



COG Operating LLC

Lea County(NAD27)

Gunner 8 Federal

#8H

OH

HOBBS OCD

DEC 12 2011

RECEIVED

Plan: Post Gyro Plan #2

Pathfinder X & Y Report

23 November, 2011

PATHFINDER[®]

A Schlumberger Company

DEC 13 2011



Company: COG Operating LLC
Project: Lea County(NAD27)
Site: Gunner 8 Federal
Well: #8H
Wellbore: OH
Design: Post Gyro Plan #2

Local Co-ordinate Reference: Well #8H
TVD Reference: WELL @ 3382.0usft (21' KB)
MD Reference: WELL @ 3382.0usft (21' KB)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1 Single User Db

Project	Lea County(NAD27)		
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	Gunner 8 Federal		
Site Position:		Northing:	384,112.900 usft
From:	Map	Easting:	758,519.100 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 3' 11.862 N
		Longitude:	103° 29' 56.099 W
		Grid Convergence:	0.44 °

Well	#8H		
Well Position	+N/-S	0.0 usft	Northing:
	+E/-W	0.0 usft	Easting:
Position Uncertainty		0.0 usft	Wellhead Elevation:
			usft
			Latitude:
			32° 3' 11.862 N
			Longitude:
			103° 29' 56.099 W
			Ground Level:
			3,361.0 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
	IGRF200510	4/12/2011	(°)	(°)	(nT)
			7.55	60.07	48,575

Design	Post Gyro Plan #2			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	
			9,400.1	
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction
	(usft)	(usft)	(usft)	(°)
	0.0	0.0	0.0	359.86



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Survey Tool Program Date 11/23/2011

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
100.0	9,400.1	Gyro #1 (OH)	NS-GYRO-MS	North sensing gyrocompassing m/s
9,400.1	17,251.0	Post Gyro Plan #2 (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	-3,382.0	0.0	0.0	0.0	0.00	384,112.90	758,519.10
100.0	0.75	339.82	100.0	-3,282.0	0.6	-0.2	0.6	0.75	384,113.51	758,518.87
200.0	0.87	36.73	200.0	-3,182.0	1.8	0.0	1.8	0.78	384,114.74	758,519.10
300.0	0.98	30.81	300.0	-3,082.0	3.2	0.9	3.2	0.15	384,116.08	758,519.99
400.0	1.35	38.35	400.0	-2,982.0	4.8	2.1	4.8	0.40	384,117.74	758,521.16
500.0	1.48	51.72	499.9	-2,882.1	6.6	3.8	6.6	0.35	384,119.46	758,522.91
600.0	1.86	69.77	599.9	-2,782.1	7.9	6.3	7.9	0.64	384,120.82	758,525.44
700.0	1.78	75.30	699.8	-2,682.2	8.9	9.4	8.9	0.19	384,121.78	758,528.47
800.0	1.61	73.83	799.8	-2,582.2	9.7	12.2	9.6	0.18	384,122.56	758,531.32
900.0	1.19	80.73	899.8	-2,482.2	10.2	14.6	10.2	0.45	384,123.12	758,533.70
1,000.0	0.67	85.16	999.7	-2,382.3	10.4	16.2	10.4	0.52	384,123.34	758,535.30
1,100.0	0.37	86.94	1,099.7	-2,282.3	10.5	17.1	10.5	0.30	384,123.41	758,536.21
1,200.0	0.17	63.47	1,199.7	-2,182.3	10.6	17.6	10.5	0.22	384,123.49	758,536.66
1,300.0	0.29	86.82	1,299.7	-2,082.3	10.7	17.9	10.6	0.15	384,123.57	758,537.05
1,400.0	0.07	45.78	1,399.7	-1,982.3	10.7	18.2	10.7	0.24	384,123.63	758,537.34
1,500.0	0.09	344.99	1,499.7	-1,882.3	10.8	18.3	10.8	0.08	384,123.74	758,537.37
1,600.0	0.11	161.43	1,599.7	-1,782.3	10.8	18.3	10.8	0.20	384,123.73	758,537.38
1,700.0	0.04	82.67	1,699.7	-1,682.3	10.7	18.3	10.7	0.11	384,123.64	758,537.44
1,800.0	0.07	109.96	1,799.7	-1,582.3	10.7	18.4	10.7	0.04	384,123.63	758,537.54
1,900.0	0.18	198.76	1,899.7	-1,482.3	10.6	18.4	10.5	0.19	384,123.46	758,537.54
2,000.0	0.12	172.60	1,999.7	-1,382.3	10.3	18.4	10.3	0.09	384,123.20	758,537.51



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2,100.0	0.07	94.16	2,099.7	-1,282.3	10.2	18.5	10.2	0.13	384,123.10	758,537.58
2,200.0	0.30	161.41	2,199.7	-1,182.3	9.9	18.6	9.9	0.28	384,122.84	758,537.72
2,300.0	0.50	122.06	2,299.7	-1,082.3	9.5	19.1	9.4	0.33	384,122.36	758,538.18
2,400.0	0.50	115.60	2,399.7	-982.3	9.0	19.8	9.0	0.06	384,121.94	758,538.94
2,500.0	0.64	101.19	2,499.7	-882.3	8.7	20.8	8.7	0.20	384,121.65	758,539.88
2,600.0	0.63	99.33	2,599.7	-782.3	8.5	21.9	8.5	0.02	384,121.45	758,540.97
2,700.0	0.86	70.83	2,699.7	-682.3	8.7	23.1	8.6	0.43	384,121.61	758,542.22
2,800.0	1.28	77.91	2,799.7	-582.3	9.2	24.9	9.1	0.44	384,122.09	758,544.02
2,900.0	1.24	71.09	2,899.7	-482.3	9.8	27.0	9.7	0.16	384,122.67	758,546.14
3,000.0	1.54	65.95	2,999.6	-382.4	10.7	29.3	10.6	0.32	384,123.57	758,548.39
3,100.0	1.73	67.34	3,099.6	-282.4	11.8	31.9	11.7	0.19	384,124.70	758,551.01
3,200.0	1.96	75.66	3,199.5	-182.5	12.8	35.0	12.7	0.35	384,125.70	758,554.06
3,300.0	1.93	75.12	3,299.5	-82.5	13.7	38.2	13.6	0.04	384,126.56	758,557.35
3,400.0	1.43	60.02	3,399.4	17.4	14.7	41.0	14.6	0.66	384,127.62	758,560.05
3,500.0	1.34	42.83	3,499.4	117.4	16.2	42.8	16.1	0.42	384,129.10	758,561.93
3,600.0	1.47	45.59	3,599.4	217.4	18.0	44.5	17.8	0.15	384,130.85	758,563.64
3,700.0	1.69	48.28	3,699.4	317.4	19.8	46.6	19.7	0.23	384,132.73	758,565.66
3,800.0	2.17	51.54	3,799.3	417.3	22.0	49.1	21.9	0.49	384,134.89	758,568.24
3,900.0	2.34	43.53	3,899.2	517.2	24.6	52.0	24.5	0.36	384,137.55	758,571.13
4,000.0	2.19	41.02	3,999.1	617.1	27.6	54.7	27.4	0.18	384,140.47	758,573.79
4,100.0	1.82	38.76	4,099.1	717.1	30.2	56.9	30.1	0.38	384,143.15	758,576.04
4,200.0	1.92	41.20	4,199.0	817.0	32.7	59.0	32.6	0.13	384,145.65	758,578.14
4,300.0	1.73	39.85	4,299.0	917.0	35.2	61.1	35.0	0.19	384,148.07	758,580.21
4,400.0	1.37	27.91	4,398.9	1,016.9	37.4	62.6	37.2	0.48	384,150.28	758,581.73
4,500.0	1.27	3.97	4,498.9	1,116.9	39.5	63.3	39.4	0.56	384,152.44	758,582.37
4,600.0	1.20	24.24	4,598.9	1,216.9	41.6	63.8	41.4	0.44	384,154.50	758,582.88
4,700.0	1.35	44.15	4,698.9	1,316.9	43.4	65.0	43.2	0.46	384,156.30	758,584.13



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North Reference: Gnd
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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)
4,800.0	1.51	55.58	4,798.8	1,416.8	45.0	66.9	44.8	0.33	384,157.89	758,586.03
4,900.0	1.90	86.30	4,898.8	1,516.8	45.8	69.7	45.7	0.98	384,158.75	758,588.77
5,000.0	2.40	105.92	4,998.7	1,616.7	45.4	73.3	45.2	0.88	384,158.28	758,592.44
5,100.0	2.16	104.68	5,098.6	1,716.6	44.3	77.2	44.1	0.25	384,157.23	758,596.28
5,200.0	1.24	115.75	5,198.6	1,816.6	43.4	80.0	43.2	0.97	384,156.28	758,599.08
5,300.0	1.26	116.46	5,298.6	1,916.6	42.4	81.9	42.2	0.03	384,155.32	758,601.04
5,400.0	0.87	120.09	5,398.6	2,016.6	41.5	83.6	41.3	0.40	384,154.45	758,602.68
5,500.0	1.01	123.66	5,498.5	2,116.5	40.7	85.0	40.5	0.15	384,153.58	758,604.07
5,600.0	0.89	116.65	5,598.5	2,216.5	39.8	86.4	39.6	0.17	384,152.74	758,605.49
5,700.0	0.78	125.16	5,698.5	2,316.5	39.1	87.6	38.9	0.17	384,152.00	758,606.75
5,800.0	0.66	124.41	5,798.5	2,416.5	38.4	88.7	38.2	0.12	384,151.29	758,607.78
5,900.0	0.62	120.11	5,898.5	2,516.5	37.8	89.6	37.6	0.06	384,150.69	758,608.72
6,000.0	0.75	117.59	5,998.5	2,616.5	37.2	90.7	37.0	0.13	384,150.11	758,609.77
6,100.0	0.62	124.26	6,098.5	2,716.5	36.6	91.7	36.4	0.15	384,149.51	758,610.80
6,200.0	0.51	113.92	6,198.5	2,816.5	36.1	92.5	35.9	0.15	384,149.02	758,611.65
6,300.0	0.52	119.43	6,298.5	2,916.5	35.7	93.4	35.5	0.05	384,148.62	758,612.45
6,400.0	0.48	128.94	6,398.5	3,016.5	35.2	94.1	35.0	0.09	384,148.13	758,613.17
6,500.0	0.37	138.19	6,498.5	3,116.5	34.7	94.6	34.5	0.13	384,147.63	758,613.71
6,600.0	0.36	126.76	6,598.5	3,216.5	34.3	95.1	34.1	0.07	384,147.20	758,614.18
6,700.0	0.33	129.62	6,698.5	3,316.5	33.9	95.6	33.7	0.03	384,146.83	758,614.65
6,800.0	0.34	135.15	6,798.5	3,416.5	33.5	96.0	33.3	0.03	384,146.43	758,615.09
6,900.0	0.35	132.25	6,898.5	3,516.5	33.1	96.4	32.9	0.02	384,146.02	758,615.52
7,000.0	0.26	109.30	6,998.5	3,616.5	32.8	96.9	32.6	0.15	384,145.74	758,615.96
7,100.0	0.26	110.58	7,098.5	3,716.5	32.7	97.3	32.4	0.01	384,145.58	758,616.39
7,200.0	0.42	102.24	7,198.5	3,816.5	32.5	97.9	32.3	0.17	384,145.42	758,616.96
7,300.0	0.40	106.86	7,298.5	3,916.5	32.3	98.6	32.1	0.04	384,145.25	758,617.65
7,400.0	0.53	81.79	7,398.5	4,016.5	32.3	99.3	32.1	0.24	384,145.21	758,618.44



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7,500.0	0.57	82.74	7,498.5	4,116.5	32.4	100.3	32.2	0.04	384,145.34	758,619.39
7,600.0	0.43	88.54	7,598.4	4,216.4	32.5	101.2	32.3	0.15	384,145.41	758,620.26
7,700.0	0.28	110.72	7,698.4	4,316.4	32.4	101.8	32.2	0.20	384,145.34	758,620.87
7,800.0	0.35	111.64	7,798.4	4,416.4	32.2	102.3	32.0	0.07	384,145.14	758,621.38
7,900.0	0.35	120.08	7,898.4	4,516.4	32.0	102.8	31.7	0.05	384,144.87	758,621.93
8,000.0	0.36	141.01	7,998.4	4,616.4	31.6	103.3	31.3	0.13	384,144.47	758,622.39
8,100.0	0.33	161.94	8,098.4	4,716.4	31.1	103.6	30.8	0.13	384,143.96	758,622.67
8,200.0	0.35	174.34	8,198.4	4,816.4	30.5	103.7	30.2	0.08	384,143.38	758,622.79
8,300.0	0.41	171.11	8,298.4	4,916.4	29.8	103.8	29.6	0.06	384,142.72	758,622.88
8,400.0	0.44	158.18	8,398.4	5,016.4	29.1	104.0	28.9	0.10	384,142.01	758,623.08
8,500.0	0.50	162.59	8,498.4	5,116.4	28.3	104.3	28.1	0.07	384,141.24	758,623.35
8,600.0	0.69	146.69	8,598.4	5,216.4	27.4	104.7	27.2	0.25	384,140.32	758,623.81
8,700.0	0.83	149.80	8,698.4	5,316.4	26.3	105.4	26.0	0.15	384,139.19	758,624.51
8,800.0	0.81	157.28	8,798.4	5,416.4	25.0	106.0	24.7	0.11	384,137.91	758,625.14
8,900.0	0.70	178.42	8,898.4	5,516.4	23.7	106.3	23.5	0.30	384,136.65	758,625.43
9,000.0	0.59	188.61	8,998.4	5,616.4	22.6	106.3	22.4	0.16	384,135.53	758,625.37
9,100.0	0.71	200.92	9,098.4	5,716.4	21.5	106.0	21.3	0.18	384,134.44	758,625.08
9,200.0	0.69	214.97	9,198.4	5,816.4	20.5	105.4	20.2	0.17	384,133.37	758,624.51
9,300.0	0.66	221.26	9,298.4	5,916.4	19.5	104.7	19.3	0.08	384,132.44	758,623.78
9,400.0	0.68	223.61	9,398.4	6,016.4	18.7	103.9	18.4	0.03	384,131.58	758,623.00
9,400.1	0.68	223.61	9,398.5	6,016.5	18.7	103.9	18.4	0.00	384,131.58	758,622.99
9,425.0	2.55	348.33	9,423.4	6,041.4	19.1	103.7	18.9	12.00	384,132.01	758,622.78
9,450.0	5.52	354.17	9,448.3	6,066.3	20.9	103.4	20.6	12.00	384,133.76	758,622.55
9,475.0	8.52	355.92	9,473.1	6,091.1	23.9	103.2	23.6	12.00	384,136.80	758,622.29
9,500.0	11.51	356.76	9,497.7	6,115.7	28.2	102.9	28.0	12.00	384,141.14	758,622.02
9,525.0	14.51	357.26	9,522.1	6,140.1	33.9	102.6	33.6	12.00	384,146.76	758,621.73
9,550.0	17.51	357.59	9,546.1	6,164.1	40.7	102.3	40.5	12.00	384,153.65	758,621.42



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9,575.0	20.51	357.83	9,569.7	6,187.7	48.9	102.0	48.6	12.00	384,161.78	758,621.10
9,600.0	23.51	358.01	9,592.9	6,210.9	58.2	101.7	58.0	12.00	384,171.14	758,620.76
9,625.0	26.51	358.15	9,615.6	6,233.6	68.8	101.3	68.6	12.00	384,181.70	758,620.40
9,650.0	29.51	358.26	9,637.6	6,255.6	80.5	100.9	80.3	12.00	384,193.44	758,620.04
9,675.0	32.51	358.35	9,659.1	6,277.1	93.4	100.6	93.2	12.00	384,206.31	758,619.66
9,700.0	35.51	358.43	9,679.8	6,297.8	107.4	100.2	107.1	12.00	384,220.28	758,619.26
9,725.0	38.51	358.50	9,699.7	6,317.7	122.4	99.8	122.2	12.00	384,235.32	758,618.86
9,750.0	41.51	358.56	9,718.9	6,336.9	138.5	99.4	138.2	12.00	384,251.39	758,618.45
9,775.0	44.51	358.62	9,737.2	6,355.2	155.5	98.9	155.3	12.00	384,268.43	758,618.03
9,800.0	47.50	358.67	9,754.5	6,372.5	173.5	98.5	173.3	12.00	384,286.41	758,617.61
9,825.0	50.50	358.71	9,770.9	6,388.9	192.4	98.1	192.1	12.00	384,305.27	758,617.17
9,850.0	53.50	358.75	9,786.3	6,404.3	212.1	97.6	211.8	12.00	384,324.97	758,616.74
9,875.0	56.50	358.79	9,800.7	6,418.7	232.5	97.2	232.3	12.00	384,345.44	758,616.30
9,900.0	59.50	358.82	9,813.9	6,431.9	253.7	96.8	253.5	12.00	384,366.63	758,615.85
9,925.0	62.50	358.85	9,826.0	6,444.0	275.6	96.3	275.4	12.00	384,388.49	758,615.41
9,950.0	65.50	358.88	9,837.0	6,455.0	298.1	95.9	297.8	12.00	384,410.96	758,614.97
9,975.0	68.50	358.91	9,846.7	6,464.7	321.1	95.4	320.8	12.00	384,433.96	758,614.53
10,000.0	71.50	358.94	9,855.3	6,473.3	344.5	95.0	344.3	12.00	384,457.45	758,614.09
10,025.0	74.50	358.97	9,862.6	6,480.6	368.5	94.6	368.2	12.00	384,481.35	758,613.65
10,050.0	77.50	359.00	9,868.6	6,486.6	392.7	94.1	392.5	12.00	384,505.60	758,613.22
10,075.0	80.50	359.02	9,873.4	6,491.4	417.2	93.7	417.0	12.00	384,530.14	758,612.80
10,100.0	83.50	359.05	9,876.9	6,494.9	442.0	93.3	441.8	12.00	384,554.89	758,612.38
10,125.0	86.50	359.07	9,879.1	6,497.1	466.9	92.9	466.7	12.00	384,579.79	758,611.97
10,150.0	89.50	359.10	9,879.9	6,497.9	491.9	92.5	491.6	12.00	384,604.76	758,611.57
10,154.1	90.00	359.10	9,880.0	6,498.0	496.0	92.4	495.8	12.00	384,608.90	758,611.51
10,200.0	90.00	359.10	9,880.0	6,498.0	541.9	91.7	541.6	0.00	384,654.76	758,610.79
10,300.0	90.00	359.10	9,880.0	6,498.0	641.8	90.1	641.6	0.00	384,754.75	758,609.22



Company: COG Operating LLC.
Project: Lea County(NAD27)
Site: Gunner 8 Federal
Well: #8H
Wellbore: OH
Design: Post Gyro Plan #2

Local Co-ordinate Reference: Well #8H
TVD Reference: WELL @ 3382.0usft (21' KB)
MD Reference: WELL @ 3382.0usft (21' KB)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
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)
10,400.0	90.00	359.10	9,880.0	6,498.0	741.8	88.6	741.6	0.00	384,854.73	758,607.66
10,500.0	90.00	359.10	9,880.0	6,498.0	841.8	87.0	841.6	0.00	384,954.72	758,606.09
10,600.0	90.00	359.10	9,880.0	6,498.0	941.8	85.4	941.6	0.00	385,054.71	758,604.52
10,700.0	90.00	359.10	9,880.0	6,498.0	1,041.8	83.9	1,041.6	0.00	385,154.70	758,602.95
10,800.0	90.00	359.10	9,880.0	6,498.0	1,141.8	82.3	1,141.6	0.00	385,254.68	758,601.39
10,900.0	90.00	359.10	9,880.0	6,498.0	1,241.8	80.7	1,241.6	0.00	385,354.67	758,599.82
11,000.0	90.00	359.10	9,880.0	6,498.0	1,341.8	79.2	1,341.6	0.00	385,454.66	758,598.25
11,100.0	90.00	359.10	9,880.0	6,498.0	1,441.7	77.6	1,441.6	0.00	385,554.65	758,596.69
11,200.0	90.00	359.10	9,880.0	6,498.0	1,541.7	76.0	1,541.5	0.00	385,654.64	758,595.12
11,300.0	90.00	359.10	9,880.0	6,498.0	1,641.7	74.5	1,641.5	0.00	385,754.62	758,593.55
11,400.0	90.00	359.10	9,880.0	6,498.0	1,741.7	72.9	1,741.5	0.00	385,854.61	758,591.99
11,500.0	90.00	359.10	9,880.0	6,498.0	1,841.7	71.3	1,841.5	0.00	385,954.60	758,590.42
11,600.0	90.00	359.10	9,880.0	6,498.0	1,941.7	69.8	1,941.5	0.00	386,054.59	758,588.85
11,700.0	90.00	359.10	9,880.0	6,498.0	2,041.7	68.2	2,041.5	0.00	386,154.57	758,587.28
11,800.0	90.00	359.10	9,880.0	6,498.0	2,141.7	66.6	2,141.5	0.00	386,254.56	758,585.72
11,900.0	90.00	359.10	9,880.0	6,498.0	2,241.6	65.1	2,241.5	0.00	386,354.55	758,584.15
12,000.0	90.00	359.10	9,880.0	6,498.0	2,341.6	63.5	2,341.5	0.00	386,454.54	758,582.58
12,100.0	90.00	359.10	9,880.0	6,498.0	2,441.6	61.9	2,441.5	0.00	386,554.52	758,581.02
12,200.0	90.00	359.10	9,880.0	6,498.0	2,541.6	60.3	2,541.5	0.00	386,654.51	758,579.45
12,300.0	90.00	359.10	9,880.0	6,498.0	2,641.6	58.8	2,641.4	0.00	386,754.50	758,577.88
12,400.0	90.00	359.10	9,880.0	6,498.0	2,741.6	57.2	2,741.4	0.00	386,854.49	758,576.32
12,500.0	90.00	359.10	9,880.0	6,498.0	2,841.6	55.6	2,841.4	0.00	386,954.48	758,574.75
12,600.0	90.00	359.10	9,880.0	6,498.0	2,941.6	54.1	2,941.4	0.00	387,054.46	758,573.18
12,700.0	90.00	359.10	9,880.0	6,498.0	3,041.6	52.5	3,041.4	0.00	387,154.45	758,571.61
12,800.0	90.00	359.10	9,880.0	6,498.0	3,141.5	50.9	3,141.4	0.00	387,254.44	758,570.05
12,900.0	90.00	359.10	9,880.0	6,498.0	3,241.5	49.4	3,241.4	0.00	387,354.43	758,568.48
13,000.0	90.00	359.10	9,880.0	6,498.0	3,341.5	47.8	3,341.4	0.00	387,454.41	758,566.91



Company: COG Operating LLC
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Wellbore: OH
Design: Post Gyro Plan #2

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TVD Reference: WELL @ 3382.0usft (21' KB)
MD Reference: WELL @ 3382.0usft (21' KB)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
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)
13,100.0	90.00	359.10	9,880.0	6,498.0	3,441.5	46.2	3,441.4	0.00	387,554.40	758,565.35
13,200.0	90.00	359.10	9,880.0	6,498.0	3,541.5	44.7	3,541.4	0.00	387,654.39	758,563.78
13,300.0	90.00	359.10	9,880.0	6,498.0	3,641.5	43.1	3,641.4	0.00	387,754.38	758,562.21
13,400.0	90.00	359.10	9,880.0	6,498.0	3,741.5	41.5	3,741.4	0.00	387,854.37	758,560.65
13,500.0	90.00	359.10	9,880.0	6,498.0	3,841.5	40.0	3,841.3	0.00	387,954.35	758,559.08
13,600.0	90.00	359.10	9,880.0	6,498.0	3,941.4	38.4	3,941.3	0.00	388,054.34	758,557.51
13,700.0	90.00	359.10	9,880.0	6,498.0	4,041.4	36.8	4,041.3	0.00	388,154.33	758,555.94
13,800.0	90.00	359.10	9,880.0	6,498.0	4,141.4	35.3	4,141.3	0.00	388,254.32	758,554.38
13,900.0	90.00	359.10	9,880.0	6,498.0	4,241.4	33.7	4,241.3	0.00	388,354.30	758,552.81
14,000.0	90.00	359.10	9,880.0	6,498.0	4,341.4	32.1	4,341.3	0.00	388,454.29	758,551.24
14,100.0	90.00	359.10	9,880.0	6,498.0	4,441.4	30.6	4,441.3	0.00	388,554.28	758,549.68
14,200.0	90.00	359.10	9,880.0	6,498.0	4,541.4	29.0	4,541.3	0.00	388,654.27	758,548.11
14,300.0	90.00	359.10	9,880.0	6,498.0	4,641.4	27.4	4,641.3	0.00	388,754.25	758,546.54
14,400.0	90.00	359.10	9,880.0	6,498.0	4,741.3	25.9	4,741.3	0.00	388,854.24	758,544.98
14,500.0	90.00	359.10	9,880.0	6,498.0	4,841.3	24.3	4,841.3	0.00	388,954.23	758,543.41
14,600.0	90.00	359.10	9,880.0	6,498.0	4,941.3	22.7	4,941.2	0.00	389,054.22	758,541.84
14,700.0	90.00	359.10	9,880.0	6,498.0	5,041.3	21.2	5,041.2	0.00	389,154.21	758,540.28
14,800.0	90.00	359.10	9,880.0	6,498.0	5,141.3	19.6	5,141.2	0.00	389,254.19	758,538.71
14,900.0	90.00	359.10	9,880.0	6,498.0	5,241.3	18.0	5,241.2	0.00	389,354.18	758,537.14
15,000.0	90.00	359.10	9,880.0	6,498.0	5,341.3	16.5	5,341.2	0.00	389,454.17	758,535.57
15,100.0	90.00	359.10	9,880.0	6,498.0	5,441.3	14.9	5,441.2	0.00	389,554.16	758,534.01
15,200.0	90.00	359.10	9,880.0	6,498.0	5,541.2	13.3	5,541.2	0.00	389,654.14	758,532.44
15,300.0	90.00	359.10	9,880.0	6,498.0	5,641.2	11.8	5,641.2	0.00	389,754.13	758,530.87
15,400.0	90.00	359.10	9,880.0	6,498.0	5,741.2	10.2	5,741.2	0.00	389,854.12	758,529.31
15,500.0	90.00	359.10	9,880.0	6,498.0	5,841.2	8.6	5,841.2	0.00	389,954.11	758,527.74
15,600.0	90.00	359.10	9,880.0	6,498.0	5,941.2	7.1	5,941.2	0.00	390,054.10	758,526.17
15,700.0	90.00	359.10	9,880.0	6,498.0	6,041.2	5.5	6,041.2	0.00	390,154.08	758,524.61



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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)
15,800.0	90.00	359.10	9,880.0	6,498.0	6,141.2	3.9	6,141.1	0.00	390,254.07	758,523.04
15,900.0	90.00	359.10	9,880.0	6,498.0	6,241.2	2.4	6,241.1	0.00	390,354.06	758,521.47
16,000.0	90.00	359.10	9,880.0	6,498.0	6,341.1	0.8	6,341.1	0.00	390,454.05	758,519.90
16,100.0	90.00	359.10	9,880.0	6,498.0	6,441.1	-0.8	6,441.1	0.00	390,554.03	758,518.34
16,200.0	90.00	359.10	9,880.0	6,498.0	6,541.1	-2.3	6,541.1	0.00	390,654.02	758,516.77
16,300.0	90.00	359.10	9,880.0	6,498.0	6,641.1	-3.9	6,641.1	0.00	390,754.01	758,515.20
16,400.0	90.00	359.10	9,880.0	6,498.0	6,741.1	-5.5	6,741.1	0.00	390,854.00	758,513.64
16,500.0	90.00	359.10	9,880.0	6,498.0	6,841.1	-7.0	6,841.1	0.00	390,953.98	758,512.07
16,600.0	90.00	359.10	9,880.0	6,498.0	6,941.1	-8.6	6,941.1	0.00	391,053.97	758,510.50
16,700.0	90.00	359.10	9,880.0	6,498.0	7,041.1	-10.2	7,041.1	0.00	391,153.96	758,508.94
16,800.0	90.00	359.10	9,880.0	6,498.0	7,141.0	-11.7	7,141.1	0.00	391,253.95	758,507.37
16,900.0	90.00	359.10	9,880.0	6,498.0	7,241.0	-13.3	7,241.0	0.00	391,353.94	758,505.80
17,000.0	90.00	359.10	9,880.0	6,498.0	7,341.0	-14.9	7,341.0	0.00	391,453.92	758,504.23
17,100.0	90.00	359.10	9,880.0	6,498.0	7,441.0	-16.4	7,441.0	0.00	391,553.91	758,502.67
17,200.0	90.00	359.10	9,880.0	6,498.0	7,541.0	-18.0	7,541.0	0.00	391,653.90	758,501.10
17,251.1	90.00	359.10	9,880.0	6,498.0	7,592.1	-18.8	7,592.1	0.00	391,705.00	758,500.30

Checked By: _____ Approved By: _____ Date: _____