

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENTFORM APPROVED
OMB NO. 1004-0135
Expires: July 31, 2010**SUNDRY NOTICES AND REPORTS ON WELLS** *OCD Artesia*
Do not use this form for proposals to drill or to re-enter an abandoned well. Use form 3160-3 (APD) for such proposals.**SUBMIT IN TRIPLICATE - Other instructions on reverse side.**

1. Type of Well ☒ Oil Well ☐ Gas Well ☐ Other		5. Lease Serial No. NMNM121474
2. Name of Operator OGX RESOURCES LLC		6. If Indian, Allottee or Tribe Name
3a. Address MIDLAND, TX 79702		7. If Unit or CA/Agreement, Name and/or No.
3b. Phone No. (include area code) Ph: 575-748-6958		8. Well Name and No. COPPERHEAD 31 FEDERAL COM 2H
4. Location of Well (Footage, Sec., T., R., M., or Survey Description) Sec 31 T26S R29E NWNE Lot L6 480FSL 2140FEL		9. API Well No. 30-015-39791-00-X1
		10. Field and Pool, or Exploratory DELAWARE RIVER
		11. County or Parish, and State EDDY COUNTY, NM

12. CHECK APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION			
☒ Notice of Intent	☐ Acidize	☐ Deepen	☐ Production (Start/Resume)	☐ Water Shut-Off
☐ Subsequent Report	☐ Alter Casing	☐ Fracture Treat	☐ Reclamation	☐ Well Integrity
☐ Final Abandonment Notice	☐ Casing Repair	☐ New Construction	☐ Recomplete	☒ Other
	☐ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon	Change to Original APD
	☐ Convert to Injection	☐ Plug Back	☐ Water Disposal	

13. Describe Proposed or Completed Operation (clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recompleat horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports shall be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompleat in a new interval, a Form 3160-4 shall be filed once testing has been completed. Final Abandonment Notices shall be filed only after all requirements, including reclamation, have been completed, and the operator has determined that the site is ready for final inspection.)

After Verbal approval from Wesley Ingram and Ted Morgan, COG Operating LLC drilled a 7-7/8" pilot hole to 8500'. After running OH logs, the pilot hole was plugged back from 9500' to 7630' with 300 sx Class H @ 17.2 ppg kick off plug cement.

COG OPERATING LLC NOW REQUESTS THE FOLLOWING CHANGES:

See attached directional plan
Kick off @ 7787' to drill 7-7/8" curve & lateral to approx 13,497' MD / 8265' TVD
Run 5-1/2" 17# P110 LTC csg
Cmt in 1 stg with:
Lead: 900 sx 35:65:6 H + Salt + Gilsonte + CFR-3 @ 12.7 ppg/1.89 yield
Tail: 1100 sx 50:50:2 H + Salt + GasStop + CFR-3 @ 14.4ppg/1.25 yield

Approval Subject to General Requirements
& Special Stipulations Attached

Accepted for record
NMOCD

14. I hereby certify that the foregoing is true and correct. Electronic Submission #133336 verified by the BLM Well Information System For OGX RESOURCES LLC, sent to the Carlsbad Committed to AFMSS for processing by KURT SIMMONS on 03/22/2012 (12KMS1272SE)	
Name (Printed/Typed) DEBORA WILBOURN	Title DRLG ENGINEERING TECH
Signature (Electronic Submission)	Date 03/19/2012

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By <u>TED MORGAN</u>	Title <u>PETROLEUM ENGINEER</u>	Date <u>03/26/2012</u>
Conditions of approval, if any, are attached. Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon		Office <u>Carlsbad</u>

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

**** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ****

Additional data for EC transaction #133336 that would not fit on the form

32. Additional remarks, continued

35% excess on OH

Minimum tie back 200? inside 9-5/8? (job designed to circ cmt to sfc)



COG Operating LLC

Eddy County(NAD27)

Copperhead 31 Fed Com

#2H

OH

Plan: Post Gyro Plan #3

Pathfinder X & Y Report

18 March, 2012

PATHFINDER[®]
A Schlumberger Company



Pathfinder
Pathfinder X & Y Report

PATHFINDER[®]
A Schlumberger Company

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #2H:
Project:	Eddy County (NAD27)	TVD Reference:	KB = 18' @ 2919.0usft (Original Well Elev)
Site:	Copperhead 31 Fed Com	MD Reference:	KB = 18' @ 2919.0usft (Original Well Elev)
Well:	#2H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Post Gyro Plan #3	Database:	EDM 5000.1 Single User Db

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

Site		Copperhead 31 Fed Com				
Site Position:		Northing:	364,332.500	usft	Latitude:	32° 0' 4.611 N
From:	Map	Easting:	596,592.300	usft	Longitude:	104° 1' 18.251 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16	"	Grid Convergence:	0.17 °

Well		#2H				
Well Position	+N/-S	0.0 usft	Northing:	364,332.500 usft	Latitude:	32° 0' 4.611 N
	+E/-W	0.0 usft	Easting:	596,592.300 usft	Longitude:	104° 1' 18.251 W
Position Uncertainty	0.0 usft	Wellhead Elevation:	usft	Ground Level:	2,901.0 usft	

Wellbore		OH			
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	2/23/2012	7.69	59.88	48,366

Design:		Post Gyro Plan #3		
Audit Notes:				
Version:		Phase:	PLAN	Tie On Depth: 7,700.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	0.10



Pathfinder
Pathfinder X & Y Report

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Well:	#2H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Post Gyro Plan #3	Database:	EDM 5000.1 Single User Db

Survey Tool Program		Date	3/18/2012		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
100.0	7,700.0	Gyro #1 (OH)	NS-GYRO-MS	North sensing gyrocompassing m/s	
7,700.0	13,497.8	Post Gyro Plan #3 (OH)			

Planned Survey											
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)	
0.0	0.00	0.00	0.0	-2,919.0	0.0	0.0	0.0	0.00	364,332.50	596,592.30	
100.0	0.96	311.10	100.0	-2,819.0	0.6	-0.6	0.5	0.96	364,333.05	596,591.67	
200.0	1.54	321.24	200.0	-2,719.0	2.1	-2.1	2.1	0.62	364,334.65	596,590.20	
300.0	2.29	322.14	299.9	-2,619.1	4.8	-4.2	4.8	0.75	364,337.27	596,588.13	
400.0	2.67	318.64	399.8	-2,519.2	8.1	-6.9	8.1	0.41	364,340.60	596,585.36	
500.0	2.12	318.50	499.7	-2,419.3	11.2	-9.7	11.2	0.55	364,343.73	596,582.60	
600.0	1.72	307.88	599.7	-2,319.3	13.5	-12.1	13.5	0.53	364,346.04	596,580.19	
700.0	1.60	307.29	699.6	-2,219.4	15.3	-14.4	15.3	0.12	364,347.81	596,577.89	
800.0	1.43	298.21	799.6	-2,119.4	16.7	-16.6	16.7	0.29	364,349.24	596,575.68	
900.0	1.10	295.50	899.6	-2,019.4	17.7	-18.6	17.7	0.34	364,350.25	596,573.72	
1,000.0	1.03	299.45	999.6	-1,919.4	18.6	-20.2	18.6	0.10	364,351.10	596,572.07	
1,100.0	0.92	299.14	1,099.5	-1,819.5	19.4	-21.7	19.4	0.11	364,351.93	596,570.58	
1,200.0	0.80	290.45	1,199.5	-1,719.5	20.1	-23.1	20.0	0.18	364,352.57	596,569.23	
1,300.0	0.62	293.04	1,299.5	-1,619.5	20.5	-24.2	20.5	0.18	364,353.02	596,568.08	
1,400.0	0.46	98.72	1,399.5	-1,519.5	20.7	-24.3	20.6	1.07	364,353.18	596,567.98	
1,500.0	0.90	104.72	1,499.5	-1,419.5	20.4	-23.2	20.4	0.45	364,352.92	596,569.13	
1,600.0	0.49	94.12	1,599.5	-1,319.5	20.2	-22.0	20.1	0.43	364,352.69	596,570.32	
1,700.0	0.52	358.74	1,699.5	-1,219.5	20.6	-21.6	20.6	0.75	364,353.11	596,570.73	
1,800.0	1.09	2.55	1,799.5	-1,119.5	22.0	-21.5	22.0	0.57	364,354.51	596,570.77	
1,900.0	1.84	24.48	1,899.5	-1,019.5	24.4	-20.8	24.4	0.92	364,356.92	596,571.47	
2,000.0	2.38	46.81	1,999.4	-919.6	27.3	-18.6	27.3	0.97	364,359.81	596,573.65	



Pathfinder
Pathfinder X & Y Report

PATHFINDER
A Schlumberger Company

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #2H
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Site:	Copperhead 31 Fed Com	MD Reference:	KB = 18" @ 2919.0usft (Original Well Elev)
Well:	#2H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Post Gyro Plan #3	Database:	EDM 5000.1 Single User Db

Planned Survey											
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)	
2,100.0	2.59	51.19	2,099.3	-819.7	30.1	-15.4	30.1	0.28	364,362.64	596,576.93	
2,200.0	2.19	50.59	2,199.2	-719.8	32.8	-12.1	32.7	0.40	364,365.27	596,580.17	
2,300.0	2.25	74.54	2,299.1	-619.9	34.5	-8.8	34.5	0.92	364,367.01	596,583.53	
2,400.0	2.27	88.43	2,399.1	-519.9	35.1	-4.9	35.1	0.55	364,367.59	596,587.41	
2,500.0	1.13	95.09	2,499.0	-420.0	35.1	-1.9	35.0	1.16	364,367.55	596,590.37	
2,600.0	0.82	87.07	2,599.0	-320.0	35.0	-0.2	35.0	0.34	364,367.50	596,592.06	
2,700.0	0.58	100.31	2,699.0	-220.0	34.9	1.0	34.9	0.29	364,367.45	596,593.28	
2,800.0	0.69	88.72	2,799.0	-120.0	34.9	2.1	34.9	0.17	364,367.37	596,594.38	
2,900.0	0.35	48.74	2,899.0	-20.0	35.1	2.9	35.1	0.48	364,367.59	596,595.21	
3,000.0	0.45	27.62	2,999.0	80.0	35.6	3.3	35.6	0.18	364,368.13	596,595.62	
3,100.0	0.69	340.06	3,099.0	180.0	36.5	3.3	36.6	0.51	364,369.05	596,595.60	
3,200.0	0.60	325.64	3,199.0	280.0	37.5	2.8	37.6	0.18	364,370.05	596,595.10	
3,300.0	0.58	316.07	3,299.0	380.0	38.3	2.1	38.3	0.10	364,370.84	596,594.45	
3,400.0	0.71	305.45	3,399.0	480.0	39.1	1.3	39.1	0.18	364,371.57	596,593.59	
3,500.0	0.71	285.51	3,499.0	580.0	39.6	0.2	39.6	0.25	364,372.09	596,592.49	
3,600.0	0.93	281.89	3,598.9	679.9	39.9	-1.2	39.9	0.23	364,372.43	596,591.10	
3,700.0	0.81	275.34	3,698.9	779.9	40.2	-2.7	40.2	0.16	364,372.66	596,589.60	
3,800.0	0.99	277.56	3,798.9	879.9	40.3	-4.3	40.3	0.18	364,372.84	596,588.04	
3,900.0	0.92	276.90	3,898.9	979.9	40.5	-5.9	40.5	0.07	364,373.05	596,586.39	
4,000.0	1.11	277.11	3,998.9	1,079.9	40.8	-7.7	40.8	0.19	364,373.26	596,584.63	
4,100.0	1.02	278.74	4,098.9	1,179.9	41.0	-9.5	41.0	0.09	364,373.52	596,582.79	
4,200.0	1.13	278.13	4,198.9	1,279.9	41.3	-11.4	41.3	0.11	364,373.79	596,580.93	
4,300.0	1.08	264.37	4,298.8	1,379.8	41.3	-13.3	41.3	0.27	364,373.84	596,579.02	
4,400.0	1.01	272.04	4,398.8	1,479.8	41.3	-15.1	41.3	0.16	364,373.78	596,577.20	
4,500.0	1.33	267.06	4,498.8	1,579.8	41.3	-17.1	41.2	0.34	364,373.75	596,575.16	
4,600.0	1.17	266.37	4,598.8	1,679.8	41.1	-19.3	41.1	0.16	364,373.63	596,572.98	
4,700.0	1.07	272.10	4,698.8	1,779.8	41.1	-21.3	41.1	0.15	364,373.60	596,571.03	



Pathfinder
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Well:	#2H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Post Gyro Plan #3	Database:	EDM 5000.1 Single User Db

Planned Survey											
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)	
4,800.0	1.18	266.98	4,798.7	1,879.7	41.1	-23.2	41.0	0.15	364,373.58	596,569.07	
4,900.0	1.03	251.66	4,898.7	1,979.7	40.7	-25.1	40.7	0.33	364,373.24	596,567.19	
5,000.0	1.11	232.09	4,998.7	2,079.7	39.9	-26.7	39.8	0.37	364,372.36	596,565.57	
5,100.0	1.09	233.62	5,098.7	2,179.7	38.7	-28.3	38.7	0.04	364,371.20	596,564.04	
5,200.0	0.93	214.94	5,198.7	2,279.7	37.5	-29.5	37.4	0.36	364,369.97	596,562.81	
5,300.0	0.98	207.97	5,298.7	2,379.7	36.1	-30.4	36.0	0.13	364,368.55	596,561.94	
5,400.0	1.22	209.70	5,398.6	2,479.6	34.4	-31.3	34.3	0.24	364,366.87	596,561.02	
5,500.0	1.27	215.34	5,498.6	2,579.6	32.5	-32.5	32.5	0.13	364,365.04	596,559.85	
5,600.0	1.34	211.82	5,598.6	2,679.6	30.6	-33.7	30.6	0.11	364,363.15	596,558.59	
5,700.0	1.34	213.56	5,698.6	2,779.6	28.7	-35.0	28.6	0.04	364,361.18	596,557.33	
5,800.0	1.48	213.48	5,798.5	2,879.5	26.6	-36.3	26.6	0.14	364,359.13	596,555.97	
5,900.0	1.69	213.82	5,898.5	2,979.5	24.3	-37.9	24.3	0.21	364,356.83	596,554.44	
6,000.0	1.86	215.23	5,998.4	3,079.4	21.8	-39.6	21.7	0.18	364,354.27	596,552.68	
6,100.0	1.87	220.24	6,098.4	3,179.4	19.2	-41.6	19.1	0.16	364,351.70	596,550.69	
6,200.0	1.93	220.18	6,198.3	3,279.3	16.7	-43.8	16.6	0.06	364,349.17	596,548.55	
6,300.0	1.96	223.29	6,298.3	3,379.3	14.1	-46.0	14.1	0.11	364,346.64	596,546.29	
6,400.0	1.63	229.89	6,398.2	3,479.2	12.0	-48.3	11.9	0.39	364,344.48	596,544.03	
6,500.0	2.02	251.73	6,498.2	3,579.2	10.5	-51.0	10.4	0.79	364,343.01	596,541.27	
6,600.0	2.08	269.55	6,598.1	3,679.1	9.9	-54.5	9.8	0.64	364,342.44	596,537.78	
6,700.0	2.14	276.60	6,698.0	3,779.0	10.1	-58.2	10.0	0.27	364,342.64	596,534.11	
6,800.0	1.98	274.35	6,798.0	3,879.0	10.5	-61.8	10.4	0.18	364,342.99	596,530.53	
6,900.0	2.17	264.76	6,897.9	3,978.9	10.4	-65.4	10.3	0.40	364,342.95	596,526.92	
7,000.0	2.19	259.40	6,997.8	4,078.8	9.9	-69.1	9.8	0.20	364,342.42	596,523.16	
7,100.0	2.83	273.60	7,097.8	4,178.8	9.7	-73.5	9.6	0.89	364,342.23	596,518.82	
7,200.0	3.21	261.35	7,197.6	4,278.6	9.5	-78.7	9.3	0.75	364,341.96	596,513.59	
7,300.0	3.10	265.48	7,297.5	4,378.5	8.8	-84.2	8.7	0.25	364,341.33	596,508.12	
7,400.0	2.88	271.48	7,397.3	4,478.3	8.7	-89.4	8.5	0.38	364,341.18	596,502.92	



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7,500.0	2.36	269.25	7,497.2	4,578.2	8.7	-94.0	8.5	0.53	364,341.22	596,498.35	
7,600.0	2.18	257.23	7,597.1	4,678.1	8.3	-97.9	8.1	0.51	364,340.77	596,494.43	
7,700.0	1.45	252.74	7,697.1	4,778.1	7.5	-100.9	7.3	0.74	364,339.97	596,491.37	
7,786.8	1.45	252.74	7,783.9	4,864.9	6.8	-103.0	6.6	0.00	364,339.32	596,489.27	
7,800.0	1.77	310.55	7,797.1	4,878.1	6.9	-103.3	6.7	12.00	364,339.40	596,488.96	
7,825.0	4.34	342.90	7,822.0	4,903.0	8.1	-103.9	7.9	12.00	364,340.56	596,488.39	
7,850.0	7.25	350.44	7,846.9	4,927.9	10.5	-104.5	10.3	12.00	364,343.02	596,487.84	
7,875.0	10.21	353.66	7,871.6	4,952.6	14.3	-105.0	14.1	12.00	364,346.78	596,487.34	
7,900.0	13.19	355.44	7,896.1	4,977.1	19.3	-105.4	19.1	12.00	364,351.83	596,486.87	
7,925.0	16.18	356.57	7,920.3	5,001.3	25.7	-105.9	25.5	12.00	364,358.15	596,486.43	
7,950.0	19.17	357.35	7,944.1	5,025.1	33.2	-106.3	33.0	12.00	364,365.73	596,486.03	
7,975.0	22.16	357.93	7,967.5	5,048.5	42.0	-106.6	41.9	12.00	364,374.55	596,485.67	
8,000.0	25.16	358.38	7,990.4	5,071.4	52.1	-106.9	51.9	12.00	364,384.57	596,485.35	
8,025.0	28.15	358.74	8,012.7	5,093.7	63.3	-107.2	63.1	12.00	364,395.78	596,485.07	
8,050.0	31.15	359.04	8,034.4	5,115.4	75.6	-107.5	75.5	12.00	364,408.15	596,484.83	
8,075.0	34.15	359.28	8,055.5	5,136.5	89.1	-107.7	88.9	12.00	364,421.63	596,484.64	
8,100.0	37.14	359.50	8,075.8	5,156.8	103.7	-107.8	103.5	12.00	364,436.20	596,484.48	
8,125.0	40.14	359.68	8,095.3	5,176.3	119.3	-107.9	119.1	12.00	364,451.81	596,484.37	
8,150.0	43.14	359.84	8,114.0	5,195.0	135.9	-108.0	135.7	12.00	364,468.42	596,484.30	
8,175.0	46.14	359.99	8,131.8	5,212.8	153.5	-108.0	153.3	12.00	364,485.98	596,484.28	
8,200.0	49.14	0.12	8,148.6	5,229.6	172.0	-108.0	171.8	12.00	364,504.45	596,484.30	
8,225.0	52.14	0.24	8,164.5	5,245.5	191.3	-107.9	191.1	12.00	364,523.78	596,484.36	
8,250.0	55.13	0.35	8,179.3	5,260.3	211.4	-107.8	211.2	12.00	364,543.91	596,484.46	
8,275.0	58.13	0.46	8,193.0	5,274.0	232.3	-107.7	232.1	12.00	364,564.78	596,484.61	
8,300.0	61.13	0.55	8,205.7	5,286.7	253.8	-107.5	253.7	12.00	364,586.35	596,484.80	
8,325.0	64.13	0.64	8,217.2	5,298.2	276.0	-107.3	275.9	12.00	364,608.55	596,485.04	
8,350.0	67.13	0.73	8,227.5	5,308.5	298.8	-107.0	298.6	12.00	364,631.32	596,485.31	



Pathfinder
Pathfinder X & Y Report

PATHFINDER
A Schlumberger Company

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #2H
Project:	Eddy County (NAD27)	TVD Reference:	KB = 18' @ 2919.0usft (Original Well Elev)
Site:	Copperhead 31 Fed Com	MD Reference:	KB = 18' @ 2919.0usft (Original Well Elev)
Well:	#2H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Post Gyro Plan #3	Database:	EDM 5000.1 Single User Db

Planned Survey											
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)	
8,375.0	70.13	0.81	8,236.6	5,317.6	322.1	-106.7	321.9	12.00	364,654.59	596,485.62	
8,400.0	73.13	0.89	8,244.5	5,325.5	345.8	-106.3	345.6	12.00	364,678.31	596,485.98	
8,425.0	76.13	0.97	8,251.1	5,332.1	369.9	-105.9	369.7	12.00	364,702.41	596,486.37	
8,450.0	79.13	1.05	8,256.5	5,337.5	394.3	-105.5	394.1	12.00	364,726.82	596,486.80	
8,475.0	82.12	1.12	8,260.5	5,341.5	419.0	-105.0	418.8	12.00	364,751.48	596,487.27	
8,500.0	85.12	1.19	8,263.3	5,344.3	443.8	-104.5	443.6	12.00	364,776.32	596,487.77	
8,525.0	88.12	1.27	8,264.8	5,345.8	468.8	-104.0	468.6	12.00	364,801.27	596,488.30	
8,540.7	90.00	1.31	8,265.0	5,346.0	484.4	-103.6	484.2	12.00	364,816.91	596,488.66	
8,600.0	90.00	1.31	8,265.0	5,346.0	543.7	-102.3	543.6	0.00	364,876.25	596,490.01	
8,700.0	90.00	1.31	8,265.0	5,346.0	643.7	-100.0	643.5	0.00	364,976.22	596,492.30	
8,800.0	90.00	1.31	8,265.0	5,346.0	743.7	-97.7	743.5	0.00	365,076.19	596,494.59	
8,900.0	90.00	1.31	8,265.0	5,346.0	843.7	-95.4	843.5	0.00	365,176.17	596,496.88	
9,000.0	90.00	1.31	8,265.0	5,346.0	943.6	-93.1	943.5	0.00	365,276.14	596,499.17	
9,100.0	90.00	1.31	8,265.0	5,346.0	1,043.6	-90.8	1,043.4	0.00	365,376.12	596,501.46	
9,200.0	90.00	1.31	8,265.0	5,346.0	1,143.6	-88.6	1,143.4	0.00	365,476.09	596,503.75	
9,300.0	90.00	1.31	8,265.0	5,346.0	1,243.6	-86.3	1,243.4	0.00	365,576.06	596,506.03	
9,400.0	90.00	1.31	8,265.0	5,346.0	1,343.5	-84.0	1,343.4	0.00	365,676.04	596,508.32	
9,500.0	90.00	1.31	8,265.0	5,346.0	1,443.5	-81.7	1,443.4	0.00	365,776.01	596,510.61	
9,600.0	90.00	1.31	8,265.0	5,346.0	1,543.5	-79.4	1,543.3	0.00	365,875.98	596,512.90	
9,700.0	90.00	1.31	8,265.0	5,346.0	1,643.5	-77.1	1,643.3	0.00	365,975.96	596,515.19	
9,800.0	90.00	1.31	8,265.0	5,346.0	1,743.4	-74.8	1,743.3	0.00	366,075.93	596,517.48	
9,900.0	90.00	1.31	8,265.0	5,346.0	1,843.4	-72.5	1,843.3	0.00	366,175.91	596,519.76	
10,000.0	90.00	1.31	8,265.0	5,346.0	1,943.4	-70.2	1,943.2	0.00	366,275.88	596,522.05	
10,100.0	90.00	1.31	8,265.0	5,346.0	2,043.4	-68.0	2,043.2	0.00	366,375.85	596,524.34	
10,200.0	90.00	1.31	8,265.0	5,346.0	2,143.3	-65.7	2,143.2	0.00	366,475.83	596,526.63	
10,300.0	90.00	1.31	8,265.0	5,346.0	2,243.3	-63.4	2,243.2	0.00	366,575.80	596,528.92	
10,400.0	90.00	1.31	8,265.0	5,346.0	2,343.3	-61.1	2,343.2	0.00	366,675.77	596,531.21	



Pathfinder
Pathfinder X & Y Report

PATHFINDER
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Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #2H
Project:	Eddy County (NAD27)	TVD Reference:	KB = 18' @ 2919.0usft (Original Well Elev)
Site:	Copperhead 31 Fed Com	MD Reference:	KB = 18' @ 2919.0usft (Original Well Elev)
Well:	#2H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Post Gyrol Plan #3	Database:	EDM 5000.1 Single User DB

Planned Survey											
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)	
10,500.0	90.00	1.31	8,265.0	5,346.0	2,443.2	-58.8	2,443.1	0.00	366,775.75	596,533.50	
10,600.0	90.00	1.31	8,265.0	5,346.0	2,543.2	-56.5	2,543.1	0.00	366,875.72	596,535.78	
10,700.0	90.00	1.31	8,265.0	5,346.0	2,643.2	-54.2	2,643.1	0.00	366,975.70	596,538.07	
10,800.0	90.00	1.31	8,265.0	5,346.0	2,743.2	-51.9	2,743.1	0.00	367,075.67	596,540.36	
10,900.0	90.00	1.31	8,265.0	5,346.0	2,843.1	-49.7	2,843.0	0.00	367,175.64	596,542.65	
11,000.0	90.00	1.31	8,265.0	5,346.0	2,943.1	-47.4	2,943.0	0.00	367,275.62	596,544.94	
11,100.0	90.00	1.31	8,265.0	5,346.0	3,043.1	-45.1	3,043.0	0.00	367,375.59	596,547.23	
11,200.0	90.00	1.31	8,265.0	5,346.0	3,143.1	-42.8	3,143.0	0.00	367,475.57	596,549.51	
11,300.0	90.00	1.31	8,265.0	5,346.0	3,243.0	-40.5	3,243.0	0.00	367,575.54	596,551.80	
11,400.0	90.00	1.31	8,265.0	5,346.0	3,343.0	-38.2	3,342.9	0.00	367,675.51	596,554.09	
11,500.0	90.00	1.31	8,265.0	5,346.0	3,443.0	-35.9	3,442.9	0.00	367,775.49	596,556.38	
11,600.0	90.00	1.31	8,265.0	5,346.0	3,543.0	-33.6	3,542.9	0.00	367,875.46	596,558.67	
11,700.0	90.00	1.31	8,265.0	5,346.0	3,642.9	-31.3	3,642.9	0.00	367,975.43	596,560.96	
11,800.0	90.00	1.31	8,265.0	5,346.0	3,742.9	-29.1	3,742.8	0.00	368,075.41	596,563.25	
11,900.0	90.00	1.31	8,265.0	5,346.0	3,842.9	-26.8	3,842.8	0.00	368,175.38	596,565.53	
12,000.0	90.00	1.31	8,265.0	5,346.0	3,942.9	-24.5	3,942.8	0.00	368,275.36	596,567.82	
12,100.0	90.00	1.31	8,265.0	5,346.0	4,042.8	-22.2	4,042.8	0.00	368,375.33	596,570.11	
12,200.0	90.00	1.31	8,265.0	5,346.0	4,142.8	-19.9	4,142.8	0.00	368,475.30	596,572.40	
12,300.0	90.00	1.31	8,265.0	5,346.0	4,242.8	-17.6	4,242.7	0.00	368,575.28	596,574.69	
12,400.0	90.00	1.31	8,265.0	5,346.0	4,342.8	-15.3	4,342.7	0.00	368,675.25	596,576.98	
12,500.0	90.00	1.31	8,265.0	5,346.0	4,442.7	-13.0	4,442.7	0.00	368,775.22	596,579.26	
12,600.0	90.00	1.31	8,265.0	5,346.0	4,542.7	-10.7	4,542.7	0.00	368,875.20	596,581.55	
12,700.0	90.00	1.31	8,265.0	5,346.0	4,642.7	-8.5	4,642.6	0.00	368,975.17	596,583.84	
12,800.0	90.00	1.31	8,265.0	5,346.0	4,742.6	-6.2	4,742.6	0.00	369,075.15	596,586.13	
12,900.0	90.00	1.31	8,265.0	5,346.0	4,842.6	-3.9	4,842.6	0.00	369,175.12	596,588.42	
13,000.0	90.00	1.31	8,265.0	5,346.0	4,942.6	-1.6	4,942.6	0.00	369,275.09	596,590.71	
13,100.0	90.00	1.31	8,265.0	5,346.0	5,042.6	0.7	5,042.6	0.00	369,375.07	596,593.00	



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Site:	Copperhead 31 Fed Com	MD Reference:	KB = 18' @ 2919.0usft (Original Well Elev)
Well:	#2H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Post Gyro Plan #3	Database:	EDM 5000.1 Single User Db

Planned Survey											
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)	
13,200.0	90.00	1.31	8,265.0	5,346.0	5,142.5	3.0	5,142.5	0.00	369,475.04	596,595.28	
13,300.0	90.00	1.31	8,265.0	5,346.0	5,242.5	5.3	5,242.5	0.00	369,575.02	596,597.57	
13,400.0	90.00	1.31	8,265.0	5,346.0	5,342.5	7.6	5,342.5	0.00	369,674.99	596,599.86	
13,497.8	90.00	1.31	8,265.0	5,346.0	5,440.3	9.8	5,440.3	0.00	369,772.80	596,602.10	

Checked By: _____	Approved By: _____	Date: _____
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