

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
OMB NO 1004-0135
Expires: July 31, 2010

SUNDRY NOTICES AND REPORTS ON WELLS
Do not use this form for proposals to drill or to re-enter an abandoned well. Use form 3160-3 (APD) for such proposals.

OCD Artesia

SUBMIT IN TRIPLICATE - Other instructions on reverse side.

1. Type of Well ☒ Oil Well ☐ Gas Well ☐ Other		5. Lease Serial No. NMNM12559
2. Name of Operator COG PRODUCTION LLC		6. If Indian, Allottee or Tribe Name
Contact: DEBORA WILBOURN E-Mail: dwilbourn@concho.com		7. If Unit or CA/Agreement, Name and/or No.
3a. Address 2208 W MAIN ST ARTESIA, NM 88210	3b. Phone No (include area code) Ph: 575-748-6958	8. Well Name and No. COTTONMOUTH 23 FEDERAL COM 1H
4. Location of Well (Footage, Sec., T, R, M, or Survey Description) Sec 23 T26S R28E SWNW 35FNL 2310FWL		9. API Well No. 30-015-39784
		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
☒ Subsequent Report	☐ Deepen
☐ Final Abandonment Notice	☐ Fracture Treat
	☐ Production (Start/Resume)
	☐ Reclamation
	☐ Water Shut-Off
	☐ Well Integrity
	☒ Other
	Change to Original A PD
	☐ Alter Casing
	☐ New Construction
	☐ Recomplete
	☐ Temporarily Abandon
	☐ Water Disposal
	☐ Casing Repair
	☐ Plug and Abandon
	☐ Plug Back
	☐ Convert to Injection

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 recompleate 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 recompleation 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.)

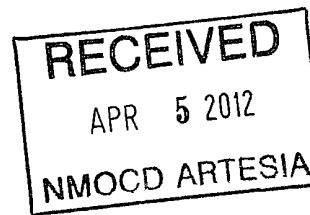
COG respectfully request the following changes:

Surface Casing setting depth will be @ 450' as per approved APD.
Cmt to sfc with 450 sx Class C + 2% CaCl2 @ 14.8/1.35 yield
75% excess on OH

Intermediate casing section:
Drill 12-1/4" hole to 2525'
Run 9-5/8" 36# J-55 STC csg to 2525'
Cmt to surface in 1 stg with:
Lead: 600 sx Class C + 4% Gel + 2% CaCl2 @ 13.5 ppg/1.75 yield
Tail: 250 sx Class C + 2% CaCl2 @ 14.8/1.35 yield

Accepted for record
NMOCD.

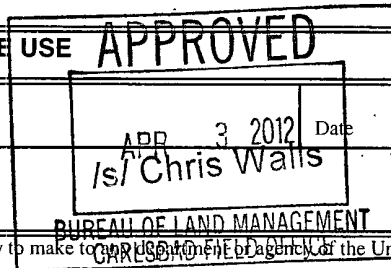
10/9/2012



14. I hereby certify that the foregoing is true and correct.	
Electronic Submission #134348 verified by the BLM Well Information System For COG PRODUCTION LLC, sent to the Carlsbad Committed to AFMSS for processing by KURT SIMMONS on 03/30/2012 ()	
Name (Printed/Typed) DEBORA WILBOURN	Title DRLG ENGINEERING TECH
Signature (Electronic Submission)	Date 03/30/2012

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By	Title
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



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, agency, or the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

**** OPERATOR-SUBMITTED ** OPERATOR-SUBMITTED ** OPERATOR-SUBMITTED ****

Cottonmouth 23 Federal #1H Sundry

COG respectfully request the following changes:

Surface Casing setting depth will be @ 425' ⁴⁵⁰ as per approved APD.
Cmt to sfc with 450 sx Class C + 2% CaCl₂ @ 14.8/1.35 yield
75% excess on OH

Intermediate casing section:

Drill 12-1/4" hole to 2525'

Run 9-5/8" 36# J-55 STC csg to 2525'

Cmt to surface in 1 stg with:

Lead: 600 sx Class C + 4% Gel + 2% CaCl₂ @ 13.5 ppg/1.75 yield

Tail: 250 sx Class C + 2% CaCl₂ @ 14.8/1.35 yield

75% excess on OH

Production casing section:

Drill 7-7/8" hole to 7643'

See attached revised directional plan

Kick off and drill 7-7/8" curve & lateral to +/- 12,852' MD (+/-8120' TVD).

Run 5-1/2" 17# P-110 LTC csg to TD

Cmt in 1 state with:

Lead: 1050 sx 35:65:6 H + Salt + Gilsonite + CF + CFR-3 @ 12.7 ppg/1.89 yield

Tail: 1000 sx 50:50:2 H + Salt + GasStop + CFR-3 @ 14.4/1.25 yield

Minimum tie back to 200' into 9-5/8" csg shoe (designed to circ cmt to sfc)

35% excess on OH



COG Operating LLC

Eddy County(NAD83)

Cottonmouth 23 Federal Com

#1H

OH

Plan: Plan #1

Pathfinder X & Y Report

29 March, 2012

PATHFINDER[®]
A Schlumberger Company



Pathfinder
Pathfinder X & Y Report

PATHFINDER®

A Schlumberger Company

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #1H:
Project:	Eddy County (NAD83)	TVD Reference:	KB = 18' @ 2963.0usft (Original Well Elev)
Site:	Cottonmouth 23 Federal Com	MD Reference:	KB = 18' @ 2963.0usft (Original Well Elev)
Well:	#1H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1	Database:	EDM/5000 ft Single User Db

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

Site		Cottonmouth 23 Federal Com					
Site Position:		Northing:		376,633.453 usft	Latitude:	32° 2' 6.538 N	
From:	Map	Easting:		626,242.434 usft	Longitude:	104° 3' 33.594 W	
Position Uncertainty:		0.0 usft	Slot Radius:		13-3/16 "	Grid Convergence:	0.15 °

Well:		#1H				
Well Position	+N/-S	0 0 usft	Northing:	376,633 453 usft	Latitude:	32° 2' 6 538 N
	+E/-W	0 0 usft	Easting:	626,242 434 usft	Longitude:	104° 3' 33 594 W
Position Uncertainty	0 0 usft		Wellhead Elevation:	usft	Ground Level:	2,945 0 usft

Wellbore		OH			
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	3/28/2012	7.69	59.93	48,414

Design:		Plan #1		
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0 0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction
	(usft)	(usft)	(usft)	(°)
	0 0	0 0	0 0	180 90

Survey Tool Program		Date: 3/29/2012		
From	To	Survey (Wellbore)	Tool Name	Description
(usft)	(usft)			
0.0	12,852.0	Plan #1 (OH)	MWD	MWD - Standard



Pathfinder
Pathfinder X & Y Report

PATHFINDER
A Schlumberger Company

Company: COG Operating, LLC
Project: Eddy County (NAD83)
Site: Cottonmouth 23 Federal Com
Well: #1H
Wellbore: OH
Design: Plan #1

Local Co-ordinate Reference:
TVD Reference:
MD Reference:
North Reference:
Survey Calculation Method:
Database:

Well #1H
KB = 18' @ 2963.0usft (Original Well Elev)
KB = 18' @ 2963.0usft (Original Well Elev)
Grid
Minimum Curvature
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)
0 0	0 00	0 00	0 0	-2,963 0	0 0	0 0	0 0	0 00	376,633 45	626,242 43
100 0	0 00	0 00	100 0	-2,863 0	0 0	0 0	0 0	0 00	376,633 45	626,242 43
200 0	0 00	0 00	200 0	-2,763 0	0 0	0 0	0 0	0 00	376,633 45	626,242 43
300 0	0 00	0 00	300 0	-2,663 0	0 0	0 0	0 0	0 00	376,633 45	626,242 43
400 0	0 00	0 00	400 0	-2,563 0	0 0	0 0	0 0	0 00	376,633 45	626,242 43
500 0	0 00	0 00	500 0	-2,463 0	0 0	0 0	0 0	0 00	376,633 45	626,242 43
600 0	0 00	0 00	600 0	-2,363 0	0 0	0 0	0 0	0 00	376,633 45	626,242 43
700 0	0 00	0 00	700 0	-2,263 0	0 0	0 0	0 0	0 00	376,633 45	626,242 43
800 0	0 00	0 00	800 0	-2,163 0	0 0	0 0	0 0	0 00	376,633 45	626,242 43
900 0	0 00	0 00	900 0	-2,063 0	0 0	0 0	0 0	0 00	376,633 45	626,242 43
1,000 0	0 00	0 00	1,000 0	-1,963 0	0 0	0 0	0 0	0 00	376,633 45	626,242 43
1,100 0	0 00	0 00	1,100 0	-1,863 0	0 0	0 0	0 0	0 00	376,633 45	626,242 43
1,200 0	0 00	0 00	1,200 0	-1,763 0	0 0	0 0	0 0	0 00	376,633 45	626,242 43
1,300 0	0 00	0 00	1,300 0	-1,663 0	0 0	0 0	0 0	0 00	376,633 45	626,242 43
1,400 0	0 00	0 00	1,400 0	-1,563 0	0 0	0 0	0 0	0 00	376,633 45	626,242 43
1,500 0	0 00	0 00	1,500 0	-1,463 0	0 0	0 0	0 0	0 00	376,633 45	626,242 43
1,600 0	0 00	0 00	1,600 0	-1,363 0	0 0	0 0	0 0	0 00	376,633 45	626,242 43
1,700 0	0 00	0 00	1,700 0	-1,263 0	0 0	0 0	0 0	0 00	376,633 45	626,242 43
1,800 0	0 00	0 00	1,800 0	-1,163 0	0 0	0 0	0 0	0 00	376,633 45	626,242 43
1,900 0	0 00	0 00	1,900 0	-1,063 0	0 0	0 0	0 0	0 00	376,633 45	626,242 43
2,000 0	0 00	0 00	2,000 0	-963 0	0 0	0 0	0 0	0 00	376,633 45	626,242 43
2,100 0	0 00	0 00	2,100 0	-863 0	0 0	0 0	0 0	0 00	376,633 45	626,242 43
2,200 0	0 00	0 00	2,200 0	-763 0	0 0	0 0	0 0	0 00	376,633 45	626,242 43
2,300 0	0 00	0 00	2,300 0	-663 0	0 0	0 0	0 0	0 00	376,633 45	626,242 43
2,400 0	0 00	0 00	2,400 0	-563 0	0 0	0 0	0 0	0 00	376,633 45	626,242 43
2,500 0	0 00	0 00	2,500 0	-463 0	0 0	0 0	0 0	0 00	376,633 45	626,242 43
2,600 0	0 00	0 00	2,600 0	-363 0	0 0	0 0	0 0	0 00	376,633 45	626,242 43



Pathfinder
Pathfinder X & Y Report

PATHFINDER
A Schlumberger Company

Company: COG Operating LLC
Project: Eddy County(NAD83)
Site: Cottonmouth 23 Federal Com
Well: #1H
Wellbore: OH
Design: Plan #1

Local Co-ordinate Reference:
TVD Reference:
MD Reference:
North Reference:
Survey Calculation Method:
Database:

Well #1H
KB: = 18' @ 2963.0usft (Original Well Elev)
KB: = 18' @ 2963.0usft (Original Well Elev)
Grid:
Minimum Curvature
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)	
2,700.0	0.00	0.00	2,700.0	-263.0	0.0	0.0	0.0	0.00	376,633.45	626,242.43	
2,800.0	0.00	0.00	2,800.0	-163.0	0.0	0.0	0.0	0.00	376,633.45	626,242.43	
2,900.0	0.00	0.00	2,900.0	-63.0	0.0	0.0	0.0	0.00	376,633.45	626,242.43	
3,000.0	0.00	0.00	3,000.0	37.0	0.0	0.0	0.0	0.00	376,633.45	626,242.43	
3,100.0	0.00	0.00	3,100.0	137.0	0.0	0.0	0.0	0.00	376,633.45	626,242.43	
3,200.0	0.00	0.00	3,200.0	237.0	0.0	0.0	0.0	0.00	376,633.45	626,242.43	
3,300.0	0.00	0.00	3,300.0	337.0	0.0	0.0	0.0	0.00	376,633.45	626,242.43	
3,400.0	0.00	0.00	3,400.0	437.0	0.0	0.0	0.0	0.00	376,633.45	626,242.43	
3,500.0	0.00	0.00	3,500.0	537.0	0.0	0.0	0.0	0.00	376,633.45	626,242.43	
3,600.0	0.00	0.00	3,600.0	637.0	0.0	0.0	0.0	0.00	376,633.45	626,242.43	
3,700.0	0.00	0.00	3,700.0	737.0	0.0	0.0	0.0	0.00	376,633.45	626,242.43	
3,800.0	0.00	0.00	3,800.0	837.0	0.0	0.0	0.0	0.00	376,633.45	626,242.43	
3,900.0	0.00	0.00	3,900.0	937.0	0.0	0.0	0.0	0.00	376,633.45	626,242.43	
4,000.0	0.00	0.00	4,000.0	1,037.0	0.0	0.0	0.0	0.00	376,633.45	626,242.43	
4,100.0	0.00	0.00	4,100.0	1,137.0	0.0	0.0	0.0	0.00	376,633.45	626,242.43	
4,200.0	0.00	0.00	4,200.0	1,237.0	0.0	0.0	0.0	0.00	376,633.45	626,242.43	
4,300.0	0.00	0.00	4,300.0	1,337.0	0.0	0.0	0.0	0.00	376,633.45	626,242.43	
4,400.0	0.00	0.00	4,400.0	1,437.0	0.0	0.0	0.0	0.00	376,633.45	626,242.43	
4,500.0	0.00	0.00	4,500.0	1,537.0	0.0	0.0	0.0	0.00	376,633.45	626,242.43	
4,600.0	0.00	0.00	4,600.0	1,637.0	0.0	0.0	0.0	0.00	376,633.45	626,242.43	
4,700.0	0.00	0.00	4,700.0	1,737.0	0.0	0.0	0.0	0.00	376,633.45	626,242.43	
4,800.0	0.00	0.00	4,800.0	1,837.0	0.0	0.0	0.0	0.00	376,633.45	626,242.43	
4,900.0	0.00	0.00	4,900.0	1,937.0	0.0	0.0	0.0	0.00	376,633.45	626,242.43	
5,000.0	0.00	0.00	5,000.0	2,037.0	0.0	0.0	0.0	0.00	376,633.45	626,242.43	
5,100.0	0.00	0.00	5,100.0	2,137.0	0.0	0.0	0.0	0.00	376,633.45	626,242.43	
5,200.0	0.00	0.00	5,200.0	2,237.0	0.0	0.0	0.0	0.00	376,633.45	626,242.43	
5,300.0	0.00	0.00	5,300.0	2,337.0	0.0	0.0	0.0	0.00	376,633.45	626,242.43	



Pathfinder
Pathfinder X & Y Report



A Schlumberger Company

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #1H
Project:	Eddy County (NAD83)	TVD Reference:	KB = 18' @ 2963.0usft (Original Well Elev)
Site:	Cottonmouth 23 Federal Com	MD Reference:	KB = 18' @ 2963.0usft (Original Well Elev)
Well:	#1H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1	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)	
5,400.0	0.00	0.00	5,400.0	2,437.0	0.0	0.0	0.0	0.00	376,633.45	626,242.43	
5,500.0	0.00	0.00	5,500.0	2,537.0	0.0	0.0	0.0	0.00	376,633.45	626,242.43	
5,600.0	0.00	0.00	5,600.0	2,637.0	0.0	0.0	0.0	0.00	376,633.45	626,242.43	
5,700.0	0.00	0.00	5,700.0	2,737.0	0.0	0.0	0.0	0.00	376,633.45	626,242.43	
5,800.0	0.00	0.00	5,800.0	2,837.0	0.0	0.0	0.0	0.00	376,633.45	626,242.43	
5,900.0	0.00	0.00	5,900.0	2,937.0	0.0	0.0	0.0	0.00	376,633.45	626,242.43	
6,000.0	0.00	0.00	6,000.0	3,037.0	0.0	0.0	0.0	0.00	376,633.45	626,242.43	
6,100.0	0.00	0.00	6,100.0	3,137.0	0.0	0.0	0.0	0.00	376,633.45	626,242.43	
6,200.0	0.00	0.00	6,200.0	3,237.0	0.0	0.0	0.0	0.00	376,633.45	626,242.43	
6,300.0	0.00	0.00	6,300.0	3,337.0	0.0	0.0	0.0	0.00	376,633.45	626,242.43	
6,400.0	0.00	0.00	6,400.0	3,437.0	0.0	0.0	0.0	0.00	376,633.45	626,242.43	
6,500.0	0.00	0.00	6,500.0	3,537.0	0.0	0.0	0.0	0.00	376,633.45	626,242.43	
6,600.0	0.00	0.00	6,600.0	3,637.0	0.0	0.0	0.0	0.00	376,633.45	626,242.43	
6,700.0	0.00	0.00	6,700.0	3,737.0	0.0	0.0	0.0	0.00	376,633.45	626,242.43	
6,800.0	0.00	0.00	6,800.0	3,837.0	0.0	0.0	0.0	0.00	376,633.45	626,242.43	
6,900.0	0.00	0.00	6,900.0	3,937.0	0.0	0.0	0.0	0.00	376,633.45	626,242.43	
7,000.0	0.00	0.00	7,000.0	4,037.0	0.0	0.0	0.0	0.00	376,633.45	626,242.43	
7,100.0	0.00	0.00	7,100.0	4,137.0	0.0	0.0	0.0	0.00	376,633.45	626,242.43	
7,200.0	0.00	0.00	7,200.0	4,237.0	0.0	0.0	0.0	0.00	376,633.45	626,242.43	
7,300.0	0.00	0.00	7,300.0	4,337.0	0.0	0.0	0.0	0.00	376,633.45	626,242.43	
7,400.0	0.00	0.00	7,400.0	4,437.0	0.0	0.0	0.0	0.00	376,633.45	626,242.43	
7,500.0	0.00	0.00	7,500.0	4,537.0	0.0	0.0	0.0	0.00	376,633.45	626,242.43	
7,600.0	0.00	0.00	7,600.0	4,637.0	0.0	0.0	0.0	0.00	376,633.45	626,242.43	
7,642.5	0.00	0.00	7,642.5	4,679.5	0.0	0.0	0.0	0.00	376,633.45	626,242.43	
7,650.0	0.90	180.90	7,650.0	4,687.0	-0.1	0.0	0.1	12.00	376,633.39	626,242.43	
7,675.0	3.90	180.90	7,675.0	4,712.0	-1.1	0.0	1.1	12.00	376,632.35	626,242.42	
7,700.0	6.90	180.90	7,699.9	4,736.9	-3.5	-0.1	3.5	12.00	376,630.00	626,242.38	



Pathfinder
Pathfinder X & Y Report

PATHFINDER
A Schlumberger Company

Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well #1H
Project:	Eddy County (NAD83)	TVD Reference:	KB = 18' @ 2963.0usft (Original Well Elev)
Site:	Cottonmouth, 23 Federal Com	MD Reference:	KB = 18' @ 2963.0usft (Original Well Elev)
Well:	#1H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1	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)
7,725.0	9.90	180.90	7,724.6	4,761.6	-7.1	-0.1	7.1	12.00	376,626.34	626,242.32
7,750.0	12.90	180.90	7,749.1	4,786.1	-12.0	-0.2	12.1	12.00	376,621.40	626,242.25
7,775.0	15.90	180.90	7,773.3	4,810.3	-18.3	-0.3	18.3	12.00	376,615.19	626,242.15
7,800.0	18.90	180.90	7,797.2	4,834.2	-25.7	-0.4	25.7	12.00	376,607.71	626,242.03
7,825.0	21.90	180.90	7,820.6	4,857.6	-34.5	-0.5	34.5	12.00	376,599.00	626,241.89
7,850.0	24.90	180.90	7,843.5	4,880.5	-44.4	-0.7	44.4	12.00	376,589.08	626,241.74
7,875.0	27.90	180.90	7,865.9	4,902.9	-55.5	-0.9	55.5	12.00	376,577.96	626,241.57
7,900.0	30.90	180.90	7,887.7	4,924.7	-67.8	-1.1	67.8	12.00	376,565.69	626,241.37
7,925.0	33.90	180.90	7,908.8	4,945.8	-81.2	-1.3	81.2	12.00	376,552.30	626,241.16
7,950.0	36.90	180.90	7,929.2	4,966.2	-95.6	-1.5	95.6	12.00	376,537.82	626,240.94
7,975.0	39.90	180.90	7,948.8	4,985.8	-111.2	-1.7	111.2	12.00	376,522.30	626,240.69
8,000.0	42.90	180.90	7,967.5	5,004.5	-127.7	-2.0	127.7	12.00	376,505.77	626,240.43
8,025.0	45.90	180.90	7,985.4	5,022.4	-145.2	-2.3	145.2	12.00	376,488.28	626,240.16
8,050.0	48.90	180.90	8,002.3	5,039.3	-163.6	-2.6	163.6	12.00	376,469.88	626,239.87
8,075.0	51.90	180.90	8,018.2	5,055.2	-182.8	-2.9	182.9	12.00	376,450.62	626,239.57
8,100.0	54.90	180.90	8,033.1	5,070.1	-202.9	-3.2	202.9	12.00	376,430.56	626,239.26
8,125.0	57.90	180.90	8,047.0	5,084.0	-223.7	-3.5	223.7	12.00	376,409.74	626,238.93
8,150.0	60.90	180.90	8,059.7	5,096.7	-245.2	-3.8	245.3	12.00	376,388.23	626,238.59
8,175.0	63.90	180.90	8,071.3	5,108.3	-267.4	-4.2	267.4	12.00	376,366.08	626,238.25
8,200.0	66.90	180.90	8,081.7	5,118.7	-290.1	-4.5	290.1	12.00	376,343.35	626,237.89
8,225.0	69.90	180.90	8,090.9	5,127.9	-313.3	-4.9	313.4	12.00	376,320.11	626,237.53
8,250.0	72.90	180.90	8,098.9	5,135.9	-337.0	-5.3	337.1	12.00	376,296.42	626,237.16
8,275.0	75.90	180.90	8,105.6	5,142.6	-361.1	-5.7	361.1	12.00	376,272.35	626,236.78
8,300.0	78.90	180.90	8,111.0	5,148.0	-385.5	-6.0	385.5	12.00	376,247.96	626,236.40
8,325.0	81.90	180.90	8,115.2	5,152.2	-410.1	-6.4	410.2	12.00	376,223.31	626,236.01
8,350.0	84.90	180.90	8,118.1	5,155.1	-435.0	-6.8	435.0	12.00	376,198.49	626,235.62
8,375.0	87.90	180.90	8,119.6	5,156.6	-459.9	-7.2	460.0	12.00	376,173.54	626,235.23



Pathfinder
Pathfinder X & Y Report



A Schlumberger Company

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #1H
Project:	Eddy County (NAD83)	TVD Reference:	KB = .18 @ 2963.0usft (Original Well Elev)
Site:	Cottonmouth 23 Federal Com	MD Reference:	KB = .18 @ 2963.0usft (Original Well Elev)
Well:	#1H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1	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)	
8,392.5	90.00	180.90	8,120.0	5,157.0	-477.4	-7.5	477.5	12.00	376,156.05	626,234.96	
8,400.0	90.00	180.90	8,120.0	5,157.0	-484.9	-7.6	485.0	0.00	376,148.55	626,234.84	
8,500.0	90.00	180.90	8,120.0	5,157.0	-584.9	-9.2	585.0	0.00	376,048.56	626,233.28	
8,600.0	90.00	180.90	8,120.0	5,157.0	-684.9	-10.7	685.0	0.00	375,948.57	626,231.71	
8,700.0	90.00	180.90	8,120.0	5,157.0	-784.9	-12.3	785.0	0.00	375,848.58	626,230.14	
8,800.0	90.00	180.90	8,120.0	5,157.0	-884.9	-13.9	885.0	0.00	375,748.60	626,228.58	
8,900.0	90.00	180.90	8,120.0	5,157.0	-984.8	-15.4	985.0	0.00	375,648.61	626,227.01	
9,000.0	90.00	180.90	8,120.0	5,157.0	-1,084.8	-17.0	1,085.0	0.00	375,548.62	626,225.45	
9,100.0	90.00	180.90	8,120.0	5,157.0	-1,184.8	-18.6	1,185.0	0.00	375,448.63	626,223.88	
9,200.0	90.00	180.90	8,120.0	5,157.0	-1,284.8	-20.1	1,285.0	0.00	375,348.65	626,222.32	
9,300.0	90.00	180.90	8,120.0	5,157.0	-1,384.8	-21.7	1,385.0	0.00	375,248.66	626,220.75	
9,400.0	90.00	180.90	8,120.0	5,157.0	-1,484.8	-23.2	1,485.0	0.00	375,148.67	626,219.18	
9,500.0	90.00	180.90	8,120.0	5,157.0	-1,584.8	-24.8	1,585.0	0.00	375,048.68	626,217.62	
9,600.0	90.00	180.90	8,120.0	5,157.0	-1,684.8	-26.4	1,685.0	0.00	374,948.69	626,216.05	
9,700.0	90.00	180.90	8,120.0	5,157.0	-1,784.7	-27.9	1,785.0	0.00	374,848.71	626,214.49	
9,800.0	90.00	180.90	8,120.0	5,157.0	-1,884.7	-29.5	1,885.0	0.00	374,748.72	626,212.92	
9,900.0	90.00	180.90	8,120.0	5,157.0	-1,984.7	-31.1	1,985.0	0.00	374,648.73	626,211.36	
10,000.0	90.00	180.90	8,120.0	5,157.0	-2,084.7	-32.6	2,085.0	0.00	374,548.74	626,209.79	
10,100.0	90.00	180.90	8,120.0	5,157.0	-2,184.7	-34.2	2,185.0	0.00	374,448.76	626,208.23	
10,200.0	90.00	180.90	8,120.0	5,157.0	-2,284.7	-35.8	2,285.0	0.00	374,348.77	626,206.66	
10,300.0	90.00	180.90	8,120.0	5,157.0	-2,384.7	-37.3	2,385.0	0.00	374,248.78	626,205.09	
10,400.0	90.00	180.90	8,120.0	5,157.0	-2,484.7	-38.9	2,485.0	0.00	374,148.79	626,203.53	
10,500.0	90.00	180.90	8,120.0	5,157.0	-2,584.6	-40.5	2,585.0	0.00	374,048.81	626,201.96	
10,600.0	90.00	180.90	8,120.0	5,157.0	-2,684.6	-42.0	2,685.0	0.00	373,948.82	626,200.40	
10,700.0	90.00	180.90	8,120.0	5,157.0	-2,784.6	-43.6	2,785.0	0.00	373,848.83	626,198.83	
10,800.0	90.00	180.90	8,120.0	5,157.0	-2,884.6	-45.2	2,885.0	0.00	373,748.84	626,197.27	
10,900.0	90.00	180.90	8,120.0	5,157.0	-2,984.6	-46.7	2,985.0	0.00	373,648.85	626,195.70	



Pathfinder
Pathfinder X & Y Report

PATHFINDER

A Schlumberger Company

Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well #1H:
Project:	Eddy County (NAD83)	TVD Reference:	KB = 18' @ 2963.0usft (Original Well Elev)
Site:	Cottonmouth 23 Federal Com	MD Reference:	KB = 18' @ 2963.0usft (Original Well Elev)
Well:	#1H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1	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)	
11,000.0	90.00	180.90	8,120.0	5,157.0	-3,084.6	-48.3	3,085.0	0.00	373,548.87	626,194.13	
11,100.0	90.00	180.90	8,120.0	5,157.0	-3,184.6	-49.9	3,185.0	0.00	373,448.88	626,192.57	
11,200.0	90.00	180.90	8,120.0	5,157.0	-3,284.6	-51.4	3,285.0	0.00	373,348.89	626,191.00	
11,300.0	90.00	180.90	8,120.0	5,157.0	-3,384.5	-53.0	3,385.0	0.00	373,248.90	626,189.44	
11,400.0	90.00	180.90	8,120.0	5,157.0	-3,484.5	-54.6	3,485.0	0.00	373,148.92	626,187.87	
11,500.0	90.00	180.90	8,120.0	5,157.0	-3,584.5	-56.1	3,585.0	0.00	373,048.93	626,186.31	
11,600.0	90.00	180.90	8,120.0	5,157.0	-3,684.5	-57.7	3,685.0	0.00	372,948.94	626,184.74	
11,700.0	90.00	180.90	8,120.0	5,157.0	-3,784.5	-59.3	3,785.0	0.00	372,848.95	626,183.18	
11,800.0	90.00	180.90	8,120.0	5,157.0	-3,884.5	-60.8	3,885.0	0.00	372,748.96	626,181.61	
11,900.0	90.00	180.90	8,120.0	5,157.0	-3,984.5	-62.4	3,985.0	0.00	372,648.98	626,180.04	
12,000.0	90.00	180.90	8,120.0	5,157.0	-4,084.5	-64.0	4,085.0	0.00	372,548.99	626,178.48	
12,100.0	90.00	180.90	8,120.0	5,157.0	-4,184.5	-65.5	4,185.0	0.00	372,449.00	626,176.91	
12,200.0	90.00	180.90	8,120.0	5,157.0	-4,284.4	-67.1	4,285.0	0.00	372,349.01	626,175.35	
12,300.0	90.00	180.90	8,120.0	5,157.0	-4,384.4	-68.7	4,385.0	0.00	372,249.03	626,173.78	
12,400.0	90.00	180.90	8,120.0	5,157.0	-4,484.4	-70.2	4,485.0	0.00	372,149.04	626,172.22	
12,500.0	90.00	180.90	8,120.0	5,157.0	-4,584.4	-71.8	4,585.0	0.00	372,049.05	626,170.65	
12,600.0	90.00	180.90	8,120.0	5,157.0	-4,684.4	-73.3	4,685.0	0.00	371,949.06	626,169.08	
12,700.0	90.00	180.90	8,120.0	5,157.0	-4,784.4	-74.9	4,785.0	0.00	371,849.07	626,167.52	
12,800.0	90.00	180.90	8,120.0	5,157.0	-4,884.4	-76.5	4,885.0	0.00	371,749.09	626,165.95	
12,852.3	90.00	180.90	8,120.0	5,157.0	-4,936.7	-77.3	4,937.3	0.00	371,696.75	626,165.13	

Checked By: _____ Approved By: _____ Date: _____