



Marbob

Eddy County
Noose Federal
Noose Fed #7
OH

Survey: MWD #1

Pathfinder X & Y Survey Report

12 October, 2009

PATHFINDER



Pathfinder Energy Services
Pathfinder X & Y Survey Report



Company: Marbob
Project: Eddy County
Site: Noose Federal
Well: Noose Fed #7
Wellbore: OH
Design: OH

Local Co-ordinate Reference: Well Noose Fed #7
TVD Reference: WELL @ 3490.00ft (Teaco #1 14' KB Correction)
MD Reference: WELL @ 3490.00ft (Teaco #1 14' KB Correction)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Midland Database

Project	Eddy County		
Map System:	US State Plane 1927 (Exact solution)		System Datum:
Geo Datum:	NAD 1927 (NADCON CONUS)		Mean Sea Level
Map Zone:	New Mexico East 3001		

Site	Noose Federal		
Site Position:		Northing:	585,835.300 ft
From:	Map	Easting:	460,335.700 ft
Position Uncertainty:	0.00 ft	Slot Radius:	
		Latitude:	32° 36' 37.799 N
		Longitude:	104° 27' 43.724 W
		Grid Convergence:	-0.07 °

Well	Noose Fed #7		
Well Position	+N/-S	0.00 ft	Northing:
	+E/-W	0.00 ft	590,490.400 ft
Position Uncertainty	0.00 ft	Easting:	463,325.900 ft
		Wellhead Elevation:	ft
		Latitude:	32° 37' 23.899 N
		Longitude:	104° 27' 8.826 W
		Ground Level:	3,476.00 ft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	10/10/2009	8.21	60.46	48,953

Design	OH			
Audit Notes:				
Version:	1.0	Phase:	ACTUAL	Tie On Depth:
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.00	0.00	0.00	181.40



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Survey Program		Date 10/12/2009			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
100 00	2,121.00	GYRO (OH)	CB-GYRO-MS	Camera based gyro multishot	
2,221 00	7,100.00	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)
2,121 00	0.30	34.47	2,120.83	-1,369.17	4.67	20.31	-5.17	0.00	590,495 07	463,346.21
2,221 00	1.93	185.03	2,220.82	-1,269.18	3.21	20.31	-3.71	2.20	590,493 61	463,346 21
2,252 00	5.63	183.88	2,251.74	-1,238.26	1.17	20.16	-1.66	11.94	590,491 57	463,346.06
2,283 00	9.15	184.40	2,282.48	-1,207.52	-2.80	19.87	2.32	11.36	590,487.60	463,345.77
2,314 00	12.84	184 58	2,312.91	-1,177.09	-8.70	19.40	8.22	11.90	590,481 70	463,345 30
2,345.00	16.53	184.40	2,342.89	-1,147.11	-16.53	18.79	16.07	11.90	590,473 87	463,344.69
2,376 00	20.14	183.96	2,372.31	-1,117.69	-26.25	18 08	25 80	11.65	590,464 15	463,343.98
2,407 00	23 65	183.88	2,401.07	-1,088.93	-37.79	17.29	37 35	11.32	590,452 61	463,343 19
2 438.00	26.47	182 21	2,429.15	-1,060.85	-50.90	16.61	50.47	9.38	590,439 50	463,342.51
2,469 00	30 42	182.29	2,456.40	-1,033.60	-65.65	16.03	65.24	12.74	590,424.75	463,341.93
2,500 00	34 38	181.86	2,482.57	-1,007.43	-82.24	15.43	81 84	12.80	590,408 16	463,341 33
2,531 00	37 99	182 21	2,507.59	-982.41	-100.53	14.78	100.14	11.66	590,389 87	463,340 68
2,563 00	41 50	184.40	2,532.19	-957.81	-120.95	13.58	120.58	11.81	590,369.45	463,339.48
2,594 00	45 02	186 07	2,554.76	-935.24	-142.10	11.64	141.77	11 94	590,348.30	463,337 54
2,625.00	49 15	186.78	2,575.87	-914.13	-164.66	9.09	164 38	13.43	590,325.74	463,334.99
2,656 00	52 85	186 34	2,595.37	-894.63	-188.59	6.34	188.37	11 99	590,301.81	463,332.24
2,687 00	56 19	186.25	2,613.36	-876.64	-213.67	3 57	213.52	10 78	590,276 73	463,329.47
2,718 00	59 18	185.55	2,629.93	-860.07	-239 73	0.88	239.64	9.83	590,250 67	463,326 78
2,749 00	62.08	185 63	2,645.14	-844.86	-266.61	-1 75	266 58	9.36	590,223 79	463,324 15
2,780 00	66 30	186.43	2,658.63	-831.37	-294.36	-4.68	294 39	13.81	590,196 04	463,321 22
2,811 00	70.43	186.43	2,670.06	-819.94	-322.99	-7 91	323.09	13.32	590,167.41	463,317 99



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Survey

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2,842.00	74.22	185.63	2,679.47	-810.53	-352.36	-11.01	352.52	12.47	590,138.04	463,314.89
2,873.00	77.47	184.93	2,687.05	-802.95	-382.28	-13.77	382.51	10.71	590,108.12	463,312.13
2,905.00	80.02	184.23	2,693.29	-796.71	-413.57	-16.28	413.84	8.25	590,076.83	463,309.62
2,936.00	82.75	183.35	2,697.94	-792.06	-444.15	-18.30	444.46	9.24	590,046.25	463,307.60
2,967.00	85.30	182.21	2,701.16	-788.84	-474.94	-19.80	475.28	9.00	590,015.46	463,306.10
2,998.00	88.46	180.85	2,702.85	-787.15	-505.88	-20.62	506.23	11.09	589,984.52	463,305.28
3,029.00	90.13	180.90	2,703.23	-786.77	-536.87	-21.10	537.22	5.39	589,953.53	463,304.80
3,091.00	90.04	180.61	2,703.14	-786.86	-598.86	-21.91	599.22	0.49	589,891.54	463,303.99
3,152.00	89.78	180.44	2,703.23	-786.77	-659.86	-22.47	660.21	0.51	589,830.54	463,303.43
3,214.00	89.63	180.15	2,703.55	-786.45	-721.86	-22.79	722.20	0.53	589,768.54	463,303.11
3,276.00	89.08	179.92	2,704.25	-785.75	-783.86	-22.83	784.18	0.96	589,706.54	463,303.07
3,338.00	89.78	180.19	2,704.87	-785.13	-845.85	-22.89	846.16	1.21	589,644.55	463,303.01
3,401.00	89.78	180.12	2,705.11	-784.89	-908.85	-23.06	909.14	0.11	589,581.55	463,302.84
3,463.00	90.84	181.72	2,704.77	-785.23	-970.84	-24.05	971.14	3.10	589,519.56	463,301.85
3,524.00	90.84	182.00	2,703.88	-786.12	-1,031.80	-26.03	1,032.13	0.46	589,458.60	463,299.87
3,586.00	90.66	181.83	2,703.07	-786.93	-1,093.76	-28.11	1,094.12	0.40	589,396.64	463,297.79
3,679.00	90.66	181.72	2,702.00	-788.00	-1,186.71	-30.99	1,187.11	0.12	589,303.69	463,294.91
3,772.00	90.66	181.68	2,700.93	-789.07	-1,279.66	-33.75	1,280.11	0.04	589,210.74	463,292.15
3,865.00	90.40	181.28	2,700.07	-789.93	-1,372.63	-36.15	1,373.10	0.51	589,117.77	463,289.75
3,958.00	90.04	180.78	2,699.71	-790.29	-1,465.61	-37.82	1,466.10	0.66	589,024.79	463,288.08
4,050.00	89.69	180.27	2,699.93	-790.07	-1,557.61	-38.66	1,558.09	0.67	588,932.79	463,287.24
4,143.00	89.43	180.20	2,700.64	-789.36	-1,650.60	-39.04	1,651.06	0.29	588,839.80	463,286.86
4,236.00	89.52	180.07	2,701.49	-788.51	-1,743.60	-39.26	1,744.04	0.17	588,746.80	463,286.64
4,359.00	89.43	179.71	2,702.62	-787.38	-1,866.59	-39.03	1,866.99	0.30	588,623.81	463,286.87
4,423.00	89.96	181.05	2,702.96	-787.04	-1,930.59	-39.45	1,930.98	2.25	588,559.81	463,286.45
4,516.00	89.96	180.77	2,703.02	-786.98	-2,023.58	-40.93	2,023.97	0.30	588,466.82	463,284.97
4,578.00	90.31	180.82	2,702.88	-787.12	-2,085.57	-41.79	2,085.97	0.57	588,404.83	463,284.11



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Survey

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4,671.00	90.78	180.58	2,701.99	-788.01	-2,178.56	-42.92	2,178.96	0.57	588,311.84	463,282.98
4,764.00	91.28	180.84	2,700.32	-789.68	-2,271.54	-44.08	2,271.94	0.61	588,218.86	463,281.82
4,857.00	89.78	180.49	2,699.46	-790.54	-2,364.52	-45.16	2,364.92	1.66	588,125.88	463,280.74
4,950.00	90.22	180.14	2,699.46	-790.54	-2,457.52	-45.67	2,457.90	0.60	588,032.88	463,280.23
5,042.00	88.37	180.37	2,700.59	-789.41	-2,549.51	-46.08	2,549.88	2.03	587,940.89	463,279.82
5,134.00	88.46	180.26	2,703.14	-786.86	-2,641.47	-46.58	2,641.82	0.15	587,848.93	463,279.32
5,227.00	88.90	180.93	2,705.28	-784.72	-2,734.44	-47.55	2,734.79	0.86	587,755.96	463,278.35
5,320.00	88.55	180.37	2,707.35	-782.65	-2,827.41	-48.60	2,827.76	0.71	587,662.99	463,277.30
5,413.00	88.90	181.06	2,709.42	-780.58	-2,920.38	-49.76	2,920.73	0.83	587,570.02	463,276.14
5,505.00	89.60	182.05	2,710.62	-779.38	-3,012.34	-52.26	3,012.72	1.32	587,478.06	463,273.64
5,598.00	91.10	182.50	2,710.06	-779.94	-3,105.26	-55.95	3,105.70	1.68	587,385.14	463,269.95
5,691.00	91.28	181.86	2,708.12	-781.88	-3,198.17	-59.49	3,198.67	0.71	587,292.23	463,266.41
5,781.00	91.28	181.55	2,706.11	-783.89	-3,288.11	-62.16	3,288.65	0.34	587,202.29	463,263.74
5,877.00	91.45	181.47	2,703.83	-786.17	-3,384.05	-64.69	3,384.62	0.20	587,106.35	463,261.21
5,971.00	90.75	181.40	2,702.02	-787.98	-3,478.00	-67.05	3,478.60	0.75	587,012.40	463,258.85
6,064.00	90.22	180.95	2,701.24	-788.76	-3,570.98	-68.95	3,571.60	0.75	586,919.42	463,256.95
6,159.00	89.96	180.60	2,701.09	-788.91	-3,665.97	-70.24	3,666.59	0.46	586,824.43	463,255.66
6,253.00	89.52	179.99	2,701.51	-788.49	-3,759.97	-70.72	3,760.57	0.80	586,730.43	463,255.18
6,346.00	89.25	179.15	2,702.51	-787.49	-3,852.96	-70.02	3,853.52	0.95	586,637.44	463,255.88
6,440.00	89.69	179.30	2,703.38	-786.62	-3,946.95	-68.75	3,947.45	0.49	586,543.45	463,257.15
6,534.00	90.04	179.55	2,703.60	-786.40	-4,040.94	-67.81	4,041.39	0.46	586,449.46	463,258.09
6,628.00	90.40	179.76	2,703.24	-786.76	-4,134.94	-67.24	4,135.35	0.44	586,355.46	463,258.66
6,722.00	90.40	179.38	2,702.59	-787.41	-4,228.93	-66.54	4,229.30	0.40	586,261.47	463,259.36
6,816.00	90.40	179.08	2,701.93	-788.07	-4,322.92	-65.28	4,323.23	0.32	586,167.48	463,260.62
6,911.00	90.40	179.02	2,701.27	-788.73	-4,417.91	-63.70	4,418.14	0.06	586,072.49	463,262.20
7,004.00	90.48	179.01	2,700.55	-789.45	-4,510.89	-62.10	4,511.06	0.09	585,979.51	463,263.80
7,054.00	90.66	179.46	2,700.05	-789.95	-4,560.88	-61.43	4,561.02	0.97	585,929.52	463,264.47



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7,100.00	90.66	179.46	2,699.52	-790.48	-4,606.88	-61.00	4,606.99	0.00	585,883.52	463,264.90

Proj To Bit -7100.00°MD,90.66°INC,179.46°AZI, 2699.52°TVD, 4606.99°VS, -4606.88°N, -61.00°E

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(#7H)	0.00	0.00	2,700.00	-4,646.50	-114.40	585,843.900	463,211.500	32° 36' 37.917 N	104° 27' 10.103 W
- survey misses by 66.49ft at 7100.00ft MD (2699.52 TVD, -4606.88 N, -61.00 E)									
- Point									

Survey Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
7,100.00	2,699.52	-4,606.88	-61.00	Proj To Bit -7100.00°MD,90.66°INC,179.46°AZI, 2699.52°TVD, 4606.99°

Checked By: _____ Approved By: _____ Date: _____

Surf: 330' FML, 1880' FEL
EOL: 343' FSL, 1941' FEL