

30-015-37234



Marbob

Eddy County

Way South State Com

#1H

OH

Plan: Plan #1

Pathfinder X & Y Planning Report

25 November, 2009

PATHFINDER



Pathfinder Energy Services

Pathfinder X & Y Planning Report



Company: Marbob
Project: Eddy County
Site: Way South State Com
Well: #1H
Wellbore: OH
Design: Plan #1

Local Co-ordinate Reference: Well #1H
TVD Reference: WELL @ 3137.00ft (Patriot #3)
MD Reference: WELL @ 3137.00ft (Patriot #3)
North Reference: Gnd
Survey Calculation Method: Minimum Curvature
Database: Midland Database

Project: Eddy County

Map System: US State Plane 1927 (Exact solution)
Geo Datum: NAD 1927 (NADCON CONUS)
Map Zone: New Mexico East 3001

System Datum: Mean Sea Level

Site: Way South State Com

Site Position:
From: Map
Position Uncertainty: 0.00 ft

Northing: 370,528.900 ft
Easting: 561,903.900 ft
Slot Radius: "

Latitude: 32° 1' 6.747 N
Longitude: 104° 8' 0.960 W
Grid Convergence: 0.11 °

Well: #1H

Well Position +N/-S 0.00 ft
+E/-W 0.00 ft
Position Uncertainty 0.00 ft

Northing: 370,672.400 ft
Easting: 566,532.600 ft
Wellhead Elevation: ft

Latitude: 32° 1' 8.079 N
Longitude: 104° 7' 7.192 W
Ground Level: 3,115.00 ft

Wellbore: OH

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	08/06/2009	8.03	59.96	48,646

Design: Plan #1

Audit Notes:

Version: Phase: PLAN Tie On Depth: 0.00

Vertical Section: Depth From (TVD) (ft) +N/-S (ft) +E/-W (ft) Direction (°)

0.00 0.00 0.00 268.22

Survey Tool Program Date 11/25/2009

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.00	10,975.98	Plan #1 (OH)	MWD	MWD - Standard



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0.00	0.00	0.00	0.00	-3,137.00	0.00	0.00	0.00	0.00	370,672.40	566,532.60	
100.00	0.00	0.00	100.00	-3,037.00	0.00	0.00	0.00	0.00	370,672.40	566,532.60	
200.00	0.00	0.00	200.00	-2,937.00	0.00	0.00	0.00	0.00	370,672.40	566,532.60	
300.00	0.00	0.00	300.00	-2,837.00	0.00	0.00	0.00	0.00	370,672.40	566,532.60	
400.00	0.00	0.00	400.00	-2,737.00	0.00	0.00	0.00	0.00	370,672.40	566,532.60	
500.00	0.00	0.00	500.00	-2,637.00	0.00	0.00	0.00	0.00	370,672.40	566,532.60	
600.00	0.00	0.00	600.00	-2,537.00	0.00	0.00	0.00	0.00	370,672.40	566,532.60	
700.00	0.00	0.00	700.00	-2,437.00	0.00	0.00	0.00	0.00	370,672.40	566,532.60	
800.00	0.00	0.00	800.00	-2,337.00	0.00	0.00	0.00	0.00	370,672.40	566,532.60	
900.00	0.00	0.00	900.00	-2,237.00	0.00	0.00	0.00	0.00	370,672.40	566,532.60	
1,000.00	0.00	0.00	1,000.00	-2,137.00	0.00	0.00	0.00	0.00	370,672.40	566,532.60	
1,100.00	0.00	0.00	1,100.00	-2,037.00	0.00	0.00	0.00	0.00	370,672.40	566,532.60	
1,200.00	0.00	0.00	1,200.00	-1,937.00	0.00	0.00	0.00	0.00	370,672.40	566,532.60	
1,300.00	0.00	0.00	1,300.00	-1,837.00	0.00	0.00	0.00	0.00	370,672.40	566,532.60	
1,400.00	0.00	0.00	1,400.00	-1,737.00	0.00	0.00	0.00	0.00	370,672.40	566,532.60	
1,500.00	0.00	0.00	1,500.00	-1,637.00	0.00	0.00	0.00	0.00	370,672.40	566,532.60	
1,600.00	0.00	0.00	1,600.00	-1,537.00	0.00	0.00	0.00	0.00	370,672.40	566,532.60	
1,700.00	0.00	0.00	1,700.00	-1,437.00	0.00	0.00	0.00	0.00	370,672.40	566,532.60	
1,800.00	0.00	0.00	1,800.00	-1,337.00	0.00	0.00	0.00	0.00	370,672.40	566,532.60	
1,900.00	0.00	0.00	1,900.00	-1,237.00	0.00	0.00	0.00	0.00	370,672.40	566,532.60	
2,000.00	0.00	0.00	2,000.00	-1,137.00	0.00	0.00	0.00	0.00	370,672.40	566,532.60	
2,100.00	0.00	0.00	2,100.00	-1,037.00	0.00	0.00	0.00	0.00	370,672.40	566,532.60	
2,200.00	0.00	0.00	2,200.00	-937.00	0.00	0.00	0.00	0.00	370,672.40	566,532.60	
2,300.00	0.00	0.00	2,300.00	-837.00	0.00	0.00	0.00	0.00	370,672.40	566,532.60	
2,400.00	0.00	0.00	2,400.00	-737.00	0.00	0.00	0.00	0.00	370,672.40	566,532.60	
2,500.00	0.00	0.00	2,500.00	-637.00	0.00	0.00	0.00	0.00	370,672.40	566,532.60	
2,600.00	0.00	0.00	2,600.00	-537.00	0.00	0.00	0.00	0.00	370,672.40	566,532.60	



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2,700.00	0.00	0.00	2,700.00	-437.00	0.00	0.00	0.00	0.00	370,672.40	566,532.60	
2,800.00	0.00	0.00	2,800.00	-337.00	0.00	0.00	0.00	0.00	370,672.40	566,532.60	
2,900.00	0.00	0.00	2,900.00	-237.00	0.00	0.00	0.00	0.00	370,672.40	566,532.60	
3,000.00	0.00	0.00	3,000.00	-137.00	0.00	0.00	0.00	0.00	370,672.40	566,532.60	
3,100.00	0.00	0.00	3,100.00	-37.00	0.00	0.00	0.00	0.00	370,672.40	566,532.60	
3,200.00	0.00	0.00	3,200.00	63.00	0.00	0.00	0.00	0.00	370,672.40	566,532.60	
3,300.00	0.00	0.00	3,300.00	163.00	0.00	0.00	0.00	0.00	370,672.40	566,532.60	
3,400.00	0.00	0.00	3,400.00	263.00	0.00	0.00	0.00	0.00	370,672.40	566,532.60	
3,500.00	0.00	0.00	3,500.00	363.00	0.00	0.00	0.00	0.00	370,672.40	566,532.60	
3,600.00	0.00	0.00	3,600.00	463.00	0.00	0.00	0.00	0.00	370,672.40	566,532.60	
3,700.00	0.00	0.00	3,700.00	563.00	0.00	0.00	0.00	0.00	370,672.40	566,532.60	
3,800.00	0.00	0.00	3,800.00	663.00	0.00	0.00	0.00	0.00	370,672.40	566,532.60	
3,900.00	0.00	0.00	3,900.00	763.00	0.00	0.00	0.00	0.00	370,672.40	566,532.60	
4,000.00	0.00	0.00	4,000.00	863.00	0.00	0.00	0.00	0.00	370,672.40	566,532.60	
4,100.00	0.00	0.00	4,100.00	963.00	0.00	0.00	0.00	0.00	370,672.40	566,532.60	
4,200.00	0.00	0.00	4,200.00	1,063.00	0.00	0.00	0.00	0.00	370,672.40	566,532.60	
4,300.00	0.00	0.00	4,300.00	1,163.00	0.00	0.00	0.00	0.00	370,672.40	566,532.60	
4,400.00	0.00	0.00	4,400.00	1,263.00	0.00	0.00	0.00	0.00	370,672.40	566,532.60	
4,500.00	0.00	0.00	4,500.00	1,363.00	0.00	0.00	0.00	0.00	370,672.40	566,532.60	
4,600.00	0.00	0.00	4,600.00	1,463.00	0.00	0.00	0.00	0.00	370,672.40	566,532.60	
4,700.00	0.00	0.00	4,700.00	1,563.00	0.00	0.00	0.00	0.00	370,672.40	566,532.60	
4,800.00	0.00	0.00	4,800.00	1,663.00	0.00	0.00	0.00	0.00	370,672.40	566,532.60	
4,900.00	0.00	0.00	4,900.00	1,763.00	0.00	0.00	0.00	0.00	370,672.40	566,532.60	
5,000.00	0.00	0.00	5,000.00	1,863.00	0.00	0.00	0.00	0.00	370,672.40	566,532.60	
5,100.00	0.00	0.00	5,100.00	1,963.00	0.00	0.00	0.00	0.00	370,672.40	566,532.60	
5,200.00	0.00	0.00	5,200.00	2,063.00	0.00	0.00	0.00	0.00	370,672.40	566,532.60	
5,300.00	0.00	0.00	5,300.00	2,163.00	0.00	0.00	0.00	0.00	370,672.40	566,532.60	



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North Reference: Grd
Survey Calculation Method: Minimum Curvature
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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	2,263.00	0.00	0.00	0.00	0.00	370,672.40	566,532.60
5,500.00	0.00	0.00	5,500.00	2,363.00	0.00	0.00	0.00	0.00	370,672.40	566,532.60
5,600.00	0.00	0.00	5,600.00	2,463.00	0.00	0.00	0.00	0.00	370,672.40	566,532.60
5,700.00	0.00	0.00	5,700.00	2,563.00	0.00	0.00	0.00	0.00	370,672.40	566,532.60
5,800.00	0.00	0.00	5,800.00	2,663.00	0.00	0.00	0.00	0.00	370,672.40	566,532.60
5,900.00	0.00	0.00	5,900.00	2,763.00	0.00	0.00	0.00	0.00	370,672.40	566,532.60
6,000.00	0.00	0.00	6,000.00	2,863.00	0.00	0.00	0.00	0.00	370,672.40	566,532.60
6,072.50	0.00	0.00	6,072.50	2,935.50	0.00	0.00	0.00	0.00	370,672.40	566,532.60
6,075.00	0.30	268.22	6,075.00	2,938.00	0.00	-0.01	0.01	12.00	370,672.40	566,532.59
6,100.00	3.30	268.22	6,099.98	2,962.98	-0.02	-0.79	0.79	12.00	370,672.38	566,531.81
6,125.00	6.30	268.22	6,124.89	2,987.89	-0.09	-2.88	2.88	12.00	370,672.31	566,529.72
6,150.00	9.30	268.22	6,149.66	3,012.66	-0.19	-6.27	6.28	12.00	370,672.21	566,526.33
6,175.00	12.30	268.22	6,174.21	3,037.21	-0.34	-10.95	10.96	12.00	370,672.06	566,521.65
6,200.00	15.30	268.22	6,198.49	3,061.49	-0.53	-16.91	16.92	12.00	370,671.87	566,515.69
6,225.00	18.30	268.22	6,222.42	3,085.42	-0.75	-24.13	24.15	12.00	370,671.65	566,508.47
6,250.00	21.30	268.22	6,245.94	3,108.94	-1.01	-32.60	32.61	12.00	370,671.39	566,500.00
6,275.00	24.30	268.22	6,268.98	3,131.98	-1.31	-42.28	42.30	12.00	370,671.09	566,490.32
6,300.00	27.30	268.22	6,291.49	3,154.49	-1.65	-53.15	53.18	12.00	370,670.75	566,479.45
6,325.00	30.30	268.22	6,313.40	3,176.40	-2.03	-65.19	65.22	12.00	370,670.37	566,467.41
6,350.00	33.30	268.22	6,334.64	3,197.64	-2.43	-78.35	78.39	12.00	370,669.97	566,454.25
6,375.00	36.30	268.22	6,355.17	3,218.17	-2.88	-92.61	92.66	12.00	370,669.52	566,439.99
6,400.00	39.30	268.22	6,374.92	3,237.92	-3.35	-107.92	107.98	12.00	370,669.05	566,424.68
6,425.00	42.30	268.22	6,393.84	3,256.84	-3.86	-124.25	124.31	12.00	370,668.54	566,408.35
6,450.00	45.30	268.22	6,411.89	3,274.89	-4.40	-141.54	141.61	12.00	370,668.00	566,391.06
6,475.00	48.30	268.22	6,429.00	3,292.00	-4.96	-159.75	159.83	12.00	370,667.44	566,372.85
6,500.00	51.30	268.22	6,445.14	3,308.14	-5.56	-178.84	178.92	12.00	370,666.84	566,353.76
6,525.00	54.30	268.22	6,460.25	3,323.25	-6.18	-198.74	198.83	12.00	370,666.22	566,333.86



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6,550.00	57.30	268.22	6,474.30	3,337.30	-6.82	-219.40	219.51	12.00	370,665.58	566,313.20
6,575.00	60.30	268.22	6,487.25	3,350.25	-7.48	-240.77	240.89	12.00	370,664.92	566,291.83
6,600.00	63.30	268.22	6,499.07	3,362.07	-8.17	-262.79	262.92	12.00	370,664.23	566,269.81
6,625.00	66.30	268.22	6,509.71	3,372.71	-8.87	-285.39	285.53	12.00	370,663.53	566,247.21
6,650.00	69.29	268.22	6,519.16	3,382.16	-9.59	-308.53	308.68	12.00	370,662.81	566,224.07
6,675.00	72.29	268.22	6,527.38	3,390.38	-10.32	-332.12	332.28	12.00	370,662.08	566,200.48
6,700.00	75.29	268.22	6,534.36	3,397.36	-11.07	-356.11	356.29	12.00	370,661.33	566,176.49
6,725.00	78.29	268.22	6,540.07	3,403.07	-11.82	-380.44	380.62	12.00	370,660.58	566,152.16
6,750.00	81.29	268.22	6,544.50	3,407.50	-12.59	-405.03	405.22	12.00	370,659.81	566,127.57
6,775.00	84.29	268.22	6,547.63	3,410.63	-13.36	-429.82	430.02	12.00	370,659.04	566,102.78
6,800.00	87.29	268.22	6,549.47	3,412.47	-14.13	-454.73	454.95	12.00	370,658.27	566,077.87
6,822.56	90.00	268.22	6,550.00	3,413.00	-14.83	-477.27	477.50	12.00	370,657.57	566,055.33
6,900.00	90.00	268.22	6,550.00	3,413.00	-17.24	-554.68	554.94	0.00	370,655.16	565,977.92
7,000.00	90.00	268.22	6,550.00	3,413.00	-20.34	-654.63	654.94	0.00	370,652.06	565,877.97
7,100.00	90.00	268.22	6,550.00	3,413.00	-23.45	-754.58	754.94	0.00	370,648.95	565,778.02
7,200.00	90.00	268.22	6,550.00	3,413.00	-26.56	-854.53	854.94	0.00	370,645.84	565,678.07
7,300.00	90.00	268.22	6,550.00	3,413.00	-29.66	-954.48	954.94	0.00	370,642.74	565,578.12
7,400.00	90.00	268.22	6,550.00	3,413.00	-32.77	-1,054.44	1,054.94	0.00	370,639.63	565,478.16
7,500.00	90.00	268.22	6,550.00	3,413.00	-35.87	-1,154.39	1,154.94	0.00	370,636.53	565,378.21
7,600.00	90.00	268.22	6,550.00	3,413.00	-38.98	-1,254.34	1,254.94	0.00	370,633.42	565,278.26
7,700.00	90.00	268.22	6,550.00	3,413.00	-42.09	-1,354.29	1,354.94	0.00	370,630.31	565,178.31
7,800.00	90.00	268.22	6,550.00	3,413.00	-45.19	-1,454.24	1,454.94	0.00	370,627.21	565,078.36
7,900.00	90.00	268.22	6,550.00	3,413.00	-48.30	-1,554.19	1,554.94	0.00	370,624.10	564,978.41
8,000.00	90.00	268.22	6,550.00	3,413.00	-51.41	-1,654.15	1,654.94	0.00	370,620.99	564,878.45
8,100.00	90.00	268.22	6,550.00	3,413.00	-54.51	-1,754.10	1,754.94	0.00	370,617.89	564,778.50
8,200.00	90.00	268.22	6,550.00	3,413.00	-57.62	-1,854.05	1,854.94	0.00	370,614.78	564,678.55
8,300.00	90.00	268.22	6,550.00	3,413.00	-60.72	-1,954.00	1,954.94	0.00	370,611.68	564,578.60



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8,400.00	90.00	268.22	6,550.00	3,413.00	-63.83	-2,053.95	2,054.94	0.00	370,608.57	564,478.65
8,500.00	90.00	268.22	6,550.00	3,413.00	-66.94	-2,153.90	2,154.94	0.00	370,605.46	564,378.70
8,600.00	90.00	268.22	6,550.00	3,413.00	-70.04	-2,253.86	2,254.94	0.00	370,602.36	564,278.74
8,700.00	90.00	268.22	6,550.00	3,413.00	-73.15	-2,353.81	2,354.94	0.00	370,599.25	564,178.79
8,800.00	90.00	268.22	6,550.00	3,413.00	-76.26	-2,453.76	2,454.94	0.00	370,596.14	564,078.84
8,900.00	90.00	268.22	6,550.00	3,413.00	-79.36	-2,553.71	2,554.94	0.00	370,593.04	563,978.89
9,000.00	90.00	268.22	6,550.00	3,413.00	-82.47	-2,653.66	2,654.94	0.00	370,589.93	563,878.94
9,100.00	90.00	268.22	6,550.00	3,413.00	-85.57	-2,753.62	2,754.94	0.00	370,586.83	563,778.98
9,200.00	90.00	268.22	6,550.00	3,413.00	-88.68	-2,853.57	2,854.94	0.00	370,583.72	563,679.03
9,300.00	90.00	268.22	6,550.00	3,413.00	-91.79	-2,953.52	2,954.94	0.00	370,580.61	563,579.08
9,400.00	90.00	268.22	6,550.00	3,413.00	-94.89	-3,053.47	3,054.94	0.00	370,577.51	563,479.13
9,500.00	90.00	268.22	6,550.00	3,413.00	-98.00	-3,153.42	3,154.94	0.00	370,574.40	563,379.18
9,600.00	90.00	268.22	6,550.00	3,413.00	-101.10	-3,253.37	3,254.94	0.00	370,571.30	563,279.23
9,700.00	90.00	268.22	6,550.00	3,413.00	-104.21	-3,353.33	3,354.94	0.00	370,568.19	563,179.27
9,800.00	90.00	268.22	6,550.00	3,413.00	-107.32	-3,453.28	3,454.94	0.00	370,565.08	563,079.32
9,900.00	90.00	268.22	6,550.00	3,413.00	-110.42	-3,553.23	3,554.94	0.00	370,561.98	562,979.37
10,000.00	90.00	268.22	6,550.00	3,413.00	-113.53	-3,653.18	3,654.94	0.00	370,558.87	562,879.42
10,100.00	90.00	268.22	6,550.00	3,413.00	-116.64	-3,753.13	3,754.94	0.00	370,555.76	562,779.47
10,200.00	90.00	268.22	6,550.00	3,413.00	-119.74	-3,853.08	3,854.94	0.00	370,552.66	562,679.52
10,300.00	90.00	268.22	6,550.00	3,413.00	-122.85	-3,953.04	3,954.94	0.00	370,549.55	562,579.56
10,400.00	90.00	268.22	6,550.00	3,413.00	-125.95	-4,052.99	4,054.94	0.00	370,546.45	562,479.61
10,500.00	90.00	268.22	6,550.00	3,413.00	-129.06	-4,152.94	4,154.94	0.00	370,543.34	562,379.66
10,600.00	90.00	268.22	6,550.00	3,413.00	-132.17	-4,252.89	4,254.94	0.00	370,540.23	562,279.71
10,700.00	90.00	268.22	6,550.00	3,413.00	-135.27	-4,352.84	4,354.94	0.00	370,537.13	562,179.76
10,800.00	90.00	268.22	6,550.00	3,413.00	-138.38	-4,452.80	4,454.94	0.00	370,534.02	562,079.80
10,900.00	90.00	268.22	6,550.00	3,413.00	-141.49	-4,552.75	4,554.94	0.00	370,530.91	561,979.85
10,975.98	90.00	268.22	6,550.00	3,413.00	-143.85	-4,628.69	4,630.92	0.00	370,528.55	561,903.91



Pathfinder Energy Services

Pathfinder X & Y Planning Report



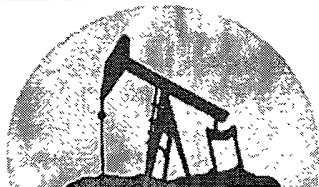
Company: Marbob
Project: Eddy County
Site: Way South State Com
Well: #1H
Wellbore: OH
Design: Plan #1

Local Co-ordinate Reference: Well #1H
TVD Reference: WELL @ 3137.00ft (Patriot #3)
MD Reference: WELL @ 3137.00ft (Patriot #3)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Midland Database

Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
PBHL(WS#1) - plan hits target - Point	0.00	0.00	6,550.00	-143.50	-4,628.70	370,528.900	561,903.900	32° 1' 6.747 N	104° 8' 0.960 W

Checked By: _____ Approved By: _____ Date: _____



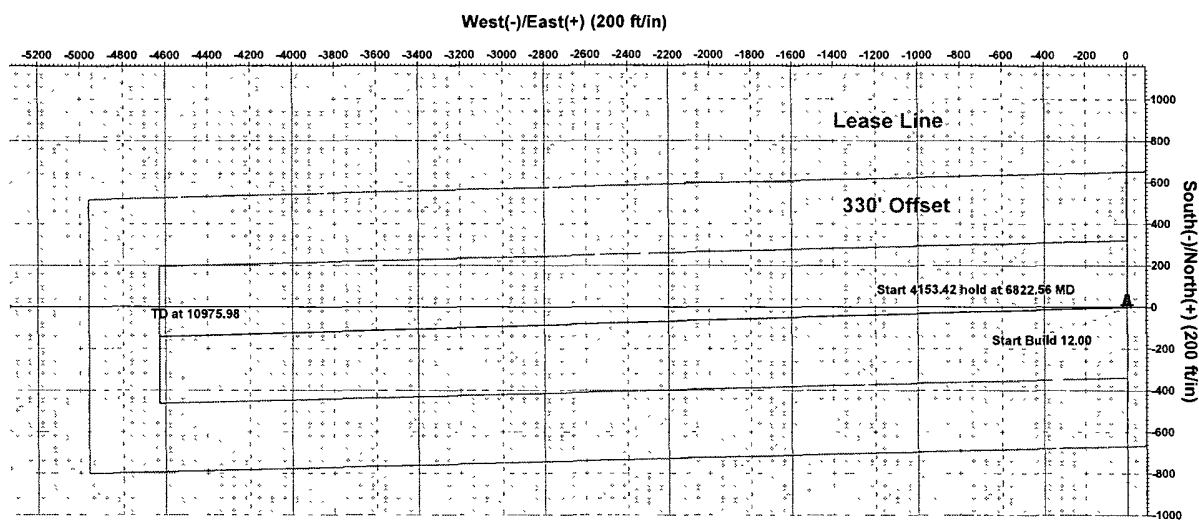
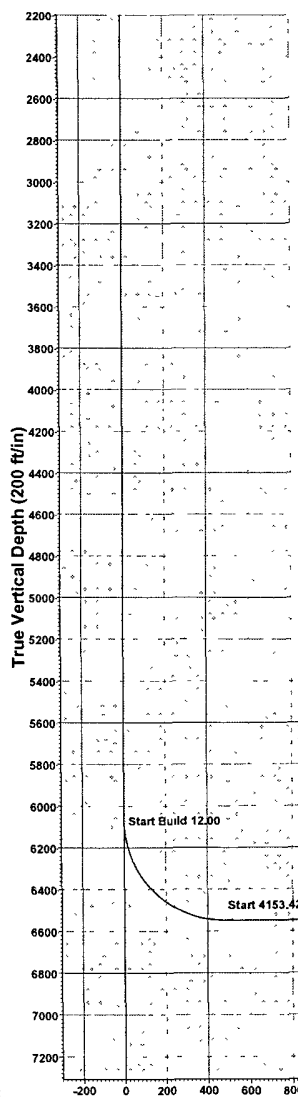
marbob
energy corporation
Artesia, N.M.

Project: Eddy County
Site: Way South State Co
Well: #1H
Wellbore: OH
Plan: Plan #1 (#1H/OH)



Azimuths to Grid North
True North: -0.11°
Magnetic North: 7.91°

Magnetic Field
Strength: 48646.3snT
Dir Angle: 59.82°



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	6072.50	0.00	0.00	6072.50	0.00	0.00	0.00	0.00	0.00	
3	6822.56	90.00	268.22	6550.00	-14.83	-477.27	12.00	268.22	477.50	
4	10975.98	90.00	268.22	6550.00	-143.85	-4628.69	0.00	0.00	4630.92	PBHL(WS#1)

WELLBORE TARGET DETAILS (MAP CO-ORDINATES)					
Name	TVD	+N-S	+E-W	Northing	Easting
PBHL(WS#1)	6550.00	-143.50	-4628.70	370528.900	561903.900
					Shape Point

WELL DETAILS: #1H						
Ground Elevation 3115.00						
RKB Elevation WELL @ 3137.00ft (Patriot #3)						
Rig Name Patriot #3						
+N-S	+E-W	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	370672.400	566532.600	32° 1' 8.079 N	104° 7' 7.192 W	

LEGEND

• Plan #1

PROJECT DETAILS: Eddy County
Geodetic System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone: New Mexico East 3001
System Datum: Mean Sea Level
Local North: Grd

Plan Plan #1 (#1H/OH)	
Created By: Nate Bingham	Date: 11 00, November 25 2009
Checked: _____	Date: _____