



HOBBS OCD
JAN 11 2012
RECEIVED

COG Operating LLC

Lea County(NAD83)

King Cobra 2 State

#1H

OH

Plan: Plan #2

Pathfinder X & Y Report

06 January, 2012

PATHFINDER®

A Schlumberger Company

JAN 12 2012



Pathfinder
Pathfinder X & Y Report

PATHFINDER
A Schlumberger Company

Company: COG Operating LLC		Local Co-ordinate Reference:		Well #1H	
Project: Lea County(NAD83)		TVD Reference:		KB = 17' @ 3986.0usft (Original Well Elev)	
Site: King Cobra 2 State		MD Reference:		KB = 17' @ 3986.0usft (Original Well Elev)	
Well: #1H		North Reference:		Gnd	
Wellbore: OH		Survey Calculation Method:		Minimum Curvature	
Design: Plan #2		Database:		EDM 5000.1 Single User Db	

Project Lea 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 King Cobra 2 State					
Site Position:		Northing:		Latitude:	
From: Map		617,776 300 usft		32° 41' 44 512 N	
Position Uncertainty: 0.0 usft		Easting: 790,350.200 usft		Longitude: 103° 31' 25.951 W	
		Slot Radius: 13-3/16 "		Grid Convergence: 0.44 °	

Well #1H					
Well Position +N/-S 0 0 usft		Northing: 617,776 300 usft		Latitude: 32° 41' 44 512 N	
+E/-W 0 0 usft		Easting: 790,350 200 usft		Longitude: 103° 31' 25.951 W	
Position Uncertainty 0 0 usft		Wellhead Elevation: usft		Ground Level: 3,969.0 usft	

Wellbore OH					
Magnetics:	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	11/29/2011	7 53	60.64	48,893

Design Plan #2					
Audit Notes:					
Version:		Phase: PLAN	Tie On Depth: 0.0		
Vertical Section:		Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
		0 0	0 0	0.0	180.29

Survey Tool Program Date 1/6/2012					
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
0.0	14,858.4	Plan #2 (OH)	MWD	MWD - Standard	



Pathfinder
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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	-3,986.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20	
100.0	0.00	0.00	100.0	-3,886.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20	
200.0	0.00	0.00	200.0	-3,786.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20	
300.0	0.00	0.00	300.0	-3,686.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20	
400.0	0.00	0.00	400.0	-3,586.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20	
500.0	0.00	0.00	500.0	-3,486.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20	
600.0	0.00	0.00	600.0	-3,386.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20	
700.0	0.00	0.00	700.0	-3,286.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20	
800.0	0.00	0.00	800.0	-3,186.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20	
900.0	0.00	0.00	900.0	-3,086.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20	
1,000.0	0.00	0.00	1,000.0	-2,986.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20	
1,100.0	0.00	0.00	1,100.0	-2,886.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20	
1,200.0	0.00	0.00	1,200.0	-2,786.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20	
1,300.0	0.00	0.00	1,300.0	-2,686.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20	
1,400.0	0.00	0.00	1,400.0	-2,586.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20	
1,500.0	0.00	0.00	1,500.0	-2,486.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20	
1,600.0	0.00	0.00	1,600.0	-2,386.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20	
1,700.0	0.00	0.00	1,700.0	-2,286.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20	
1,800.0	0.00	0.00	1,800.0	-2,186.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20	
1,900.0	0.00	0.00	1,900.0	-2,086.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20	
2,000.0	0.00	0.00	2,000.0	-1,986.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20	
2,100.0	0.00	0.00	2,100.0	-1,886.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20	
2,200.0	0.00	0.00	2,200.0	-1,786.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20	
2,300.0	0.00	0.00	2,300.0	-1,686.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20	
2,400.0	0.00	0.00	2,400.0	-1,586.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20	
2,500.0	0.00	0.00	2,500.0	-1,486.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20	
2,600.0	0.00	0.00	2,600.0	-1,386.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20	



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Pathfinder X & Y Report

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Well:	#1H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Plan #2	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)
2,700.0	0.00	0.00	2,700.0	-1,286.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20
2,800.0	0.00	0.00	2,800.0	-1,186.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20
2,900.0	0.00	0.00	2,900.0	-1,086.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20
3,000.0	0.00	0.00	3,000.0	-986.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20
3,100.0	0.00	0.00	3,100.0	-886.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20
3,200.0	0.00	0.00	3,200.0	-786.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20
3,300.0	0.00	0.00	3,300.0	-686.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20
3,400.0	0.00	0.00	3,400.0	-586.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20
3,500.0	0.00	0.00	3,500.0	-486.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20
3,600.0	0.00	0.00	3,600.0	-386.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20
3,700.0	0.00	0.00	3,700.0	-286.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20
3,800.0	0.00	0.00	3,800.0	-186.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20
3,900.0	0.00	0.00	3,900.0	-86.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20
4,000.0	0.00	0.00	4,000.0	14.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20
4,100.0	0.00	0.00	4,100.0	114.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20
4,200.0	0.00	0.00	4,200.0	214.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20
4,300.0	0.00	0.00	4,300.0	314.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20
4,400.0	0.00	0.00	4,400.0	414.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20
4,500.0	0.00	0.00	4,500.0	514.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20
4,600.0	0.00	0.00	4,600.0	614.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20
4,700.0	0.00	0.00	4,700.0	714.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20
4,800.0	0.00	0.00	4,800.0	814.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20
4,900.0	0.00	0.00	4,900.0	914.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20
5,000.0	0.00	0.00	5,000.0	1,014.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20
5,100.0	0.00	0.00	5,100.0	1,114.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20
5,200.0	0.00	0.00	5,200.0	1,214.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20
5,300.0	0.00	0.00	5,300.0	1,314.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20



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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	1,414.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20	
5,500.0	0.00	0.00	5,500.0	1,514.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20	
5,600.0	0.00	0.00	5,600.0	1,614.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20	
5,700.0	0.00	0.00	5,700.0	1,714.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20	
5,800.0	0.00	0.00	5,800.0	1,814.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20	
5,900.0	0.00	0.00	5,900.0	1,914.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20	
6,000.0	0.00	0.00	6,000.0	2,014.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20	
6,100.0	0.00	0.00	6,100.0	2,114.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20	
6,200.0	0.00	0.00	6,200.0	2,214.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20	
6,300.0	0.00	0.00	6,300.0	2,314.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20	
6,400.0	0.00	0.00	6,400.0	2,414.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20	
6,500.0	0.00	0.00	6,500.0	2,514.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20	
6,600.0	0.00	0.00	6,600.0	2,614.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20	
6,700.0	0.00	0.00	6,700.0	2,714.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20	
6,800.0	0.00	0.00	6,800.0	2,814.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20	
6,900.0	0.00	0.00	6,900.0	2,914.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20	
7,000.0	0.00	0.00	7,000.0	3,014.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20	
7,100.0	0.00	0.00	7,100.0	3,114.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20	
7,200.0	0.00	0.00	7,200.0	3,214.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20	
7,300.0	0.00	0.00	7,300.0	3,314.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20	
7,400.0	0.00	0.00	7,400.0	3,414.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20	
7,500.0	0.00	0.00	7,500.0	3,514.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20	
7,600.0	0.00	0.00	7,600.0	3,614.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20	
7,700.0	0.00	0.00	7,700.0	3,714.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20	
7,800.0	0.00	0.00	7,800.0	3,814.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20	
7,900.0	0.00	0.00	7,900.0	3,914.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20	
8,000.0	0.00	0.00	8,000.0	4,014.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20	



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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)	
8,100.0	0.00	0.00	8,100.0	4,114.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20	
8,200.0	0.00	0.00	8,200.0	4,214.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20	
8,300.0	0.00	0.00	8,300.0	4,314.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20	
8,400.0	0.00	0.00	8,400.0	4,414.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20	
8,500.0	0.00	0.00	8,500.0	4,514.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20	
8,600.0	0.00	0.00	8,600.0	4,614.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20	
8,700.0	0.00	0.00	8,700.0	4,714.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20	
8,800.0	0.00	0.00	8,800.0	4,814.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20	
8,900.0	0.00	0.00	8,900.0	4,914.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20	
9,000.0	0.00	0.00	9,000.0	5,014.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20	
9,100.0	0.00	0.00	9,100.0	5,114.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20	
9,200.0	0.00	0.00	9,200.0	5,214.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20	
9,300.0	0.00	0.00	9,300.0	5,314.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20	
9,400.0	0.00	0.00	9,400.0	5,414.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20	
9,500.0	0.00	0.00	9,500.0	5,514.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20	
9,600.0	0.00	0.00	9,600.0	5,614.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20	
9,700.0	0.00	0.00	9,700.0	5,714.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20	
9,800.0	0.00	0.00	9,800.0	5,814.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20	
9,900.0	0.00	0.00	9,900.0	5,914.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20	
10,000.0	0.00	0.00	10,000.0	6,014.0	0.0	0.0	0.0	0.00	617,776.30	790,350.20	
10,097.5	0.00	0.00	10,097.5	6,111.5	0.0	0.0	0.0	0.00	617,776.30	790,350.20	
10,100.0	0.30	180.29	10,100.0	6,114.0	0.0	0.0	0.0	12.00	617,776.29	790,350.20	
10,125.0	3.30	180.29	10,125.0	6,139.0	-0.8	0.0	0.8	12.00	617,775.51	790,350.20	
10,150.0	6.30	180.29	10,149.9	6,163.9	-2.9	0.0	2.9	12.00	617,773.42	790,350.19	
10,175.0	9.30	180.29	10,174.7	6,188.7	-6.3	0.0	6.3	12.00	617,770.02	790,350.17	
10,200.0	12.30	180.29	10,199.2	6,213.2	-11.0	-0.1	11.0	12.00	617,765.34	790,350.14	
10,225.0	15.30	180.29	10,223.5	6,237.5	-16.9	-0.1	16.9	12.00	617,759.38	790,350.11	



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10,250.0	18.30	180.29	10,247.4	6,261.4	-24.1	-0.1	24.1	12.00	617,752.15	790,350.08
10,275.0	21.30	180.29	10,270.9	6,264.9	-32.6	-0.2	32.6	12.00	617,743.69	790,350.04
10,300.0	24.30	180.29	10,294.0	6,308.0	-42.3	-0.2	42.3	12.00	617,734.00	790,349.99
10,325.0	27.30	180.29	10,316.5	6,330.5	-53.2	-0.3	53.2	12.00	617,723.12	790,349.93
10,350.0	30.30	180.29	10,338.4	6,352.4	-65.2	-0.3	65.2	12.00	617,711.08	790,349.87
10,375.0	33.30	180.29	10,359.6	6,373.6	-78.4	-0.4	78.4	12.00	617,697.90	790,349.80
10,400.0	36.30	180.29	10,380.2	6,394.2	-92.7	-0.5	92.7	12.00	617,683.64	790,349.73
10,425.0	39.30	180.29	10,399.9	6,413.9	-108.0	-0.5	108.0	12.00	617,668.32	790,349.66
10,450.0	42.30	180.29	10,418.8	6,432.8	-124.3	-0.6	124.3	12.00	617,651.98	790,349.57
10,475.0	45.30	180.29	10,436.9	6,450.9	-141.6	-0.7	141.6	12.00	617,634.68	790,349.49
10,500.0	48.30	180.29	10,454.0	6,468.0	-159.8	-0.8	159.8	12.00	617,616.46	790,349.39
10,525.0	51.30	180.29	10,470.1	6,484.1	-178.9	-0.9	178.9	12.00	617,597.37	790,349.30
10,550.0	54.30	180.29	10,485.2	6,499.2	-198.8	-1.0	198.8	12.00	617,577.46	790,349.20
10,575.0	57.30	180.29	10,499.3	6,513.3	-219.5	-1.1	219.5	12.00	617,556.78	790,349.09
10,600.0	60.30	180.29	10,512.2	6,526.2	-240.9	-1.2	240.9	12.00	617,535.40	790,348.99
10,625.0	63.30	180.29	10,524.1	6,538.1	-262.9	-1.3	262.9	12.00	617,513.37	790,348.87
10,650.0	66.30	180.29	10,534.7	6,548.7	-285.5	-1.4	285.5	12.00	617,490.75	790,348.76
10,675.0	69.30	180.29	10,544.1	6,558.1	-308.7	-1.6	308.7	12.00	617,467.61	790,348.64
10,700.0	72.30	180.29	10,552.4	6,566.4	-332.3	-1.7	332.3	12.00	617,444.00	790,348.52
10,725.0	75.30	180.29	10,559.3	6,573.3	-356.3	-1.8	356.3	12.00	617,420.00	790,348.40
10,750.0	78.30	180.29	10,565.0	6,579.0	-380.6	-1.9	380.6	12.00	617,395.66	790,348.28
10,775.0	81.30	180.29	10,569.5	6,583.5	-405.2	-2.0	405.2	12.00	617,371.06	790,348.16
10,800.0	84.30	180.29	10,572.6	6,586.6	-430.0	-2.2	430.0	12.00	617,346.26	790,348.03
10,825.0	87.30	180.29	10,574.4	6,588.4	-455.0	-2.3	455.0	12.00	617,321.33	790,347.91
10,844.5	89.64	180.29	10,575.0	6,589.0	-474.5	-2.4	474.5	12.00	617,301.82	790,347.81
10,900.0	89.64	180.29	10,575.3	6,589.3	-530.0	-2.7	530.0	0.00	617,246.34	790,347.53
11,000.0	89.64	180.29	10,575.9	6,589.9	-630.0	-3.2	630.0	0.00	617,146.35	790,347.02



Pathfinder
Pathfinder X & Y Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #1H
Project:	Lea County(NAD83)	TVD Reference:	KB = 17' @ 3986.0usft (Original Well Elev)
Site:	King Cobra 2 State	MD Reference:	KB = 17' @ 3986.0usft (Original Well Elev)
Well:	#1H	North Reference:	Gnd
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Plan #2	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)
11,100.0	89.64	180.29	10,576.5	6,590.5	-730.0	-3.7	730.0	0.00	617,046.35	790,346.52
11,200.0	89.64	180.29	10,577.2	6,591.2	-829.9	-4.2	830.0	0.00	616,946.35	790,346.02
11,300.0	89.64	180.29	10,577.8	6,591.8	-929.9	-4.7	930.0	0.00	616,846.36	790,345.51
11,400.0	89.64	180.29	10,578.4	6,592.4	-1,029.9	-5.2	1,030.0	0.00	616,746.36	790,345.01
11,500.0	89.64	180.29	10,579.0	6,593.0	-1,129.9	-5.7	1,130.0	0.00	616,646.36	790,344.50
11,600.0	89.64	180.29	10,579.7	6,593.7	-1,229.9	-6.2	1,230.0	0.00	616,546.37	790,344.00
11,700.0	89.64	180.29	10,580.3	6,594.3	-1,329.9	-6.7	1,329.9	0.00	616,446.37	790,343.49
11,800.0	89.64	180.29	10,580.9	6,594.9	-1,429.9	-7.2	1,429.9	0.00	616,346.37	790,342.99
11,900.0	89.64	180.29	10,581.5	6,595.5	-1,529.9	-7.7	1,529.9	0.00	616,246.38	790,342.49
12,000.0	89.64	180.29	10,582.2	6,596.2	-1,629.9	-8.2	1,629.9	0.00	616,146.38	790,341.98
12,100.0	89.64	180.29	10,582.8	6,596.8	-1,729.9	-8.7	1,729.9	0.00	616,046.38	790,341.48
12,200.0	89.64	180.29	10,583.4	6,597.4	-1,829.9	-9.2	1,829.9	0.00	615,946.38	790,340.97
12,300.0	89.64	180.29	10,584.0	6,598.0	-1,929.9	-9.7	1,929.9	0.00	615,846.39	790,340.47
12,400.0	89.64	180.29	10,584.7	6,598.7	-2,029.9	-10.2	2,029.9	0.00	615,746.39	790,339.96
12,500.0	89.64	180.29	10,585.3	6,599.3	-2,129.9	-10.7	2,129.9	0.00	615,646.39	790,339.46
12,600.0	89.64	180.29	10,585.9	6,599.9	-2,229.9	-11.2	2,229.9	0.00	615,546.40	790,338.96
12,700.0	89.64	180.29	10,586.5	6,600.5	-2,329.9	-11.7	2,329.9	0.00	615,446.40	790,338.45
12,800.0	89.64	180.29	10,587.2	6,601.2	-2,429.9	-12.3	2,429.9	0.00	615,346.40	790,337.95
12,900.0	89.64	180.29	10,587.8	6,601.8	-2,529.9	-12.8	2,529.9	0.00	615,246.41	790,337.44
13,000.0	89.64	180.29	10,588.4	6,602.4	-2,629.9	-13.3	2,629.9	0.00	615,146.41	790,336.94
13,100.0	89.64	180.29	10,589.0	6,603.0	-2,729.9	-13.8	2,729.9	0.00	615,046.41	790,336.44
13,200.0	89.64	180.29	10,589.7	6,603.7	-2,829.9	-14.3	2,829.9	0.00	614,946.42	790,335.93
13,300.0	89.64	180.29	10,590.3	6,604.3	-2,929.9	-14.8	2,929.9	0.00	614,846.42	790,335.43
13,400.0	89.64	180.29	10,590.9	6,604.9	-3,029.9	-15.3	3,029.9	0.00	614,746.42	790,334.92
13,500.0	89.64	180.29	10,591.5	6,605.5	-3,129.9	-15.8	3,129.9	0.00	614,646.43	790,334.42
13,600.0	89.64	180.29	10,592.1	6,606.1	-3,229.9	-16.3	3,229.9	0.00	614,546.43	790,333.91
13,700.0	89.64	180.29	10,592.8	6,606.8	-3,329.9	-16.8	3,329.9	0.00	614,446.43	790,333.41



Pathfinder
Pathfinder X & Y Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #1H
Project:	Lea County(NAD83)	TVD Reference:	KB = 17' @ 3986.0usft (Original Well Elev)
Site:	King Cobra 2 State	MD Reference:	KB = 17' @ 3986.0usft (Original Well Elev)
Well:	#1H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Plan #2	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)
13,800.0	89.64	180.29	10,593.4	6,607.4	-3,429.9	-17.3	3,429.9	0.00	614,346.44	790,332.91
13,900.0	89.64	180.29	10,594.0	6,608.0	-3,529.9	-17.8	3,529.9	0.00	614,246.44	790,332.40
14,000.0	89.64	180.29	10,594.6	6,608.6	-3,629.9	-18.3	3,629.9	0.00	614,146.44	790,331.90
14,100.0	89.64	180.29	10,595.3	6,609.3	-3,729.9	-18.8	3,729.9	0.00	614,046.45	790,331.39
14,200.0	89.64	180.29	10,595.9	6,609.9	-3,829.9	-19.3	3,829.9	0.00	613,946.45	790,330.89
14,300.0	89.64	180.29	10,596.5	6,610.5	-3,929.8	-19.8	3,929.9	0.00	613,846.45	790,330.39
14,400.0	89.64	180.29	10,597.1	6,611.1	-4,029.8	-20.3	4,029.9	0.00	613,746.46	790,329.88
14,500.0	89.64	180.29	10,597.8	6,611.8	-4,129.8	-20.8	4,129.9	0.00	613,646.46	790,329.38
14,600.0	89.64	180.29	10,598.4	6,612.4	-4,229.8	-21.3	4,229.9	0.00	613,546.46	790,328.87
14,700.0	89.64	180.29	10,599.0	6,613.0	-4,329.8	-21.8	4,329.9	0.00	613,446.47	790,328.37
14,800.0	89.64	180.29	10,599.6	6,613.6	-4,429.8	-22.3	4,429.9	0.00	613,346.47	790,327.86
14,858.4	89.64	180.29	10,600.0	6,614.0	-4,488.2	-22.6	4,488.3	0.00	613,288.09	790,327.57

Checked By: _____	Approved By: _____	Date: _____
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