



30-005-28000

COG Operating LLC

Chaves County
Taurus "10" Federal Com
#1
OH

Survey: MWD #1

Pathfinder X & Y Survey Report

11 August, 2010





Pathfinder
Pathfinder X & Y Survey Report



Company: COG Operating LLC
Project: Chaves County
Site: Taurus "10" Federal Com
Well: #1
Wellbore: OH
Design: OH

Local Co-ordinate Reference: Well #1
TVD Reference: WELL1 @ 4433.00ft (18' Correction)
MD Reference: WELL1 @ 4433.00ft (18' Correction)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Midland Database

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

Site	Taurus "10" Federal Com		
Site Position:		Northing:	736,670.600 ft
From: Map		Easting:	699,556.000 ft
Position Uncertainty:	0.00 ft	Slot Radius:	"
		Latitude:	33° 1' 26.537 N
		Longitude:	103° 49' 1.613 W
		Grid Convergence:	0.28 °

Well	#1					
Well Position	+N/-S	0.00 ft	Northing:	736,670.600 ft	Latitude:	33° 1' 26.537 N
	+E/-W	0.00 ft	Easting:	699,556.000 ft	Longitude:	103° 49' 1.613 W
Position Uncertainty	0.00 ft		Wellhead Elevation:	ft	Ground Level:	4,415.00 ft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	07/26/2010	7.85	60.93	49,184

Design	OH			
Audit Notes:				
Version:	1.0	Phase:	ACTUAL	Tie On Depth: 0.00
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.00	0.00	0.00	81.39



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Survey Program		Date 08/11/2010								
From (ft)	To (ft)	Survey (Wellbore)			Tool Name		Description			
100.00	7,992.00	GYRO (OH)			NS-GYRO-MS		North sensing gyrocompassing m/s			
8,057.00	13,180.00	MWD #1 (OH)			MWD		MWD - Standard			
Survey										
MD (ft)	Inc (°)	Azi (°)	TVD (ft)	TVDSS (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)	Northing (ft)	Easting (ft)
7,992.00	0.38	52.22	7,991.66	3,558.66	9.14	18.69	19.85	0.00	736,679.74	699,574.69
8,057.00	0.53	58.14	8,056.65	3,623.65	9.43	19.11	20.31	0.24	736,680.03	699,575.11
8,120.00	0.70	68.81	8,119.65	3,686.65	9.73	19.72	20.95	0.32	736,680.33	699,575.72
8,152.00	0.70	68.40	8,151.65	3,718.65	9.87	20.08	21.33	0.02	736,680.47	699,576.08
8,184.00	0.88	75.93	8,183.64	3,750.64	10.00	20.50	21.77	0.65	736,680.60	699,576.50
8,216.00	2.90	95.53	8,215.63	3,782.63	9.98	21.55	22.80	6.54	736,680.58	699,577.55
8,248.00	5.36	91.90	8,247.54	3,814.54	9.85	23.85	25.05	7.73	736,680.45	699,579.85
8,280.00	7.83	89.54	8,279.33	3,846.33	9.82	27.52	28.68	7.76	736,680.42	699,583.52
8,312.00	10.29	82.99	8,310.93	3,877.93	10.19	32.54	33.70	8.32	736,680.79	699,588.54
8,344.00	12.57	81.15	8,342.29	3,909.29	11.07	38.82	40.04	7.21	736,681.67	699,594.82
8,376.00	16.00	79.32	8,373.29	3,940.29	12.43	46.59	47.93	10.81	736,683.03	699,602.59
8,408.00	20.22	77.98	8,403.70	3,970.70	14.40	56.34	57.86	13.25	736,685.00	699,612.34
8,440.00	23.30	78.76	8,433.42	4,000.42	16.78	67.96	69.71	9.67	736,687.38	699,623.96
8,472.00	25.76	79.36	8,462.53	4,029.53	19.30	81.00	82.98	7.73	736,689.90	699,637.00
8,504.00	27.44	79.95	8,491.14	4,058.14	21.87	95.10	97.30	5.31	736,692.47	699,651.10
8,536.00	30.25	82.28	8,519.17	4,086.17	24.24	110.35	112.73	9.46	736,694.84	699,666.35
8,568.00	33.68	84.32	8,546.31	4,113.31	26.20	127.17	129.66	11.24	736,696.80	699,683.17
8,600.00	37.55	86.48	8,572.32	4,139.32	27.68	145.74	148.24	12.71	736,698.28	699,701.74
8,632.00	41.68	87.39	8,596.97	4,163.97	28.76	166.11	168.55	13.03	736,699.36	699,722.11
8,664.00	45.90	88.10	8,620.06	4,187.06	29.63	188.23	190.55	13.28	736,700.23	699,744.23
8,696.00	50.91	89.26	8,641.30	4,208.30	30.17	212.15	214.28	15.89	736,700.77	699,768.15

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Survey											
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8,727.00	54.69	89.59	8,660.04	4,227.04	30.42	236.84	238.72	12.22	736,701.02	699,792.84	
8,759.00	58.21	89.50	8,677.72	4,244.72	30.63	263.50	265.12	11.00	736,701.23	699,819.50	
8,791.00	61.38	88.64	8,693.82	4,260.82	31.08	291.15	292.52	10.17	736,701.68	699,847.15	
8,822.00	65.42	88.39	8,707.70	4,274.70	31.80	318.85	320.02	13.05	736,702.40	699,874.85	
8,854.00	70.26	87.27	8,719.77	4,286.77	32.93	348.46	349.46	15.47	736,703.53	699,904.46	
8,886.00	73.42	86.40	8,729.74	4,296.74	34.61	378.81	379.73	10.21	736,705.21	699,934.81	
8,918.00	76.33	85.63	8,738.09	4,305.09	36.76	409.63	410.51	9.39	736,707.36	699,965.63	
8,950.00	78.35	84.55	8,745.10	4,312.10	39.43	440.73	441.67	7.12	736,710.03	699,996.73	
8,982.00	80.02	83.29	8,751.10	4,318.10	42.76	471.99	473.07	6.50	736,713.36	700,027.99	
9,014.00	83.01	82.25	8,755.83	4,322.83	46.74	503.38	504.70	9.88	736,717.34	700,059.38	
9,046.00	85.30	81.39	8,759.08	4,326.08	51.27	534.89	536.53	7.64	736,721.87	700,090.89	
9,078.00	84.68	80.78	8,761.88	4,328.88	56.21	566.38	568.41	2.71	736,726.81	700,122.38	
9,110.00	84.68	80.87	8,764.85	4,331.85	61.29	597.83	600.27	0.28	736,731.89	700,153.83	
9,142.00	84.68	80.76	8,767.81	4,334.81	66.38	629.29	632.13	0.34	736,736.98	700,185.29	
9,174.00	84.94	81.07	8,770.71	4,337.71	71.41	660.76	664.00	1.26	736,742.01	700,216.76	
9,206.00	85.21	81.04	8,773.45	4,340.45	76.37	692.25	695.88	0.85	736,746.97	700,248.25	
9,238.00	85.21	80.54	8,776.13	4,343.13	81.47	723.73	727.77	1.56	736,752.07	700,279.73	
9,270.00	86.00	81.00	8,778.58	4,345.58	86.59	755.22	759.67	2.85	736,757.19	700,311.22	
9,301.00	87.49	80.78	8,780.34	4,347.34	91.49	785.78	790.62	4.86	736,762.09	700,341.78	
9,333.00	89.52	80.57	8,781.17	4,348.17	96.67	817.34	822.60	6.38	736,767.27	700,373.34	
9,365.00	90.48	81.09	8,781.17	4,348.17	101.77	848.93	854.60	3.41	736,772.37	700,404.93	
9,397.00	90.57	80.95	8,780.88	4,347.88	106.77	880.54	886.60	0.52	736,777.37	700,436.54	
9,429.00	90.31	80.66	8,780.64	4,347.64	111.88	912.13	918.60	1.22	736,782.48	700,468.13	
9,461.00	88.02	80.53	8,781.10	4,348.10	117.11	943.69	950.59	7.17	736,787.71	700,499.69	
9,493.00	86.70	79.44	8,782.58	4,349.58	122.67	975.17	982.54	5.35	736,793.27	700,531.17	
9,525.00	86.70	79.79	8,784.42	4,351.42	128.43	1,006.59	1,014.48	1.09	736,799.03	700,562.59	
9,557.00	86.53	79.36	8,786.31	4,353.31	134.21	1,038.01	1,046.40	1.44	736,804.81	700,594.01	



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9,589.00	86.88	79.29	8,788.15	4,355.15	140.12	1,069.40	1,078.33	1.12	736,810.72	700,625.40	
9,621.00	88.37	78.95	8,789.47	4,356.47	146.16	1,100.80	1,110.28	4.78	736,816.76	700,656.80	
9,653.00	88.20	79.20	8,790.43	4,357.43	152.22	1,132.21	1,142.24	0.94	736,822.82	700,688.21	
9,685.00	87.93	78.78	8,791.51	4,358.51	158.33	1,163.60	1,174.19	1.56	736,828.93	700,719.60	
9,717.00	88.29	79.14	8,792.57	4,359.57	164.45	1,194.99	1,206.14	1.59	736,835.05	700,750.99	
9,749.00	87.76	78.62	8,793.67	4,360.67	170.62	1,226.37	1,238.09	2.32	736,841.22	700,782.37	
9,781.00	88.02	77.64	8,794.85	4,361.85	177.20	1,257.66	1,270.02	3.17	736,847.80	700,813.66	
9,814.00	88.37	77.31	8,795.89	4,362.89	184.35	1,289.86	1,302.93	1.46	736,854.95	700,845.86	
9,846.00	87.85	76.50	8,796.94	4,363.94	191.60	1,321.01	1,334.81	3.01	736,862.20	700,877.01	
9,879.00	89.16	75.98	8,797.80	4,364.80	199.44	1,353.06	1,367.67	4.27	736,870.04	700,909.06	
9,911.00	89.96	76.04	8,798.05	4,365.05	207.18	1,384.10	1,399.52	2.51	736,877.78	700,940.10	
9,943.00	89.69	75.79	8,798.15	4,365.15	214.97	1,415.14	1,431.38	1.15	736,885.57	700,971.14	
9,976.00	89.87	75.56	8,798.27	4,365.27	223.13	1,447.12	1,464.21	0.89	736,893.73	701,003.12	
10,007.00	89.87	75.81	8,798.34	4,365.34	230.80	1,477.15	1,495.06	0.81	736,901.40	701,033.15	
10,039.00	89.60	75.92	8,798.49	4,365.49	238.61	1,508.18	1,526.91	0.91	736,909.21	701,064.18	
10,070.00	89.78	75.83	8,798.66	4,365.66	246.18	1,538.25	1,557.77	0.65	736,916.78	701,094.25	
10,103.00	89.52	75.36	8,798.86	4,365.86	254.39	1,570.21	1,590.60	1.63	736,924.99	701,126.21	
10,134.00	89.34	75.38	8,799.17	4,366.17	262.22	1,600.20	1,621.42	0.58	736,932.82	701,156.20	
10,167.00	89.34	75.18	8,799.55	4,366.55	270.60	1,632.12	1,654.23	0.61	736,941.20	701,188.12	
10,199.00	89.52	74.96	8,799.87	4,366.87	278.84	1,663.03	1,686.04	0.89	736,949.44	701,219.03	
10,230.00	89.69	74.99	8,800.08	4,367.08	286.88	1,692.97	1,716.84	0.56	736,957.48	701,248.97	
10,262.00	89.78	75.92	8,800.23	4,367.23	294.92	1,723.95	1,748.67	2.92	736,965.52	701,279.95	
10,295.00	90.31	77.22	8,800.20	4,367.20	302.58	1,756.04	1,781.55	4.25	736,973.18	701,312.04	
10,327.00	90.75	79.32	8,799.91	4,366.91	309.09	1,787.37	1,813.50	6.70	736,979.69	701,343.37	
10,356.00	89.87	79.75	8,799.75	4,366.75	314.35	1,815.89	1,842.49	3.38	736,984.95	701,371.89	
10,388.00	90.04	79.12	8,799.78	4,366.78	320.22	1,847.35	1,874.47	2.04	736,990.82	701,403.35	
10,420.00	90.40	79.33	8,799.65	4,366.65	326.20	1,878.78	1,906.44	1.30	736,996.80	701,434.78	



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10,451.00	89.87	79.15	8,799.58	4,366.58	331.99	1,909.24	1,937.42	1.81	737,002.59	701,465.24
10,483.00	90.22	79.17	8,799.55	4,366.55	338.01	1,940.67	1,969.40	1.10	737,008.61	701,496.67
10,515.00	91.19	79.40	8,799.16	4,366.16	343.96	1,972.11	2,001.37	3.12	737,014.56	701,528.11
10,547.00	91.89	79.51	8,798.30	4,365.30	349.81	2,003.55	2,033.34	2.21	737,020.41	701,559.55
10,579.00	91.28	79.81	8,797.42	4,364.42	355.55	2,035.02	2,065.32	2.12	737,026.15	701,591.02
10,611.00	91.19	79.68	8,796.73	4,363.73	361.25	2,066.50	2,097.30	0.49	737,031.85	701,622.50
10,643.00	91.45	79.76	8,795.99	4,362.99	366.96	2,097.98	2,129.27	0.85	737,037.56	701,653.98
10,676.00	91.28	80.06	8,795.20	4,362.20	372.74	2,130.46	2,162.25	1.04	737,043.34	701,686.46
10,709.00	91.45	79.89	8,794.42	4,361.42	378.48	2,162.95	2,195.23	0.73	737,049.08	701,718.95
10,741.00	91.19	80.02	8,793.68	4,360.68	384.06	2,194.45	2,227.22	0.91	737,054.66	701,750.45
10,773.00	90.84	79.72	8,793.11	4,360.11	389.69	2,225.95	2,259.20	1.44	737,060.29	701,781.95
10,804.00	91.19	79.70	8,792.56	4,359.56	395.22	2,256.44	2,290.18	1.13	737,065.82	701,812.44
10,836.00	91.28	79.99	8,791.87	4,358.87	400.87	2,287.93	2,322.16	0.95	737,071.47	701,843.93
10,868.00	91.19	80.53	8,791.18	4,358.18	406.28	2,319.47	2,354.15	1.71	737,076.88	701,875.47
10,900.00	91.28	80.54	8,790.49	4,357.49	411.54	2,351.02	2,386.14	0.28	737,082.14	701,907.02
10,933.00	91.36	80.72	8,789.73	4,356.73	416.91	2,383.57	2,419.13	0.60	737,087.51	701,939.57
10,964.00	91.45	81.36	8,788.97	4,355.97	421.74	2,414.19	2,450.12	2.08	737,092.34	701,970.19
10,997.00	90.84	83.42	8,788.31	4,355.31	426.11	2,446.89	2,483.10	6.51	737,096.71	702,002.89
11,028.00	91.01	83.52	8,787.81	4,354.81	429.63	2,477.68	2,514.08	0.64	737,100.23	702,033.68
11,057.00	91.63	83.48	8,787.15	4,354.15	432.91	2,506.49	2,543.05	2.14	737,103.51	702,062.49
11,091.00	91.89	83.30	8,786.10	4,353.10	436.82	2,540.25	2,577.01	0.93	737,107.42	702,096.25
11,123.00	92.77	84.00	8,784.80	4,351.80	440.36	2,572.02	2,608.96	3.51	737,110.96	702,128.02
11,155.00	91.10	84.38	8,783.72	4,350.72	443.60	2,603.84	2,640.90	5.35	737,114.20	702,159.84
11,187.00	90.31	83.97	8,783.33	4,350.33	446.85	2,635.67	2,672.86	2.78	737,117.45	702,191.67
11,220.00	91.19	83.81	8,782.89	4,349.89	450.36	2,668.48	2,705.83	2.71	737,120.96	702,224.48
11,251.00	91.10	83.76	8,782.27	4,349.27	453.71	2,699.29	2,736.80	0.33	737,124.31	702,255.29
11,283.00	90.75	83.63	8,781.76	4,348.76	457.23	2,731.09	2,768.77	1.17	737,127.83	702,287.09



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11,315.00	89.43	83.42	8,781.71	4,348.71	460.84	2,762.89	2,800.74	4.18	737,131.44	702,318.89
11,345.00	88.81	83.77	8,782.17	4,349.17	464.18	2,792.70	2,830.72	2.37	737,134.78	702,348.70
11,378.00	87.93	83.30	8,783.11	4,350.11	467.90	2,825.47	2,863.68	3.02	737,138.50	702,381.47
11,411.00	89.52	83.06	8,783.84	4,350.84	471.81	2,858.23	2,896.65	4.87	737,142.41	702,414.23
11,443.00	88.99	83.56	8,784.26	4,351.26	475.54	2,890.01	2,928.63	2.28	737,146.14	702,446.01
11,474.00	87.85	84.43	8,785.11	4,352.11	478.78	2,920.83	2,959.59	4.63	737,149.38	702,476.83
11,507.00	87.32	84.17	8,786.50	4,353.50	482.06	2,953.64	2,992.52	1.79	737,152.66	702,509.64
11,538.00	88.90	84.20	8,787.53	4,354.53	485.20	2,984.46	3,023.46	5.10	737,155.80	702,540.46
11,570.00	89.52	84.57	8,787.97	4,354.97	488.33	3,016.30	3,055.42	2.26	737,158.93	702,572.30
11,602.00	88.90	84.18	8,788.41	4,355.41	491.46	3,048.14	3,087.37	2.29	737,162.06	702,604.14
11,634.00	89.34	84.09	8,788.90	4,355.90	494.73	3,079.97	3,119.33	1.40	737,165.33	702,635.97
11,666.00	88.90	84.05	8,789.39	4,356.39	498.04	3,111.80	3,151.29	1.38	737,168.64	702,667.80
11,698.00	89.16	83.64	8,789.93	4,356.93	501.47	3,143.61	3,183.26	1.52	737,172.07	702,699.61
11,730.00	88.55	83.85	8,790.57	4,357.57	504.95	3,175.41	3,215.22	2.02	737,175.55	702,731.41
11,762.00	89.25	82.89	8,791.19	4,358.19	508.65	3,207.19	3,247.20	3.71	737,179.25	702,763.19
11,793.00	91.01	83.11	8,791.12	4,358.12	512.43	3,237.96	3,278.18	5.72	737,183.03	702,793.96
11,824.00	90.48	83.19	8,790.71	4,357.71	516.12	3,268.74	3,309.17	1.73	737,186.72	702,824.74
11,856.00	90.92	83.06	8,790.32	4,357.32	519.95	3,300.50	3,341.15	1.43	737,190.55	702,856.50
11,888.00	90.57	83.08	8,789.91	4,356.91	523.81	3,332.27	3,373.13	1.10	737,194.41	702,888.27
11,919.00	89.52	82.89	8,789.88	4,356.88	527.60	3,363.03	3,404.12	3.44	737,198.20	702,919.03
11,951.00	90.22	82.56	8,789.95	4,356.95	531.65	3,394.78	3,436.11	2.42	737,202.25	702,950.78
11,983.00	89.78	82.53	8,789.95	4,356.95	535.80	3,426.51	3,468.10	1.38	737,206.40	702,982.51
12,015.00	89.78	81.83	8,790.08	4,357.08	540.16	3,458.21	3,500.10	2.19	737,210.76	703,014.21
12,049.00	89.96	81.87	8,790.15	4,357.15	544.98	3,491.86	3,534.10	0.54	737,215.58	703,047.86
12,080.00	89.60	81.70	8,790.27	4,357.27	549.41	3,522.55	3,565.10	1.28	737,220.01	703,078.55
12,112.00	89.96	81.32	8,790.40	4,357.40	554.13	3,554.19	3,597.10	1.64	737,224.73	703,110.19
12,144.00	89.52	81.50	8,790.54	4,357.54	558.91	3,585.83	3,629.10	1.49	737,229.51	703,141.83

Company: COG Operating LLC
Project: Chaves County
Site: Taurus "10" Federal Com
Well: #1
Wellbore: OH
Design: OH

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

Well #1
WELL1 @ 4433.00ft (18' Correction)
WELL1 @ 4433.00ft (18' Correction)
Grid
Minimum Curvature
Midland Database

Survey

MD (ft)	Inc (°)	Azi (°)	TVD (ft)	TVDSS (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)	Northing (ft)	Easting (ft)
12,176.00	89.96	81.39	8,790.69	4,357.69	563.67	3,617.48	3,661.10	1.42	737,234.27	703,173.48
12,208.00	90.31	81.82	8,790.61	4,357.61	568.34	3,649.14	3,693.10	1.73	737,238.94	703,205.14
12,240.00	89.52	81.58	8,790.66	4,357.66	572.96	3,680.80	3,725.10	2.58	737,243.56	703,236.80
12,272.00	89.96	81.48	8,790.80	4,357.80	577.68	3,712.45	3,757.09	1.41	737,248.28	703,268.45
12,304.00	89.87	82.12	8,790.85	4,357.85	582.24	3,744.12	3,789.09	2.02	737,252.84	703,300.12
12,336.00	89.08	82.31	8,791.14	4,358.14	586.57	3,775.83	3,821.09	2.54	737,257.17	703,331.83
12,368.00	89.34	82.17	8,791.59	4,358.59	590.90	3,807.53	3,853.08	0.92	737,261.50	703,363.53
12,400.00	89.43	82.60	8,791.93	4,358.93	595.14	3,839.25	3,885.08	1.37	737,265.74	703,395.25
12,432.00	88.90	82.64	8,792.40	4,359.40	599.25	3,870.98	3,917.06	1.66	737,269.85	703,426.98
12,464.00	89.08	82.66	8,792.96	4,359.96	603.34	3,902.71	3,949.05	0.57	737,273.94	703,458.71
12,496.00	89.43	83.03	8,793.38	4,360.38	607.32	3,934.46	3,981.04	1.59	737,277.92	703,490.46
12,528.00	88.99	82.69	8,793.82	4,360.82	611.30	3,966.21	4,013.02	1.74	737,281.90	703,522.21
12,560.00	89.52	82.68	8,794.23	4,361.23	615.38	3,997.94	4,045.01	1.66	737,285.98	703,553.94
12,596.00	88.99	83.11	8,794.70	4,361.70	619.83	4,033.66	4,081.00	1.90	737,290.43	703,589.66
12,624.00	89.25	82.69	8,795.13	4,362.13	623.29	4,061.45	4,108.99	1.76	737,293.89	703,617.45
12,656.00	89.16	83.15	8,795.57	4,362.57	627.23	4,093.20	4,140.97	1.46	737,297.83	703,649.20
12,687.00	88.02	83.44	8,796.34	4,363.34	630.85	4,123.98	4,171.94	3.79	737,301.45	703,679.98
12,719.00	88.37	83.20	8,797.35	4,364.35	634.57	4,155.74	4,203.91	1.33	737,305.17	703,711.74
12,752.00	88.99	84.24	8,798.11	4,365.11	638.18	4,188.54	4,236.87	3.67	737,308.78	703,744.54
12,783.00	88.20	85.06	8,798.87	4,365.87	641.07	4,219.39	4,267.81	3.67	737,311.67	703,775.39
12,816.00	88.55	85.17	8,799.80	4,366.80	643.88	4,252.26	4,300.73	1.11	737,314.48	703,808.26
12,848.00	87.93	84.98	8,800.78	4,367.78	646.62	4,284.12	4,332.65	2.03	737,317.22	703,840.12
12,879.00	88.37	84.97	8,801.79	4,368.79	649.34	4,314.99	4,363.57	1.42	737,319.94	703,870.99
12,911.00	89.34	85.24	8,802.42	4,369.42	652.07	4,346.87	4,395.50	3.15	737,322.67	703,902.87
12,943.00	88.37	84.93	8,803.06	4,370.06	654.81	4,378.74	4,427.42	3.18	737,325.41	703,934.74
12,974.00	88.99	85.04	8,803.78	4,370.78	657.52	4,409.61	4,458.35	2.03	737,328.12	703,965.61
13,006.00	88.99	84.98	8,804.34	4,371.34	660.30	4,441.49	4,490.29	0.19	737,330.90	703,997.49



Pathfinder
Pathfinder X & Y Survey Report



Company: COG Operating LLC
Project: Chaves County
Site: Taurus "10" Federal Com
Well: #1
Wellbore: OH
Design: OH

Local Co-ordinate Reference: Well #1
TVD Reference: WELL1 @ 4433.00ft (18' Correction)
MD Reference: WELL1 @ 4433.00ft (18' Correction)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Midland Database

MD (ft)	Inc (°)	Azi (°)	TVD (ft)	TVDSS (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)	Northing (ft)	Easting (ft)
13,038.00	89.43	85.29	8,804.78	4,371.78	663.01	4,473.37	4,522.21	1.68	737,333.61	704,029.37
13,070.00	89.34	85.22	8,805.13	4,372.13	665.66	4,505.26	4,554.14	0.36	737,336.26	704,061.26
13,090.00	89.16	85.32	8,805.39	4,372.39	667.31	4,525.19	4,574.09	1.03	737,337.91	704,081.19
13,180.00	89.16	85.32	8,806.71	4,373.71	674.65	4,614.88	4,663.87	0.00	737,345.25	704,170.88

BHL-13180.00'MD,89.16°INC,85.32°AZI, 8806.71'TVD, 4663.87'VS, 674.65'N, 4614.88'E - PBHL(Taurus 10 #1)

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
- hit/miss target									
- Shape									
PBHL(Taurus 10 #1)	0.00	0.00	8,810.00	737.79	4,611.34	737,408.392	704,167.341	33° 1' 33.610 N	103° 48' 7.407 W
- survey misses target center by 63.32ft at 13180.00ft MD (8806.71 TVD, 674.65 N, 4614.88 E)									
- Point									

Survey Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
13,180.00	8,806.71	674.65	4,614.88	BHL-13180.00'MD,89.16°INC,85.32°AZI, 8806.71'TVD, 4663.87'VS, 67

Checked By: _____ Approved By: _____ Date: _____