



RECEIVED

OCT 14 2009

HOBBSOCD

COG Operating LLC

Lea County(NAD83)

High Plains "22" State Com

#1H

OH

Plan: Plan #1

Pathfinder X & Y Planning Report

05 October, 2009

PATHFINDER



Pathfinder Energy Services
Pathfinder X & Y Planning Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #1H
Project:	Lea County(NAD83)	TVD Reference:	WELL @ 4158.00ft (25' KB Correction)
Site:	High Plains "22" State Com	MD Reference:	WELL @ 4158.00ft (25' KB Correction)
Well:	#1H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1	Database:	Midland Database

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	High Plains "22" State Com		
Site Position:		Northing:	761,973.600 ft
From:	Map	Easting:	794,733.500 ft
Position Uncertainty:	0.00 ft	Slot Radius:	"
		Latitude:	33° 5' 30.863 N
		Longitude:	103° 30' 21.427 W
		Grid Convergence:	0.45 °

Well	#1H		
Well Position	+N/-S	0.00 ft	Northing:
	+E/-W	0.00 ft	Easting:
Position Uncertainty		0.00 ft	Wellhead Elevation:
			ft
			Latitude:
			Longitude:
			Ground Level:
			4,133.00 ft

Wellbore	OH		
----------	----	--	--

Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
			(°)	(°)	(nT)
	IGRF200510	10/05/2009	7.81	61.06	49,340

Design	Plan #1		
--------	---------	--	--

Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction
	(ft)	(ft)	(ft)	(°)
	0.00	0.00	0.00	85.29

Survey Tool Program		Date 10/05/2009		
From	To	Survey (Wellbore)	Tool Name	Description
(ft)	(ft)			
0.00	13.996.39	Plan #1 (OH)		



Pathfinder Energy Services
Pathfinder X & Y Planning Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #1H
Project:	Lea County(NAD83)	TVD Reference:	WELL @ 4158.00ft (25' KB Correction)
Site:	High Plains "22" State Com	MD Reference:	WELL @ 4158.00ft (25' KB Correction)
Well:	#1H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1	Database:	Midland Database

Planned Survey											
MD (ft)	Inc (°)	Azi (°)	TVD (ft)	TVDSS (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)	Northing (ft)	Easting (ft)	
0.00	0.00	0.00	0.00	-4,158.00	0.00	0.00	0.00	0.00	761,973.60	794,733.50	
100.00	0.00	0.00	100.00	-4,058.00	0.00	0.00	0.00	0.00	761,973.60	794,733.50	
200.00	0.00	0.00	200.00	-3,958.00	0.00	0.00	0.00	0.00	761,973.60	794,733.50	
300.00	0.00	0.00	300.00	-3,858.00	0.00	0.00	0.00	0.00	761,973.60	794,733.50	
400.00	0.00	0.00	400.00	-3,758.00	0.00	0.00	0.00	0.00	761,973.60	794,733.50	
500.00	0.00	0.00	500.00	-3,658.00	0.00	0.00	0.00	0.00	761,973.60	794,733.50	
600.00	0.00	0.00	600.00	-3,558.00	0.00	0.00	0.00	0.00	761,973.60	794,733.50	
700.00	0.00	0.00	700.00	-3,458.00	0.00	0.00	0.00	0.00	761,973.60	794,733.50	
800.00	0.00	0.00	800.00	-3,358.00	0.00	0.00	0.00	0.00	761,973.60	794,733.50	
900.00	0.00	0.00	900.00	-3,258.00	0.00	0.00	0.00	0.00	761,973.60	794,733.50	
1,000.00	0.00	0.00	1,000.00	-3,158.00	0.00	0.00	0.00	0.00	761,973.60	794,733.50	
1,100.00	0.00	0.00	1,100.00	-3,058.00	0.00	0.00	0.00	0.00	761,973.60	794,733.50	
1,200.00	0.00	0.00	1,200.00	-2,958.00	0.00	0.00	0.00	0.00	761,973.60	794,733.50	
1,300.00	0.00	0.00	1,300.00	-2,858.00	0.00	0.00	0.00	0.00	761,973.60	794,733.50	
1,400.00	0.00	0.00	1,400.00	-2,758.00	0.00	0.00	0.00	0.00	761,973.60	794,733.50	
1,500.00	0.00	0.00	1,500.00	-2,658.00	0.00	0.00	0.00	0.00	761,973.60	794,733.50	
1,600.00	0.00	0.00	1,600.00	-2,558.00	0.00	0.00	0.00	0.00	761,973.60	794,733.50	
1,700.00	0.00	0.00	1,700.00	-2,458.00	0.00	0.00	0.00	0.00	761,973.60	794,733.50	
1,800.00	0.00	0.00	1,800.00	-2,358.00	0.00	0.00	0.00	0.00	761,973.60	794,733.50	
1,900.00	0.00	0.00	1,900.00	-2,258.00	0.00	0.00	0.00	0.00	761,973.60	794,733.50	
2,000.00	0.00	0.00	2,000.00	-2,158.00	0.00	0.00	0.00	0.00	761,973.60	794,733.50	
2,100.00	0.00	0.00	2,100.00	-2,058.00	0.00	0.00	0.00	0.00	761,973.60	794,733.50	
2,200.00	0.00	0.00	2,200.00	-1,958.00	0.00	0.00	0.00	0.00	761,973.60	794,733.50	
2,300.00	0.00	0.00	2,300.00	-1,858.00	0.00	0.00	0.00	0.00	761,973.60	794,733.50	
2,400.00	0.00	0.00	2,400.00	-1,758.00	0.00	0.00	0.00	0.00	761,973.60	794,733.50	
2,500.00	0.00	0.00	2,500.00	-1,658.00	0.00	0.00	0.00	0.00	761,973.60	794,733.50	
2,600.00	0.00	0.00	2,600.00	-1,558.00	0.00	0.00	0.00	0.00	761,973.60	794,733.50	



Pathfinder Energy Services
Pathfinder X & Y Planning Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #1H
Project:	Lea County(NAD83)	TVD Reference:	WELL @ 4158.00ft (25' KB Correction)
Site:	High Plains "22" State Com	MD Reference:	WELL @ 4158.00ft (25' KB Correction)
Well:	#1H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1	Database:	Midland Database

Planned Survey											
MD (ft)	Inc (°)	Azi (°)	TVD (ft)	TVDSS (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)	Northing (ft)	Easting (ft)	
2,700.00	0.00	0.00	2,700.00	-1,458.00	0.00	0.00	0.00	0.00	761,973.60	794,733.50	
2,800.00	0.00	0.00	2,800.00	-1,358.00	0.00	0.00	0.00	0.00	761,973.60	794,733.50	
2,900.00	0.00	0.00	2,900.00	-1,258.00	0.00	0.00	0.00	0.00	761,973.60	794,733.50	
3,000.00	0.00	0.00	3,000.00	-1,158.00	0.00	0.00	0.00	0.00	761,973.60	794,733.50	
3,100.00	0.00	0.00	3,100.00	-1,058.00	0.00	0.00	0.00	0.00	761,973.60	794,733.50	
3,200.00	0.00	0.00	3,200.00	-958.00	0.00	0.00	0.00	0.00	761,973.60	794,733.50	
3,300.00	0.00	0.00	3,300.00	-858.00	0.00	0.00	0.00	0.00	761,973.60	794,733.50	
3,400.00	0.00	0.00	3,400.00	-758.00	0.00	0.00	0.00	0.00	761,973.60	794,733.50	
3,500.00	0.00	0.00	3,500.00	-658.00	0.00	0.00	0.00	0.00	761,973.60	794,733.50	
3,600.00	0.00	0.00	3,600.00	-558.00	0.00	0.00	0.00	0.00	761,973.60	794,733.50	
3,700.00	0.00	0.00	3,700.00	-458.00	0.00	0.00	0.00	0.00	761,973.60	794,733.50	
3,800.00	0.00	0.00	3,800.00	-358.00	0.00	0.00	0.00	0.00	761,973.60	794,733.50	
3,900.00	0.00	0.00	3,900.00	-258.00	0.00	0.00	0.00	0.00	761,973.60	794,733.50	
4,000.00	0.00	0.00	4,000.00	-158.00	0.00	0.00	0.00	0.00	761,973.60	794,733.50	
4,100.00	0.00	0.00	4,100.00	-58.00	0.00	0.00	0.00	0.00	761,973.60	794,733.50	
4,200.00	0.00	0.00	4,200.00	42.00	0.00	0.00	0.00	0.00	761,973.60	794,733.50	
4,300.00	0.00	0.00	4,300.00	142.00	0.00	0.00	0.00	0.00	761,973.60	794,733.50	
4,400.00	0.00	0.00	4,400.00	242.00	0.00	0.00	0.00	0.00	761,973.60	794,733.50	
4,500.00	0.00	0.00	4,500.00	342.00	0.00	0.00	0.00	0.00	761,973.60	794,733.50	
4,600.00	0.00	0.00	4,600.00	442.00	0.00	0.00	0.00	0.00	761,973.60	794,733.50	
4,700.00	0.00	0.00	4,700.00	542.00	0.00	0.00	0.00	0.00	761,973.60	794,733.50	
4,800.00	0.00	0.00	4,800.00	642.00	0.00	0.00	0.00	0.00	761,973.60	794,733.50	
4,900.00	0.00	0.00	4,900.00	742.00	0.00	0.00	0.00	0.00	761,973.60	794,733.50	
5,000.00	0.00	0.00	5,000.00	842.00	0.00	0.00	0.00	0.00	761,973.60	794,733.50	
5,100.00	0.00	0.00	5,100.00	942.00	0.00	0.00	0.00	0.00	761,973.60	794,733.50	
5,200.00	0.00	0.00	5,200.00	1,042.00	0.00	0.00	0.00	0.00	761,973.60	794,733.50	
5,300.00	0.00	0.00	5,300.00	1,142.00	0.00	0.00	0.00	0.00	761,973.60	794,733.50	



Pathfinder Energy Services
Pathfinder X & Y Planning Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #1H
Project:	Lea County(NAD83)	TVD Reference:	WELL @ 4158.00ft (25' KB Correction)
Site:	High Plains "22" State Com	MD Reference:	WELL @ 4158.00ft (25' KB Correction)
Well:	#1H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1	Database:	Midland Database

Planned Survey											
MD (ft)	Inc (°)	Azi (°)	TVD (ft)	TVDSS (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)	Northing (ft)	Easting (ft)	
5,400.00	0.00	0.00	5,400.00	1,242.00	0.00	0.00	0.00	0.00	761,973.60	794,733.50	
5,500.00	0.00	0.00	5,500.00	1,342.00	0.00	0.00	0.00	0.00	761,973.60	794,733.50	
5,600.00	0.00	0.00	5,600.00	1,442.00	0.00	0.00	0.00	0.00	761,973.60	794,733.50	
5,700.00	0.00	0.00	5,700.00	1,542.00	0.00	0.00	0.00	0.00	761,973.60	794,733.50	
5,800.00	0.00	0.00	5,800.00	1,642.00	0.00	0.00	0.00	0.00	761,973.60	794,733.50	
5,900.00	0.00	0.00	5,900.00	1,742.00	0.00	0.00	0.00	0.00	761,973.60	794,733.50	
6,000.00	0.00	0.00	6,000.00	1,842.00	0.00	0.00	0.00	0.00	761,973.60	794,733.50	
6,100.00	0.00	0.00	6,100.00	1,942.00	0.00	0.00	0.00	0.00	761,973.60	794,733.50	
6,200.00	0.00	0.00	6,200.00	2,042.00	0.00	0.00	0.00	0.00	761,973.60	794,733.50	
6,300.00	0.00	0.00	6,300.00	2,142.00	0.00	0.00	0.00	0.00	761,973.60	794,733.50	
6,400.00	0.00	0.00	6,400.00	2,242.00	0.00	0.00	0.00	0.00	761,973.60	794,733.50	
6,500.00	0.00	0.00	6,500.00	2,342.00	0.00	0.00	0.00	0.00	761,973.60	794,733.50	
6,600.00	0.00	0.00	6,600.00	2,442.00	0.00	0.00	0.00	0.00	761,973.60	794,733.50	
6,700.00	0.00	0.00	6,700.00	2,542.00	0.00	0.00	0.00	0.00	761,973.60	794,733.50	
6,800.00	0.00	0.00	6,800.00	2,642.00	0.00	0.00	0.00	0.00	761,973.60	794,733.50	
6,900.00	0.00	0.00	6,900.00	2,742.00	0.00	0.00	0.00	0.00	761,973.60	794,733.50	
7,000.00	0.00	0.00	7,000.00	2,842.00	0.00	0.00	0.00	0.00	761,973.60	794,733.50	
7,100.00	0.00	0.00	7,100.00	2,942.00	0.00	0.00	0.00	0.00	761,973.60	794,733.50	
7,200.00	0.00	0.00	7,200.00	3,042.00	0.00	0.00	0.00	0.00	761,973.60	794,733.50	
7,300.00	0.00	0.00	7,300.00	3,142.00	0.00	0.00	0.00	0.00	761,973.60	794,733.50	
7,400.00	0.00	0.00	7,400.00	3,242.00	0.00	0.00	0.00	0.00	761,973.60	794,733.50	
7,500.00	0.00	0.00	7,500.00	3,342.00	0.00	0.00	0.00	0.00	761,973.60	794,733.50	
7,600.00	0.00	0.00	7,600.00	3,442.00	0.00	0.00	0.00	0.00	761,973.60	794,733.50	
7,700.00	0.00	0.00	7,700.00	3,542.00	0.00	0.00	0.00	0.00	761,973.60	794,733.50	
7,800.00	0.00	0.00	7,800.00	3,642.00	0.00	0.00	0.00	0.00	761,973.60	794,733.50	
7,900.00	0.00	0.00	7,900.00	3,742.00	0.00	0.00	0.00	0.00	761,973.60	794,733.50	
8,000.00	0.00	0.00	8,000.00	3,842.00	0.00	0.00	0.00	0.00	761,973.60	794,733.50	



Pathfinder Energy Services
Pathfinder X & Y Planning Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #1H
Project:	Lea County(NAD83)	TVD Reference:	WELL @ 4158.00ft (25' KB Correction)
Site:	High Plains "22" State Com	MD Reference:	WELL @ 4158.00ft (25' KB Correction)
Well:	#1H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1	Database:	Midland Database

Planned Survey											
MD (ft)	Inc (°)	Azi (°)	TVD (ft)	TVDSS (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)	Northing (ft)	Easting (ft)	
8,100.00	0.00	0.00	8,100.00	3,942.00	0.00	0.00	0.00	0.00	761,973.60	794,733.50	
8,200.00	0.00	0.00	8,200.00	4,042.00	0.00	0.00	0.00	0.00	761,973.60	794,733.50	
8,300.00	0.00	0.00	8,300.00	4,142.00	0.00	0.00	0.00	0.00	761,973.60	794,733.50	
8,400.00	0.00	0.00	8,400.00	4,242.00	0.00	0.00	0.00	0.00	761,973.60	794,733.50	
8,500.00	0.00	0.00	8,500.00	4,342.00	0.00	0.00	0.00	0.00	761,973.60	794,733.50	
8,600.00	0.00	0.00	8,600.00	4,442.00	0.00	0.00	0.00	0.00	761,973.60	794,733.50	
8,700.00	0.00	0.00	8,700.00	4,542.00	0.00	0.00	0.00	0.00	761,973.60	794,733.50	
8,800.00	0.00	0.00	8,800.00	4,642.00	0.00	0.00	0.00	0.00	761,973.60	794,733.50	
8,900.00	0.00	0.00	8,900.00	4,742.00	0.00	0.00	0.00	0.00	761,973.60	794,733.50	
9,000.00	0.00	0.00	9,000.00	4,842.00	0.00	0.00	0.00	0.00	761,973.60	794,733.50	
9,100.00	0.00	0.00	9,100.00	4,942.00	0.00	0.00	0.00	0.00	761,973.60	794,733.50	
9,182.50	0.00	0.00	9,182.50	5,024.50	0.00	0.00	0.00	0.00	761,973.60	794,733.50	
9,200.00	2.10	85.29	9,200.00	5,042.00	0.03	0.32	0.32	12.00	761,973.63	794,733.82	
9,225.00	5.10	85.29	9,224.94	5,066.94	0.16	1.88	1.89	12.00	761,973.76	794,735.38	
9,250.00	8.10	85.29	9,249.78	5,091.78	0.39	4.75	4.76	12.00	761,973.99	794,738.25	
9,275.00	11.10	85.29	9,274.42	5,116.42	0.73	8.90	8.93	12.00	761,974.33	794,742.40	
9,300.00	14.10	85.29	9,298.82	5,140.82	1.18	14.34	14.38	12.00	761,974.78	794,747.84	
9,325.00	17.10	85.29	9,322.89	5,164.89	1.73	21.03	21.11	12.00	761,975.33	794,754.53	
9,350.00	20.10	85.29	9,346.59	5,188.59	2.39	28.98	29.08	12.00	761,975.99	794,762.48	
9,375.00	23.10	85.29	9,369.83	5,211.83	3.14	38.15	38.28	12.00	761,976.74	794,771.65	
9,400.00	26.10	85.29	9,392.56	5,234.56	4.00	48.52	48.68	12.00	761,977.60	794,782.02	
9,425.00	29.10	85.29	9,414.71	5,256.71	4.95	60.06	60.27	12.00	761,978.55	794,793.56	
9,450.00	32.10	85.29	9,436.23	5,278.23	5.99	72.74	72.99	12.00	761,979.59	794,806.24	
9,475.00	35.10	85.29	9,457.05	5,299.05	7.13	86.53	86.82	12.00	761,980.73	794,820.03	
9,500.00	38.10	85.29	9,477.12	5,319.12	8.35	101.38	101.72	12.00	761,981.95	794,834.88	
9,525.00	41.10	85.29	9,496.38	5,338.38	9.66	117.26	117.66	12.00	761,983.26	794,850.76	
9,550.00	44.10	85.29	9,514.78	5,356.78	11.05	134.12	134.58	12.00	761,984.65	794,867.62	



Pathfinder Energy Services
Pathfinder X & Y Planning Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #1H
Project:	Lea County(NAD83)	TVD Reference:	WELL @ 4158.00ft (25' KB Correction)
Site:	High Plains "22" State Com	MD Reference:	WELL @ 4158.00ft (25' KB Correction)
Well:	#1H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1	Database:	Midland Database

Planned Survey											
MD (ft)	Inc (°)	Azi (°)	TVD (ft)	TVDSS (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)	Northing (ft)	Easting (ft)	
9,575.00	47.10	85.29	9,532.27	5,374.27	12.52	151.92	152.43	12.00	761,986.12	794,885.42	
9,600.00	50.10	85.29	9,548.80	5,390.80	14.06	170.61	171.18	12.00	761,987.66	794,904.11	
9,625.00	53.10	85.29	9,564.33	5,406.33	15.66	190.13	190.77	12.00	761,989.26	794,923.63	
9,650.00	56.10	85.29	9,578.81	5,420.81	17.34	210.43	211.15	12.00	761,990.94	794,943.93	
9,675.00	59.10	85.29	9,592.21	5,434.21	19.07	231.47	232.25	12.00	761,992.67	794,964.97	
9,700.00	62.10	85.29	9,604.48	5,446.48	20.86	253.17	254.03	12.00	761,994.46	794,986.67	
9,725.00	65.10	85.29	9,615.60	5,457.60	22.70	275.49	276.42	12.00	761,996.30	795,008.99	
9,750.00	68.09	85.29	9,625.53	5,467.53	24.58	298.35	299.36	12.00	761,998.18	795,031.85	
9,775.00	71.09	85.29	9,634.24	5,476.24	26.50	321.70	322.79	12.00	762,000.10	795,055.20	
9,800.00	74.09	85.29	9,641.72	5,483.72	28.46	345.47	346.64	12.00	762,002.06	795,078.97	
9,825.00	77.09	85.29	9,647.94	5,489.94	30.45	369.60	370.85	12.00	762,004.05	795,103.10	
9,850.00	80.09	85.29	9,652.88	5,494.88	32.46	394.02	395.36	12.00	762,006.06	795,127.52	
9,875.00	83.09	85.29	9,656.54	5,498.54	34.49	418.67	420.08	12.00	762,008.09	795,152.17	
9,900.00	86.09	85.29	9,658.89	5,500.89	36.54	443.47	444.97	12.00	762,010.14	795,176.97	
9,925.00	89.09	85.29	9,659.94	5,501.94	38.59	468.36	469.94	12.00	762,012.19	795,201.86	
9,931.97	89.93	85.29	9,660.00	5,502.00	39.16	475.31	476.92	12.00	762,012.76	795,208.81	
10,000.00	89.93	85.29	9,660.08	5,502.08	44.75	543.10	544.94	0.00	762,018.35	795,276.60	
10,100.00	89.93	85.29	9,660.21	5,502.21	52.96	642.77	644.94	0.00	762,026.56	795,376.27	
10,200.00	89.93	85.29	9,660.33	5,502.33	61.17	742.43	744.94	0.00	762,034.77	795,475.93	
10,300.00	89.93	85.29	9,660.45	5,502.45	69.38	842.09	844.94	0.00	762,042.98	795,575.59	
10,400.00	89.93	85.29	9,660.57	5,502.57	77.59	941.75	944.94	0.00	762,051.19	795,675.25	
10,500.00	89.93	85.29	9,660.69	5,502.69	85.80	1,041.42	1,044.94	0.00	762,059.40	795,774.92	
10,600.00	89.93	85.29	9,660.82	5,502.82	94.01	1,141.08	1,144.94	0.00	762,067.61	795,874.58	
10,700.00	89.93	85.29	9,660.94	5,502.94	102.23	1,240.74	1,244.94	0.00	762,075.83	795,974.24	
10,800.00	89.93	85.29	9,661.06	5,503.06	110.44	1,340.40	1,344.94	0.00	762,084.04	796,073.90	
10,900.00	89.93	85.29	9,661.18	5,503.18	118.65	1,440.06	1,444.94	0.00	762,092.25	796,173.56	
11,000.00	89.93	85.29	9,661.30	5,503.30	126.86	1,539.73	1,544.94	0.00	762,100.46	796,273.23	



Pathfinder Energy Services
Pathfinder X & Y Planning Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #1H
Project:	Lea County(NAD83)	TVD Reference:	WELL @ 4158.00ft (25' KB Correction)
Site:	High Plains "22" State Com	MD Reference:	WELL @ 4158.00ft (25' KB Correction)
Well:	#1H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1	Database:	Midland Database

Planned Survey											
MD (ft)	Inc (°)	Azi (°)	TVD (ft)	TVDSS (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)	Northing (ft)	Easting (ft)	
11,100.00	89.93	85.29	9,661.43	5,503.43	135.07	1,639.39	1,644.94	0.00	762,108.67	796,372.89	
11,200.00	89.93	85.29	9,661.55	5,503.55	143.28	1,739.05	1,744.94	0.00	762,116.88	796,472.55	
11,300.00	89.93	85.29	9,661.67	5,503.67	151.49	1,838.71	1,844.94	0.00	762,125.09	796,572.21	
11,400.00	89.93	85.29	9,661.79	5,503.79	159.70	1,938.38	1,944.94	0.00	762,133.30	796,671.88	
11,500.00	89.93	85.29	9,661.92	5,503.92	167.92	2,038.04	2,044.94	0.00	762,141.52	796,771.54	
11,600.00	89.93	85.29	9,662.04	5,504.04	176.13	2,137.70	2,144.94	0.00	762,149.73	796,871.20	
11,700.00	89.93	85.29	9,662.16	5,504.16	184.34	2,237.36	2,244.94	0.00	762,157.94	796,970.86	
11,800.00	89.93	85.29	9,662.28	5,504.28	192.55	2,337.02	2,344.94	0.00	762,166.15	797,070.52	
11,900.00	89.93	85.29	9,662.40	5,504.40	200.76	2,436.69	2,444.94	0.00	762,174.36	797,170.19	
12,000.00	89.93	85.29	9,662.53	5,504.53	208.97	2,536.35	2,544.94	0.00	762,182.57	797,269.85	
12,100.00	89.93	85.29	9,662.65	5,504.65	217.18	2,636.01	2,644.94	0.00	762,190.78	797,369.51	
12,200.00	89.93	85.29	9,662.77	5,504.77	225.39	2,735.67	2,744.94	0.00	762,198.99	797,469.17	
12,300.00	89.93	85.29	9,662.89	5,504.89	233.61	2,835.34	2,844.94	0.00	762,207.21	797,568.84	
12,400.00	89.93	85.29	9,663.02	5,505.02	241.82	2,935.00	2,944.94	0.00	762,215.42	797,668.50	
12,500.00	89.93	85.29	9,663.14	5,505.14	250.03	3,034.66	3,044.94	0.00	762,223.63	797,768.16	
12,600.00	89.93	85.29	9,663.26	5,505.26	258.24	3,134.32	3,144.94	0.00	762,231.84	797,867.82	
12,700.00	89.93	85.29	9,663.38	5,505.38	266.45	3,233.98	3,244.94	0.00	762,240.05	797,967.48	
12,800.00	89.93	85.29	9,663.50	5,505.50	274.66	3,333.65	3,344.94	0.00	762,248.26	798,067.15	
12,900.00	89.93	85.29	9,663.63	5,505.63	282.87	3,433.31	3,444.94	0.00	762,256.47	798,166.81	
13,000.00	89.93	85.29	9,663.75	5,505.75	291.08	3,532.97	3,544.94	0.00	762,264.68	798,266.47	
13,100.00	89.93	85.29	9,663.87	5,505.87	299.30	3,632.63	3,644.94	0.00	762,272.90	798,366.13	
13,200.00	89.93	85.29	9,663.99	5,505.99	307.51	3,732.30	3,744.94	0.00	762,281.11	798,465.80	
13,300.00	89.93	85.29	9,664.11	5,506.11	315.72	3,831.96	3,844.94	0.00	762,289.32	798,565.46	
13,400.00	89.93	85.29	9,664.24	5,506.24	323.93	3,931.62	3,944.94	0.00	762,297.53	798,665.12	
13,500.00	89.93	85.29	9,664.36	5,506.36	332.14	4,031.28	4,044.94	0.00	762,305.74	798,764.78	
13,600.00	89.93	85.29	9,664.48	5,506.48	340.35	4,130.94	4,144.94	0.00	762,313.95	798,864.44	
13,700.00	89.93	85.29	9,664.60	5,506.60	348.56	4,230.61	4,244.94	0.00	762,322.16	798,964.11	



Pathfinder Energy Services
Pathfinder X & Y Planning Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #1H
Project:	Lea County(NAD83)	TVD Reference:	WELL @ 4158.00ft (25' KB Correction)
Site:	High Plains "22" State Com	MD Reference:	WELL @ 4158.00ft (25' KB Correction)
Well:	#1H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1.	Database:	Midland Database

Planned Survey										
MD (ft)	Inc (°)	Azi (°)	TVD (ft)	TVDSS (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)	Northing (ft)	Easting (ft)
13,800.00	89.93	85.29	9,664.73	5,506.73	356.77	4,330.27	4,344.94	0.00	762,330.37	799,063.77
13,900.00	89.93	85.29	9,664.85	5,506.85	364.99	4,429.93	4,444.94	0.00	762,338.59	799,163.43
13,996.39	89.93	85.29	9,664.97	5,506.97	372.90	4,526.00	4,541.33	0.00	762,346.50	799,259.50

Targets									
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(HP#1H)	0.00	0.00	9,665.00	372.90	4,519.20	762,346.500	799,252.700	33° 5' 34.197 N	103° 29' 28.275 W
- plan hits target									
- Point									

Checked By: _____	Approved By: _____	Date: _____
-------------------	--------------------	-------------



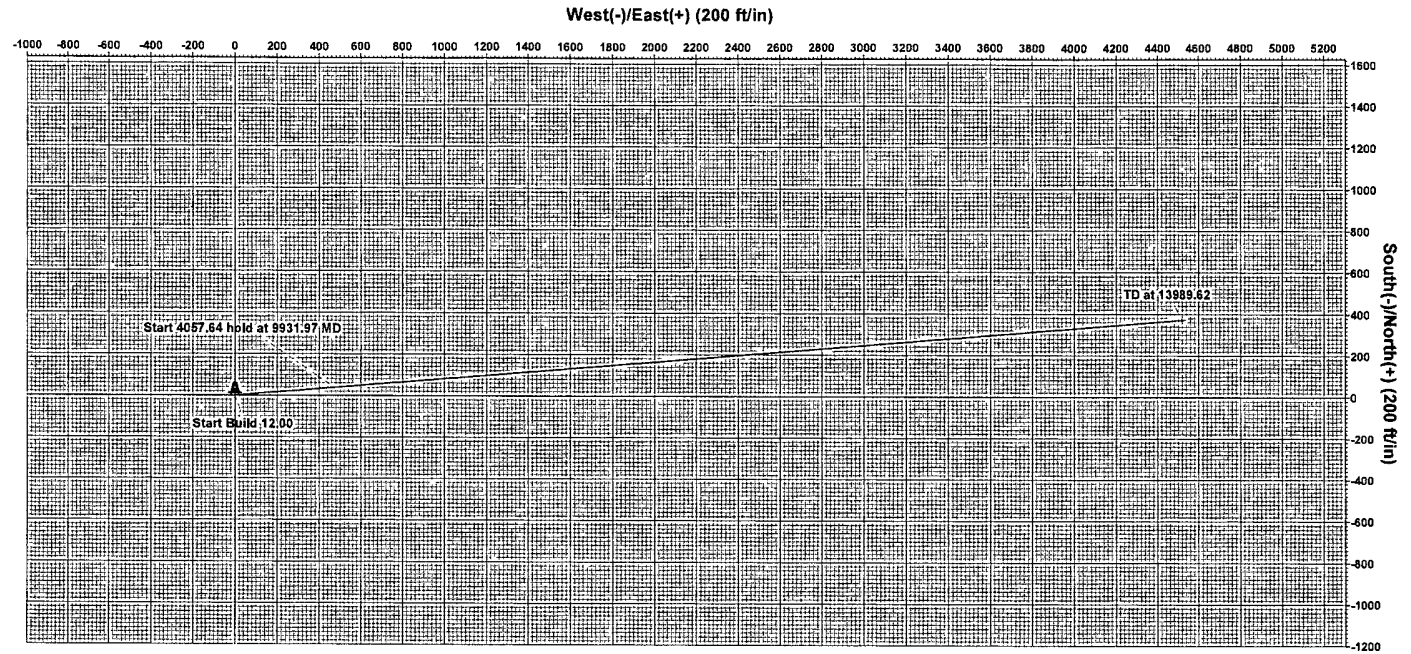
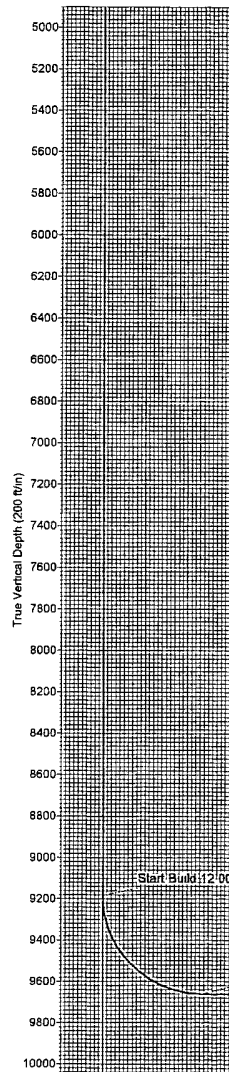
PROJECT DETAILS: Lea County(NAD83)
Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: New Mexico Eastern Zone
System Datum: Mean Sea Level
Local North: Grid



Azimuths to Grid North
True North: -0.45°
Magnetic North: 7.36°

Magnetic Field
Strength: 49340.3snT
Dip Angle: 61.06°
Date: 10/05/2009
Model: IGRF200510

PATHFINDER



SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N-S	+E-W	DLeg	TFace	VSec	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	9182.50	0.00	0.00	9182.50	0.00	0.00	0.00	0.00	0.00	
3	9931.97	89.93	85.29	9660.00	39.16	475.31	12.00	85.29	476.92	
4	13998.39	89.93	85.29	9664.97	372.90	4526.00	0.00	0.00	4541.33	PBHL(HP#1H)

WELL DETAILS #1H

Ground Elevation: 4133.00
RKB Elevation: WELL @ 4158.00ft (25' KB Correction)
Rig Name: 25' KB Correction

+N-S	+E-W	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	761973.600	794733.500	33° 5' 30.893 N	103° 30' 21.427 W	

Project: Lea County(NAD83)
Site: High Plains "22" State Com
Well: #1H
Wellbore: OH
Plan: Plan #1 (#1H/OH)

Plan Plan #1 (#1H/OH)

Created By: Nate Bingham Date: 15 51, October 05 2009
Checked: _____ Date: _____

COG Operating LLC - High Plains 22 St Com #1H

Attention: Oil Conservation Commission

The documents provided are hard copies necessary for processing the High Plains 22 St Com #1H APD. The APD was submitted online thru the NMOCD website on October 6, 2009.

Documents include:

1. Directional plan and plot from Pathfinder Directional Services
2. Signed C-144EZ
3. Attachments to C-144EZ

Please call if there are any questions or comments.

Thank you,



Seth Wild
Drilling Engineer
Concho Resources
Cell - 432.528.3633
Cell - 254.246.0068
E-mail - swild@conchoresources.com

RECEIVED

OCT 14 2009

HOBBSOCD