18	6,910.14	-213.17	-284.99	-199.86	2.29	-2.04	-14.12
6,950.00	3.82	237.20	6,935.09	-214.01	-286.47	-200.64	1.76	-0.68	-23.92
6,975.00	3.81	236.85	6,960.03	-214.91	-287.87	-201.48	0.10	-0.04	-1.40
7,000.00	3.70	233.92	6,984.98	-215.84	-289.21	-202.35	0.88	-0.44	-11.72
7,025.00	3.80	234.21	7,009.92	-216.80	-290.54	-203.24	0.41	0.40	1.16
7,050.00	3.83	232.81	7,034.87	-217.79	-291.87	-204.17	0.39	0.12	-5.60
7,075.00	4.03	232.18	7,059.81	-218.84	-293.23	-205.15	0.82	0.80	-2.52
7,100.00	4.22	234.30	7,084.75	-219.91	-294.67	-206.16	0.97	0.76	8.48
Tie In									
7,161.00	4.37	230.30	7,145.57	-222.71	-298.28	-208.78	0.55	0.25	-6.56
First Phoenix MWD Survey									
7,188.00	4.16	230.65	7,172.50	-223.98	-299.83	-209.99	0.78	-0.78	1.30
7,283.00	4.48	300.38	7,267.29	-224.29	-305.70	-210.03	5.20	0.34	73.40
7,330.00	8.41	321.45	7,313.99	-220.67	-309.43	-206.24	9.62	8.36	44.83
7,378.00	12.96	329.89	7,361.15	-213.27	-314.32	-198.62	10.00	9.48	17.58
7,425.00	17.72	337.03	7,406.46	-202.12	-319.76	-187.23	10.88	10.13	15.19
7,466.32	20.84	335.40	7,445.46	-189.64	-325.27	-174.51	7.67	7.56	-3.94
FTP: 7466.3' MD									
7,473.00	21.35	335.18	7,451.69	-187.46	-326.28	-172.29	7.67	7.58	-3.30
7,520.00	25.05	334.57	7,494.88	-170.70	-334.15	-155.19	7.89	7.87	-1.30
7,568.00	29.88	338.03	7,537.46	-150.42	-342.99	-134.52	10.59	10.06	7.21
7,615.00	34.92	341.06	7,577.14	-126.82	-351.74	-110.55	11.26	10.72	6.45
7,663.00	39.73	343.40	7,615.30	-99.11	-360.59	-82.46	10.45	10.02	4.88
7,710.00	44.16	344.57	7,650.25	-68.92	-369.24	-51.90	9.57	9.43	2.49
7,758.00	48.75	347.73	7,683.31	-35.15	-377.53	-17.78	10.68	9.56	6.58
7,805.00	53.20	350.44	7,712.90	0.70	-384.41	18.34	10.47	9.47	5.77
7,852.00	57.39	348.81	7,739.66	38.69	-391.38	56.61	9.36	8.91	-3.47
7,899.00	63.26	348.36	7,762.92	78.70	-399.47	96.95	12.52	12.49	-0.96
7,947.00	66.01	348.22	7,783.48	121.17	-408.27	139.77	5.74	5.73	-0.29
7,994.00	69.25	348.69	7,801.36	163.74	-416.96	182.70	6.96	6.89	1.00
8,042.00	71.29	348.54	7,817.56	208.04	-425.88	227.36	4.26	4.25	-0.31
8,089.00	72.75	348.09	7,832.07	251.81	-434.94	271.50	3.24	3.11	-0.96
8,137.00	74.14	348.00	7,845.75	296.82	-444.47	316.91	2.90	2.90	-0.19
8,184.00	75.21	348.01	7,858.17	341.16	-453.89	361.63	2.28	2.28	0.02
8,231.00	75.17	347.38	7,870.18	385.56	-463.57	406.42	1.30	-0.09	-1.34
8,278.00	75.52	347.44	7,882.08	429.93	-473.48	451.21	0.75	0.74	0.13
8,326.00	80.07	350.04	7,892.22	475.93	-482.63	497.58	10.86	9.48	5.42
8,421.00	87.22	353.73	7,902.73	569.33	-495.93	591.48	8.46	7.53	3.88
8,516.00	88.45	356.69	7,906.32	663.92	-503.85	686.34	3.37	1.29	3.12



Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 502H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	RKB @ 3063.00usft (Pioneer 84)
Site:	Myox 31 State Com	MD Reference:	RKB @ 3063.00usft (Pioneer 84)
Well:	502H	North Reference:	Grid
Wellbore:	OH/ 66060	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Pioneer 84)	Database:	USA Compass

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
8,611.00	88.71	358.69	7,908.68	758.80	-507.68	781.30	2.12	0.27	2.11
8,706.00	87.81	1.56	7,911.56	853.75	-507.47	876.14	3.16	-0.95	3.02
8,801.00	88.56	1.55	7,914.57	948.67	-504.90	970.83	0.79	0.79	-0.01
8,896.00	89.42	2.09	7,916.25	1,043.60	-501.88	1,065.53	1.07	0.91	0.57
8,990.00	90.68	2.31	7,916.16	1,137.53	-498.27	1,159.20	1.36	1.34	0.23
9,085.00	90.02	2.53	7,915.58	1,232.44	-494.26	1,253.83	0.73	-0.69	0.23
9,180.00	90.18	2.20	7,915.42	1,327.36	-490.34	1,348.46	0.39	0.17	-0.35
9,275.00	91.36	1.86	7,914.14	1,422.29	-486.98	1,443.14	1.29	1.24	-0.36
9,370.00	90.18	2.16	7,912.87	1,517.22	-483.64	1,537.82	1.28	-1.24	0.32
9,464.00	87.10	0.95	7,915.10	1,611.15	-481.09	1,631.53	3.52	-3.28	-1.29
9,559.00	87.56	0.59	7,919.52	1,706.04	-479.82	1,726.26	0.61	0.48	-0.38
9,654.00	88.44	0.35	7,922.84	1,800.98	-479.04	1,821.06	0.96	0.93	-0.25
9,749.00	87.08	359.39	7,926.55	1,895.90	-479.26	1,915.89	1.75	-1.43	-1.01
9,844.00	87.02	359.76	7,931.44	1,990.77	-479.96	2,010.70	0.39	-0.06	0.39
9,939.00	87.51	358.84	7,935.97	2,085.65	-481.12	2,105.53	1.10	0.52	-0.97
10,033.00	88.78	358.34	7,939.02	2,179.57	-483.43	2,199.46	1.45	1.35	-0.53
10,128.00	89.96	358.75	7,940.06	2,274.54	-485.84	2,294.43	1.31	1.24	0.43
10,223.00	90.98	358.24	7,939.28	2,369.50	-488.34	2,389.41	1.20	1.07	-0.54
10,318.00	92.54	357.58	7,936.36	2,464.39	-491.80	2,484.36	1.78	1.64	-0.69
10,412.00	91.64	359.25	7,932.93	2,558.28	-494.40	2,578.28	2.02	-0.96	1.78
10,507.00	88.56	0.01	7,932.77	2,653.27	-495.01	2,673.19	3.34	-3.24	0.80
10,602.00	89.01	0.81	7,934.78	2,748.25	-494.33	2,768.03	0.97	0.47	0.84
10,697.00	90.02	0.26	7,935.59	2,843.24	-493.44	2,862.88	1.21	1.06	-0.58
10,792.00	91.11	359.43	7,934.65	2,938.23	-493.70	2,957.79	1.44	1.15	-0.87
10,887.00	92.70	359.19	7,931.49	3,033.17	-494.84	3,052.68	1.69	1.67	-0.25
10,981.00	89.50	1.23	7,929.69	3,127.13	-494.50	3,146.53	4.04	-3.40	2.17
11,076.00	91.22	1.67	7,929.09	3,222.10	-492.10	3,241.28	1.87	1.81	0.46
11,171.00	89.18	3.23	7,928.76	3,317.00	-488.03	3,335.90	2.70	-2.15	1.64
11,265.00	89.18	3.13	7,930.10	3,410.85	-482.82	3,429.41	0.11	0.00	-0.11
11,360.00	90.54	3.06	7,930.34	3,505.70	-477.69	3,523.93	1.43	1.43	-0.07
11,455.00	90.16	2.65	7,929.76	3,600.58	-472.96	3,618.49	0.59	-0.40	-0.43
11,550.00	89.13	2.47	7,930.35	3,695.49	-468.72	3,713.10	1.10	-1.08	-0.19
11,644.00	90.67	2.49	7,930.51	3,789.40	-464.65	3,806.72	1.64	1.64	0.02
11,739.00	89.93	2.62	7,930.01	3,884.30	-460.41	3,901.33	0.79	-0.78	0.14
11,834.00	89.02	2.03	7,930.88	3,979.22	-456.56	3,995.97	1.14	-0.96	-0.62
11,928.00	90.88	2.01	7,930.96	4,073.15	-453.25	4,089.66	1.98	1.98	-0.02
12,023.00	91.04	1.52	7,929.37	4,168.09	-450.32	4,184.37	0.54	0.17	-0.52
12,118.00	90.54	0.96	7,928.06	4,263.06	-448.27	4,279.14	0.79	-0.53	-0.59
12,213.00	92.05	1.03	7,925.92	4,358.02	-446.62	4,373.92	1.59	1.59	0.07
12,308.00	89.65	0.18	7,924.51	4,453.00	-445.61	4,468.75	2.68	-2.53	-0.89
12,402.00	87.36	359.39	7,926.96	4,546.96	-445.97	4,562.63	2.58	-2.44	-0.84
12,497.00	88.27	359.16	7,930.58	4,641.88	-447.17	4,657.51	0.99	0.96	-0.24
12,592.00	89.04	358.52	7,932.81	4,736.83	-449.09	4,752.45	1.05	0.81	-0.67
12,686.00	86.94	358.43	7,936.11	4,830.74	-451.59	4,846.37	2.24	-2.23	-0.10



Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 502H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	RKB @ 3063.00usft (Pioneer 84)
Site:	Myox 31 State Com	MD Reference:	RKB @ 3063.00usft (Pioneer 84)
Well:	502H	North Reference:	Grid
Wellbore:	OH/ 66060	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Pioneer 84)	Database:	USA Compass

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
12,781.00	86.82	358.95	7,941.28	4,925.57	-453.76	4,941.20	0.56	-0.13	0.55	
12,876.00	88.30	357.55	7,945.32	5,020.44	-456.66	5,036.10	2.14	1.56	-1.47	
12,971.00	89.81	356.74	7,946.89	5,115.30	-461.39	5,131.08	1.80	1.59	-0.85	
13,065.00	89.02	358.26	7,947.85	5,209.20	-465.49	5,225.08	1.82	-0.84	1.62	
13,160.00	89.54	358.49	7,949.04	5,304.16	-468.18	5,320.05	0.60	0.55	0.24	
13,255.00	90.21	357.35	7,949.25	5,399.09	-471.63	5,415.05	1.39	0.71	-1.20	
13,349.00	89.04	358.45	7,949.87	5,493.02	-475.08	5,509.04	1.71	-1.24	1.17	
13,444.00	89.42	359.24	7,951.14	5,588.00	-476.99	5,604.00	0.92	0.40	0.83	
13,538.00	90.47	358.35	7,951.23	5,681.97	-478.97	5,697.96	1.46	1.12	-0.95	
13,633.00	89.36	358.67	7,951.37	5,776.94	-481.44	5,792.94	1.22	-1.17	0.34	
13,728.00	88.53	359.87	7,953.12	5,871.91	-482.65	5,887.87	1.54	-0.87	1.26	
13,822.00	90.11	359.54	7,954.24	5,965.90	-483.13	5,981.79	1.72	1.68	-0.35	
13,917.00	91.53	359.06	7,952.88	6,060.88	-484.29	6,076.72	1.58	1.49	-0.51	
14,012.00	93.21	359.42	7,948.95	6,155.79	-485.55	6,171.58	1.81	1.77	0.38	
14,107.00	94.79	359.31	7,942.32	6,250.55	-486.60	6,266.29	1.67	1.66	-0.12	
14,202.00	93.64	0.81	7,935.34	6,345.29	-486.50	6,360.93	1.99	-1.21	1.58	
14,297.00	92.36	2.94	7,930.37	6,440.10	-483.40	6,455.50	2.61	-1.35	2.24	
14,391.00	93.15	2.90	7,925.85	6,533.87	-478.61	6,548.95	0.84	0.84	-0.04	
14,486.00	94.33	2.37	7,919.65	6,628.56	-474.26	6,643.34	1.36	1.24	-0.56	
14,581.00	92.61	2.02	7,913.90	6,723.31	-470.62	6,737.83	1.85	-1.81	-0.37	
14,676.00	93.95	2.22	7,908.47	6,818.09	-467.12	6,832.34	1.43	1.41	0.21	
14,771.00	92.45	2.94	7,903.17	6,912.84	-462.85	6,926.80	1.75	-1.58	0.76	
14,865.00	91.07	5.50	7,900.28	7,006.54	-455.93	7,020.08	3.09	-1.47	2.72	
14,960.00	91.47	4.75	7,898.17	7,101.13	-447.45	7,114.18	0.89	0.42	-0.79	
15,054.00	90.73	3.89	7,896.37	7,194.85	-440.37	7,207.47	1.21	-0.79	-0.91	
15,149.00	91.55	3.17	7,894.48	7,289.64	-434.52	7,301.91	1.15	0.86	-0.76	
15,244.00	90.23	2.16	7,893.00	7,384.53	-430.10	7,396.48	1.75	-1.39	-1.06	
15,339.00	88.14	359.78	7,894.35	7,479.49	-428.50	7,491.28	3.33	-2.20	-2.51	
15,434.00	89.13	359.72	7,896.62	7,574.46	-428.91	7,586.17	1.04	1.04	-0.06	
15,529.00	90.43	359.50	7,896.98	7,669.46	-429.56	7,681.09	1.39	1.37	-0.23	
15,623.00	92.19	0.02	7,894.83	7,763.43	-429.95	7,774.98	1.95	1.87	0.55	
15,718.00	91.18	0.41	7,892.04	7,858.39	-429.59	7,869.82	1.14	-1.06	0.41	
15,813.00	91.82	0.82	7,889.55	7,953.35	-428.57	7,964.63	0.80	0.67	0.43	
15,908.00	90.47	359.25	7,887.65	8,048.32	-428.52	8,059.51	2.18	-1.42	-1.65	
16,003.00	90.86	358.80	7,886.55	8,143.30	-430.13	8,154.46	0.63	0.41	-0.47	
16,097.00	91.77	358.94	7,884.39	8,237.26	-431.99	8,248.40	0.98	0.97	0.15	
16,192.00	90.49	359.59	7,882.52	8,332.23	-433.20	8,343.33	1.51	-1.35	0.68	
16,287.00	89.68	359.79	7,882.38	8,427.23	-433.72	8,438.25	0.88	-0.85	0.21	
16,381.00	90.74	359.71	7,882.04	8,521.22	-434.13	8,532.17	1.13	1.13	-0.09	
16,476.00	90.10	358.91	7,881.34	8,616.21	-435.27	8,627.11	1.08	-0.67	-0.84	
16,571.00	88.23	357.63	7,882.72	8,711.15	-438.14	8,722.08	2.39	-1.97	-1.35	
16,666.00	90.40	358.13	7,883.86	8,806.08	-441.65	8,817.07	2.34	2.28	0.53	
16,760.00	91.42	357.88	7,882.37	8,900.01	-444.93	8,911.05	1.12	1.09	-0.27	



Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 502H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	RKB @ 3063.00usft (Pioneer 84)
Site:	Myox 31 State Com	MD Reference:	RKB @ 3063.00usft (Pioneer 84)
Well:	502H	North Reference:	Grid
Wellbore:	OH/ 66060	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Pioneer 84)	Database:	USA Compass

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
16,855.00	90.22	357.97	7,881.01	8,994.93	-448.36	9,006.03	1.27	-1.26	0.09
16,950.00	89.06	358.60	7,881.60	9,089.89	-451.21	9,101.02	1.39	-1.22	0.66
17,044.00	89.94	358.36	7,882.42	9,183.85	-453.70	9,194.99	0.97	0.94	-0.26
17,139.00	91.36	358.18	7,881.35	9,278.80	-456.57	9,289.97	1.51	1.49	-0.19
17,234.00	91.09	359.30	7,879.32	9,373.75	-458.66	9,384.92	1.21	-0.28	1.18
17,328.00	91.33	0.03	7,877.33	9,467.73	-459.21	9,478.83	0.82	0.26	0.78
17,423.00	91.49	0.56	7,874.99	9,562.70	-458.72	9,573.67	0.58	0.17	0.56
17,518.00	88.76	1.21	7,874.79	9,657.68	-457.25	9,668.48	2.95	-2.87	0.68
17,613.00	90.57	2.03	7,875.34	9,752.63	-454.57	9,763.22	2.09	1.91	0.86
17,708.00	89.14	1.22	7,875.58	9,847.59	-451.87	9,857.95	1.73	-1.51	-0.85
17,802.00	86.41	0.97	7,879.23	9,941.49	-450.08	9,951.67	2.92	-2.90	-0.27
17,897.00	87.38	0.94	7,884.38	10,036.34	-448.50	10,046.35	1.02	1.02	-0.03
17,992.00	88.36	0.69	7,887.91	10,131.26	-447.15	10,141.11	1.06	1.03	-0.26
18,039.00	88.55	0.51	7,889.17	10,178.24	-446.65	10,188.02	0.56	0.40	-0.38
Final Phoenix MWD Survey									
18,052.91	88.55	0.51	7,889.53	10,192.15	-446.53	10,201.90	0.00	0.00	0.00
LTP: 18053' MD									
18,103.00	88.55	0.51	7,890.79	10,242.22	-446.08	10,251.90	0.00	0.00	0.00
Projection to TD									

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
7,100.00	7,084.75	-219.91	-294.67	Tie In
7,161.00	7,145.57	-222.71	-298.28	First Phoenix MWD Survey
7,466.32	7,445.46	-189.64	-325.27	FTP: 7466.3' MD
18,039.00	7,889.17	10,178.24	-446.65	Final Phoenix MWD Survey
18,052.91	7,889.53	10,192.15	-446.53	LTP: 18053' MD
18,103.00	7,890.79	10,242.22	-446.08	Projection to TD

NMOCD-REC'D 10/28/2020

Submit To Appropriate District Office Two Copies 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 and Natural Resources Oil Conservation Division 1220 South St. Francis Dr. Santa Fe, NM 87505				Form C-105 Revised April 3, 2017			
				1. WELL API NO.				30-015-46498			
				2. Type of Lease				☒ STATE ☐ FEE ☐ FED/INDIAN			
				3. State Oil & Gas Lease No.							
WELL COMPLETION OR RECOMPLETION REPORT AND LOG											
4. Reason for filing: ☒ COMPLETION REPORT (Fill in boxes #1 through #31 for State and Fee wells only) ☐ C-144 CLOSURE ATTACHMENT (Fill in boxes #1 through #9, #15 Date Rig Released and #32 and/or #33; attach this and the plat to the C-144 closure report in accordance with 19.15.17.13.K NMAC)								5. Lease Name or Unit Agreement Name			
								Myox 31 State Com			
								6. Well Number:			
								502H			
7. Type of Completion:											
☒ NEW WELL ☐ WORKOVER ☐ DEEPENING ☐ PLUGBACK ☐ DIFFERENT RESERVOIR ☐ OTHER _____											
8. Name of Operator								9. OGRID			
COG Operating LLC								229137			
10. Address of Operator								11. Pool name or Wildcat			
2208 W. Main Street								Delaware River; Bone Spring			
Artesia, NM 88210											
12. Location	Unit Ltr	Section	Township	Range	Lot	Feet from the	N/S Line	Feet from the	E/W Line	County	
Surface:	O	31	25S	28E		290'	South	1335'	East	Eddy	
BH:	B	30	25S	28E		50'	North	1791'	East	Eddy	
13. Date Spudded	14. Date T.D. Reached	15. Date Rig Released		16. Date Completed (Ready to Produce)		17. Elevations (DF and RKB, RT, GR, etc.)		3038' GR			
1/11/20	2/9/20	2/12/20		9/14/20							
18. Total Measured Depth of Well		19. Plug Back Measured Depth		20. Was Directional Survey Made?		21. Type Electric and Other Logs Run					
18,103'		18,025'		Yes							
22. Producing Interval(s), of this completion - Top, Bottom, Name											
8,080-17,918' Bone Spring											
23. CASING RECORD (Report all strings set in well)											
CASING SIZE		WEIGHT LB./FT.		DEPTH SET		HOLE SIZE		CEMENTING RECORD		AMOUNT PULLED	
13 3/8"		54.5#		518'		17 1/2"		550 sx			
9 5/8		40#		2396'		12 1/4"		740 sx			
5 1/2"		17#		18093'		8 3/4"		3200 sx			
24. LINER RECORD											
SIZE	TOP	BOTTOM	SACKS CEMENT	SCREEN		25. TUBING RECORD		SIZE		DEPTH SET	PACKER SET
						2 7/8"		7317'		7433'	7307'
26. Perforation record (interval, size, and number)						27. ACID, SHOT, FRACTURE, CEMENT, SQUEEZE, ETC.					
8,040-18,000' (1200)						DEPTH INTERVAL		AMOUNT AND KIND MATERIAL USED			
						8040-18,000'		Acidz w/0 gal 7 1/2%; Frac w/29,738,803# sand & 29,699,494 gal fluid			
28. PRODUCTION											
Date First Production		Production Method (Flowing, gas lift, pumping - Size and type pump)				Well Status (Prod. or Shut-in)					
10/7/20		Flowing				Producing					
Date of Test	Hours Tested	Choke Size	Prod'n For Test Period	Oil - Bbl	Gas - MCF	Water - Bbl.	Gas - Oil Ratio				
10/7/20	24	48/128"		266	463	3475					
Flow Tubing Press.	Casing Pressure	Calculated 24-Hour Rate	Oil - Bbl.	Gas - MCF	Water - Bbl.	Oil Gravity - API - (Corr.)					
325#	251#		266	463	3475						
29. Disposition of Gas (Sold, used for fuel, vented, etc.)								30. Test Witnessed By			
Sold								Nicholas Jancha			
31. List Attachments											
Surveys											
32. If a temporary pit was used at the well, attach a plat with the location of the temporary pit.								33. Rig Release Date:			
								2/12/20			
34. If an on-site burial was used at the well, report the exact location of the on-site burial:											
Latitude				Longitude				NAD83			
I hereby certify that the information shown on both sides of this form is true and complete to the best of my knowledge and belief											
Signature <i>Amanda Avery</i>				Name: Amanda Avery				Title Regulatory Analyst		Date: 10/28/20	
E-mail Address: aavery@concho.com											

INSTRUCTIONS

INDICATE FORMATION TOPS IN CONFORMANCE WITH GEOGRAPHICAL SECTION OF STATE

OIL OR GAS SANDS OR ZONES

IMPORTANT WATER SANDS

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

LITHOLOGY RECORD (Attach additional sheet if necessary)

From	To	Thickness In Feet	Lithology

Operator:	COG OPERATING LLC	600 W Illinois Ave	Midland, TX79701	OGRID:	229137	Action Number:	12681	Action Type:	C-104C
OCD Reviewer				Condition					
abustamante				None					