

Murchison Oil & Gas

Eddy County

Carbon Valley '25' Fed Com

#4H

Original Hole

Survey: MWD #1

Pathfinder X & Y Survey Report

06 October, 2009

PATHFINDER

CONFIDENTIAL

Pathfinder Energy Services

Pathfinder X & Y Survey Report



Company: Murchison Oil & Gas
Project: Eddy County
Site: Carbon Valley '25' Fed Com
Well: #4H
Wellbore: Original Hole
Design: Original Hole

Local Co-ordinate Reference: Well #4H
TVD Reference: WELL1 @ 3523.00ft (18' KB Correction)
MD Reference: WELL1 @ 3523.00ft (18' KB Correction)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Midland Database

Project	Eddy 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	Carbon Valley '25' Fed Com		
Site Position:		Northing:	688,624.502 ft
From: Map		Easting:	574,796.208 ft
Position Uncertainty:	0.00 ft	Slot Radius:	"
		Latitude:	32° 53' 34.798 N
		Longitude:	104° 13' 27.581 W
		Grid Convergence:	0.06 °

Well	#4H		
Well Position	+N/-S	0.00 ft	Northing:
	+E/-W	0.00 ft	Easting:
Position Uncertainty	0.00 ft	Wellhead Elevation:	ft
		Latitude:	32° 53' 34.798 N
		Longitude:	104° 13' 27.581 W
		Ground Level:	3,505.00 ft

Wellbore	Original Hole		
Magnetics	Model Name	Sample Date	Declination
			(°)
	IGRF200510	06/18/2009	8.16
			Dip Angle
			(°)
			60.76
			Field Strength
			(nT)
			49,173

Design	Original Hole		
Audit Notes:			
Version:	1.0	Phase:	ACTUAL
		Tie On Depth:	5,700.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(ft)	(ft)	(ft)
	0.00	0.00	0.00
			Direction
			(°)
			275.66

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Survey Program Date 10/06/2009

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
100.00	5,700.00	GYRO (Pilot Hole)	CB-GYRO-MS	Camera based gyro multishot
5,760.00	10,780.00	MWD #1 (Original Hole)	MWD	MWD - Standard

Survey

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5,700.00	2.30	101.46	5,699.59	2,176.59	-3.15	-14.03	13.65	0.00	688,621.36	574,782.17
5,760.00	2.37	93.24	5,759.54	2,236.54	-3.46	-11.61	11.22	0.57	688,621.05	574,784.59
5,792.00	0.97	37.98	5,791.52	2,268.52	-3.28	-10.79	10.41	6.20	688,621.22	574,785.42
5,824.00	4.31	322.62	5,823.49	2,300.49	-2.11	-11.35	11.09	13.04	688,622.39	574,784.86
5,855.00	9.23	317.99	5,854.27	2,331.27	0.66	-13.72	13.72	15.96	688,625.17	574,782.48
5,887.00	14.51	317.46	5,885.57	2,362.57	5.53	-18.15	18.61	16.50	688,630.03	574,778.05
5,918.00	18.82	318.19	5,915.26	2,392.26	12.12	-24.12	25.19	13.92	688,636.62	574,772.09
5,949.00	21.81	318.66	5,944.33	2,421.33	20.17	-31.26	33.09	9.66	688,644.67	574,764.95
5,981.00	24.36	315.91	5,973.77	2,450.77	29.38	-39.78	42.48	8.65	688,653.88	574,756.43
6,013.00	27.17	310.97	6,002.58	2,479.58	38.91	-49.89	53.48	11.04	688,663.41	574,746.32
6,045.00	31.13	307.84	6,030.53	2,507.53	48.78	-61.94	66.45	13.26	688,673.28	574,734.27
6,077.00	34.21	308.09	6,057.46	2,534.46	59.41	-75.56	81.05	9.63	688,683.91	574,720.65
6,108.00	36.93	308.71	6,082.67	2,559.67	70.61	-89.69	96.21	8.85	688,695.11	574,706.52
6,140.00	39.92	309.16	6,107.74	2,584.74	83.11	-105.15	112.84	9.38	688,707.61	574,691.06
6,172.00	42.91	308.73	6,131.74	2,608.74	96.41	-121.62	130.53	9.39	688,720.91	574,674.59
6,204.00	45.81	307.98	6,154.61	2,631.61	110.29	-139.16	149.36	9.21	688,734.79	574,657.05
6,236.00	49.42	307.04	6,176.18	2,653.18	124.67	-157.91	169.44	11.49	688,749.18	574,638.30
6,268.00	53.99	306.18	6,196.01	2,673.01	139.64	-178.07	190.97	14.44	688,764.14	574,618.14
6,299.00	56.98	306.97	6,213.57	2,690.57	154.86	-198.58	212.88	9.87	688,779.37	574,597.63
6,331.00	59.36	307.35	6,230.45	2,707.45	171.29	-220.24	236.06	7.51	688,795.79	574,575.97
6,362.00	61.99	307.95	6,245.63	2,722.63	187.79	-241.64	258.98	8.65	688,812.30	574,554.57

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MD (ft)	Inc (°)	Azi (°)	TVD (ft)	TVDSS (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)	Northing (ft)	Easting (ft)
6,394.00	65.07	309.74	6,259.89	2,736.89	205.76	-263.94	282.95	10.85	688,830.27	574,532.27
6,425.00	67.09	310.93	6,272.46	2,749.46	224.11	-285.54	306.25	7.40	688,848.61	574,510.67
6,457.00	69.82	311.83	6,284.21	2,761.21	243.78	-307.87	330.41	8.92	688,868.28	574,488.34
6,489.00	73.78	311.86	6,294.20	2,771.20	264.06	-330.51	354.94	12.38	688,888.56	574,465.70
6,521.00	78.10	311.80	6,301.97	2,778.97	284.75	-353.63	379.99	13.50	688,909.26	574,442.58
6,552.00	79.76	311.03	6,307.93	2,784.93	304.88	-376.45	404.68	5.88	688,929.38	574,419.76
6,584.00	82.83	311.23	6,312.77	2,789.77	325.68	-400.27	430.44	9.61	688,950.18	574,395.94
6,616.00	88.64	310.18	6,315.15	2,792.15	346.48	-424.45	456.55	18.45	688,970.98	574,371.76
6,648.00	91.28	309.20	6,315.17	2,792.17	366.92	-449.07	483.07	8.80	688,991.42	574,347.14
6,680.00	91.71	307.36	6,314.34	2,791.34	386.73	-474.18	510.01	5.90	689,011.24	574,322.03
6,710.00	92.07	304.84	6,313.35	2,790.35	404.40	-498.41	535.86	8.48	689,028.90	574,297.80
6,742.00	90.95	302.80	6,312.50	2,789.50	422.20	-524.98	564.06	7.27	689,046.70	574,271.23
6,774.00	90.34	300.04	6,312.14	2,789.14	438.88	-552.28	592.88	8.83	689,063.38	574,243.92
6,805.00	90.90	296.77	6,311.81	2,788.81	453.62	-579.55	621.46	10.70	689,078.13	574,216.66
6,837.00	91.51	293.90	6,311.13	2,788.13	467.31	-608.46	651.58	9.17	689,091.81	574,187.75
6,869.00	91.51	292.48	6,310.29	2,787.29	479.91	-637.86	682.08	4.44	689,104.41	574,158.34
6,900.00	91.40	291.13	6,309.50	2,786.50	491.42	-666.64	711.85	4.37	689,115.92	574,129.57
6,932.00	91.45	289.44	6,308.71	2,785.71	502.51	-696.64	742.80	5.28	689,127.01	574,099.57
6,964.00	91.17	287.74	6,307.98	2,784.98	512.71	-726.96	773.98	5.38	689,137.21	574,069.25
6,996.00	90.95	285.54	6,307.38	2,784.38	521.87	-757.61	805.39	6.91	689,146.37	574,038.59
7,027.00	90.95	283.30	6,306.87	2,783.87	529.59	-787.63	836.02	7.22	689,154.09	574,008.58
7,059.00	90.73	280.78	6,306.40	2,783.40	536.26	-818.92	867.82	7.90	689,160.76	573,977.29
7,091.00	91.18	280.15	6,305.87	2,782.87	542.07	-850.39	899.70	2.42	689,166.58	573,945.82
7,122.00	91.18	280.04	6,305.23	2,782.23	547.51	-880.90	930.60	0.35	689,172.01	573,915.31
7,157.00	90.57	278.24	6,304.69	2,781.69	553.06	-915.45	965.53	5.43	689,177.57	573,880.76
7,189.00	89.69	275.47	6,304.62	2,781.62	556.88	-947.22	997.52	9.08	689,181.39	573,848.99
7,221.00	89.69	272.55	6,304.80	2,781.80	559.12	-979.13	1,029.50	9.12	689,183.62	573,817.07

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MD (ft)	Inc (°)	Azi (°)	TVD (ft)	TVDSS (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)	Northing (ft)	Easting (ft)
7,252.00	90.57	271.34	6,304.72	2,781.72	560.17	-1,010.12	1,060.44	4.83	689,184.68	573,786.09
7,284.00	91.45	270.26	6,304.16	2,781.16	560.62	-1,042.11	1,092.32	4.35	689,185.12	573,754.10
7,315.00	91.80	268.49	6,303.28	2,780.28	560.28	-1,073.09	1,123.12	5.82	689,184.78	573,723.12
7,347.00	92.09	267.36	6,302.20	2,779.20	559.12	-1,105.05	1,154.81	3.64	689,183.63	573,691.16
7,379.00	91.19	267.28	6,301.28	2,778.28	557.63	-1,137.00	1,186.46	2.82	689,182.13	573,659.21
7,411.00	90.48	266.79	6,300.81	2,777.81	555.97	-1,168.96	1,218.09	2.70	689,180.48	573,627.25
7,443.00	90.61	266.61	6,300.51	2,777.51	554.13	-1,200.90	1,249.70	0.69	689,178.63	573,595.31
7,474.00	90.13	266.24	6,300.31	2,777.31	552.20	-1,231.84	1,280.30	1.95	689,176.70	573,564.37
7,506.00	89.43	266.03	6,300.43	2,777.43	550.04	-1,263.77	1,311.85	2.28	689,174.54	573,532.44
7,538.00	88.99	266.13	6,300.87	2,777.87	547.85	-1,295.69	1,343.40	1.41	689,172.36	573,500.52
7,570.00	89.16	265.99	6,301.39	2,778.39	545.66	-1,327.61	1,374.95	0.69	689,170.16	573,468.60
7,599.00	89.22	265.47	6,301.80	2,778.80	543.50	-1,356.53	1,403.51	1.80	689,168.00	573,439.68
7,630.00	89.27	265.30	6,302.21	2,779.21	541.00	-1,387.42	1,434.02	0.57	689,165.50	573,408.79
7,662.00	89.33	265.68	6,302.60	2,779.60	538.49	-1,419.32	1,465.51	1.20	689,162.99	573,376.89
7,695.00	89.50	267.15	6,302.94	2,779.94	536.42	-1,452.25	1,498.08	4.48	689,160.93	573,343.95
7,726.00	89.72	267.23	6,303.15	2,780.15	534.90	-1,483.22	1,528.74	0.76	689,159.41	573,312.99
7,758.00	90.17	267.95	6,303.18	2,780.18	533.56	-1,515.19	1,560.42	2.65	689,158.06	573,281.02
7,790.00	90.06	268.06	6,303.11	2,780.11	532.44	-1,547.17	1,592.14	0.49	689,156.95	573,249.04
7,822.00	90.28	268.83	6,303.02	2,780.02	531.58	-1,579.16	1,623.88	2.50	689,156.08	573,217.05
7,853.00	89.27	268.31	6,303.14	2,780.14	530.80	-1,610.15	1,654.65	3.66	689,155.30	573,186.06
7,885.00	89.22	268.78	6,303.56	2,780.56	529.99	-1,642.13	1,686.40	1.48	689,154.49	573,154.08
7,916.00	89.78	268.87	6,303.83	2,780.83	529.35	-1,673.12	1,717.17	1.83	689,153.86	573,123.08
7,948.00	89.83	268.98	6,303.94	2,780.94	528.75	-1,705.12	1,748.95	0.38	689,153.26	573,091.09
7,980.00	89.78	268.86	6,304.05	2,781.05	528.15	-1,737.11	1,780.73	0.41	689,152.65	573,059.10
8,011.00	89.50	268.62	6,304.24	2,781.24	527.47	-1,768.10	1,811.51	1.19	689,151.97	573,028.10
8,043.00	89.61	268.95	6,304.49	2,781.49	526.79	-1,800.10	1,843.28	1.09	689,151.29	572,996.11
8,074.00	89.83	268.62	6,304.64	2,781.64	526.13	-1,831.09	1,874.05	1.28	689,150.63	572,965.12

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8,106.00	89.94	268.73	6,304.71	2,781.71	525.39	-1,863.08	1,905.81	0.49	689,149.89	572,933.13
8,138.00	90.11	269.05	6,304.70	2,781.70	524.77	-1,895.07	1,937.59	1.13	689,149.27	572,901.13
8,169.00	90.62	268.76	6,304.50	2,781.50	524.18	-1,926.07	1,968.37	1.89	689,148.68	572,870.14
8,201.00	91.29	268.92	6,303.96	2,780.96	523.53	-1,958.06	2,000.14	2.15	689,148.03	572,838.15
8,233.00	91.34	268.65	6,303.23	2,780.23	522.85	-1,990.04	2,031.91	0.86	689,147.36	572,806.17
8,265.00	91.85	268.46	6,302.34	2,779.34	522.05	-2,022.02	2,063.65	1.70	689,146.55	572,774.19
8,297.00	91.79	268.39	6,301.32	2,778.32	521.17	-2,053.99	2,095.38	0.29	689,145.67	572,742.22
8,329.00	91.40	268.49	6,300.43	2,777.43	520.30	-2,085.97	2,127.11	1.26	689,144.80	572,710.24
8,360.00	91.23	268.59	6,299.72	2,776.72	519.51	-2,116.95	2,157.86	0.64	689,144.01	572,679.26
8,392.00	91.29	268.42	6,299.02	2,776.02	518.67	-2,148.93	2,189.61	0.56	689,143.18	572,647.28
8,424.00	91.46	268.10	6,298.25	2,775.25	517.70	-2,180.90	2,221.33	1.13	689,142.20	572,615.30
8,456.00	91.62	268.55	6,297.39	2,774.39	516.77	-2,212.88	2,253.06	1.49	689,141.27	572,583.33
8,487.00	91.57	268.60	6,296.53	2,773.53	516.00	-2,243.86	2,283.81	0.23	689,140.50	572,552.35
8,519.00	91.51	268.07	6,295.67	2,772.67	515.07	-2,275.83	2,315.54	1.67	689,139.57	572,520.38
8,551.00	91.51	268.23	6,294.82	2,771.82	514.03	-2,307.80	2,347.25	0.50	689,138.54	572,488.40
8,583.00	91.29	268.43	6,294.04	2,771.04	513.10	-2,339.78	2,378.98	0.93	689,137.60	572,456.43
8,615.00	91.23	268.09	6,293.34	2,770.34	512.13	-2,371.76	2,410.71	1.08	689,136.63	572,424.45
8,647.00	91.17	267.92	6,292.67	2,769.67	511.02	-2,403.73	2,442.41	0.56	689,135.52	572,392.48
8,678.00	90.78	267.92	6,292.14	2,769.14	509.89	-2,434.71	2,473.13	1.26	689,134.39	572,361.50
8,710.00	89.05	268.27	6,292.19	2,769.19	508.83	-2,466.69	2,504.85	5.52	689,133.33	572,329.52
8,742.00	89.05	268.11	6,292.72	2,769.72	507.82	-2,498.67	2,536.57	0.50	689,132.32	572,297.54
8,774.00	87.99	268.41	6,293.54	2,770.54	506.85	-2,530.64	2,568.29	3.44	689,131.35	572,265.57
8,806.00	88.10	268.21	6,294.64	2,771.64	505.90	-2,562.61	2,600.01	0.71	689,130.41	572,233.60
8,837.00	88.27	268.35	6,295.62	2,772.62	504.97	-2,593.58	2,630.74	0.71	689,129.48	572,202.63
8,869.00	89.22	268.53	6,296.32	2,773.32	504.10	-2,625.56	2,662.48	3.02	689,128.60	572,170.65
8,901.00	89.11	268.98	6,296.79	2,773.79	503.41	-2,657.55	2,694.24	1.45	689,127.91	572,138.66
8,933.00	88.99	268.89	6,297.32	2,774.32	502.81	-2,689.54	2,726.02	0.47	689,127.31	572,106.67

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8,964.00	88.88	269.18	6,297.89	2,774.89	502.29	-2,720.53	2,756.80	1.00	689,126.79	572,075.68
8,996.00	89.10	269.04	6,298.46	2,775.46	501.79	-2,752.52	2,788.59	0.81	689,126.30	572,043.69
9,028.00	89.61	269.00	6,298.82	2,775.82	501.25	-2,784.51	2,820.37	1.60	689,125.75	572,011.69
9,060.00	89.55	268.68	6,299.05	2,776.05	500.60	-2,816.51	2,852.15	1.02	689,125.10	571,979.70
9,091.00	89.27	269.02	6,299.37	2,776.37	499.98	-2,847.50	2,882.93	1.42	689,124.48	571,948.71
9,123.00	89.50	269.35	6,299.71	2,776.71	499.52	-2,879.49	2,914.72	1.26	689,124.02	571,916.71
9,155.00	91.01	269.01	6,299.57	2,776.57	499.06	-2,911.49	2,946.51	4.84	689,123.57	571,884.72
9,186.00	91.62	269.21	6,298.86	2,775.86	498.58	-2,942.48	2,977.30	2.07	689,123.08	571,853.73
9,218.00	91.45	269.53	6,298.00	2,775.00	498.23	-2,974.46	3,009.10	1.13	689,122.73	571,821.74
9,250.00	91.06	269.05	6,297.30	2,774.30	497.83	-3,006.45	3,040.89	1.93	689,122.34	571,789.75
9,281.00	90.22	269.24	6,296.96	2,773.96	497.37	-3,037.45	3,071.69	2.78	689,121.87	571,758.76
9,313.00	89.50	268.35	6,297.03	2,774.03	496.70	-3,069.44	3,103.46	3.58	689,121.20	571,726.77
9,345.00	89.10	268.35	6,297.42	2,774.42	495.78	-3,101.42	3,135.20	1.25	689,120.28	571,694.78
9,377.00	89.55	269.19	6,297.80	2,774.80	495.09	-3,133.41	3,166.97	2.98	689,119.59	571,662.79
9,408.00	90.00	269.40	6,297.92	2,774.92	494.71	-3,164.41	3,197.77	1.60	689,119.21	571,631.80
9,440.00	89.72	269.26	6,298.00	2,775.00	494.33	-3,196.41	3,229.58	0.98	689,118.84	571,599.80
9,472.00	90.73	268.16	6,297.88	2,774.88	493.61	-3,228.40	3,261.34	4.67	689,118.12	571,567.81
9,505.00	90.73	268.16	6,297.46	2,774.46	492.55	-3,261.38	3,294.06	0.00	689,117.06	571,534.83
9,535.00	91.73	268.12	6,296.81	2,773.81	491.58	-3,291.36	3,323.79	3.34	689,116.08	571,504.85
9,567.00	91.29	268.14	6,295.97	2,772.97	490.54	-3,323.33	3,355.51	1.38	689,115.04	571,472.88
9,598.00	90.73	268.66	6,295.42	2,772.42	489.67	-3,354.31	3,386.25	2.46	689,114.17	571,441.90
9,630.00	90.95	268.25	6,294.95	2,771.95	488.81	-3,386.30	3,418.00	1.45	689,113.31	571,409.91
9,662.00	90.62	268.84	6,294.51	2,771.51	488.00	-3,418.28	3,449.75	2.11	689,112.50	571,377.92
9,693.00	91.23	268.28	6,294.01	2,771.01	487.22	-3,449.27	3,480.50	2.67	689,111.72	571,346.94
9,725.00	91.12	268.42	6,293.36	2,770.36	486.30	-3,481.25	3,512.24	0.56	689,110.80	571,314.96
9,757.00	90.84	268.73	6,292.81	2,769.81	485.50	-3,513.23	3,543.99	1.31	689,110.00	571,282.97
9,789.00	90.56	268.81	6,292.42	2,769.42	484.81	-3,545.22	3,575.76	0.91	689,109.32	571,250.98

Pathfinder Energy Services
Pathfinder X & Y Survey Report



Company: Murchison Oil & Gas
Project: Eddy County
Site: Carbon Valley '25' Fed Com
Well: #4H
Wellbore: Original Hole
Design: Original Hole

Local Co-ordinate Reference: Well #4H
TVD Reference: WELL1 @ 3523.00ft (18' KB Correction)
MD Reference: WELL1 @ 3523.00ft (18' KB Correction)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: 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)
9,820.00	90.11	268.89	6,292.24	2,769.24	484.19	-3,576.22	3,606.54	1.47	689,108.69	571,219.99
9,852.00	89.78	268.50	6,292.27	2,769.27	483.46	-3,608.21	3,638.30	1.60	689,107.96	571,188.00
9,883.00	89.27	268.70	6,292.53	2,769.53	482.71	-3,639.20	3,669.06	1.77	689,107.21	571,157.01
9,915.00	89.33	268.15	6,292.92	2,769.92	481.83	-3,671.18	3,700.81	1.73	689,106.33	571,125.02
9,947.00	89.33	268.04	6,293.29	2,770.29	480.76	-3,703.16	3,732.53	0.34	689,105.26	571,093.04
9,978.00	88.55	267.93	6,293.86	2,770.86	479.67	-3,734.14	3,763.24	2.54	689,104.17	571,062.07
10,010.00	87.48	268.56	6,294.97	2,771.97	478.69	-3,766.10	3,794.95	3.88	689,103.20	571,030.10
10,042.00	87.37	268.18	6,296.41	2,773.41	477.78	-3,798.06	3,826.66	1.24	689,102.29	570,998.15
10,074.00	87.31	268.46	6,297.90	2,774.90	476.85	-3,830.01	3,858.37	0.89	689,101.35	570,966.20
10,105.00	87.54	268.49	6,299.29	2,776.29	476.02	-3,860.97	3,889.09	0.75	689,100.52	570,935.24
10,136.00	88.32	268.59	6,300.41	2,777.41	475.23	-3,891.94	3,919.83	2.54	689,099.74	570,904.27
10,168.00	88.99	268.60	6,301.16	2,778.16	474.45	-3,923.92	3,951.58	2.09	689,098.95	570,872.29
10,199.00	89.44	268.95	6,301.58	2,778.58	473.79	-3,954.91	3,982.36	1.84	689,098.29	570,841.30
10,231.00	90.06	268.88	6,301.72	2,778.72	473.18	-3,986.90	4,014.13	1.95	689,097.68	570,809.30
10,262.00	90.17	268.74	6,301.66	2,778.66	472.54	-4,017.90	4,044.91	0.57	689,097.04	570,778.31
10,294.00	90.39	268.80	6,301.50	2,778.50	471.85	-4,049.89	4,076.68	0.71	689,096.35	570,746.32
10,326.00	90.67	268.98	6,301.21	2,778.21	471.23	-4,081.88	4,108.46	1.04	689,095.73	570,714.33
10,358.00	90.95	268.63	6,300.76	2,777.76	470.56	-4,113.87	4,140.22	1.40	689,095.06	570,682.34
10,389.00	91.06	268.48	6,300.21	2,777.21	469.78	-4,144.86	4,170.98	0.60	689,094.28	570,651.35
10,421.00	90.95	268.35	6,299.65	2,776.65	468.90	-4,176.84	4,202.72	0.53	689,093.40	570,619.37
10,452.00	91.29	268.36	6,299.05	2,776.05	468.01	-4,207.82	4,233.46	1.10	689,092.51	570,588.39
10,484.00	91.51	268.96	6,298.26	2,775.26	467.26	-4,239.80	4,265.22	2.00	689,091.76	570,556.41
10,516.00	92.41	268.74	6,297.17	2,774.17	466.62	-4,271.78	4,296.97	2.90	689,091.12	570,524.43
10,548.00	91.68	269.12	6,296.03	2,773.03	466.02	-4,303.75	4,328.73	2.57	689,090.52	570,492.46
10,580.00	91.90	269.41	6,295.03	2,772.03	465.61	-4,335.73	4,360.51	1.14	689,090.11	570,460.48
10,611.00	92.74	269.95	6,293.77	2,770.77	465.44	-4,366.71	4,391.32	3.22	689,089.94	570,429.50
10,643.00	91.85	270.26	6,292.49	2,769.49	465.49	-4,398.68	4,423.14	2.94	689,090.00	570,397.53

Pathfinder Energy Services

Pathfinder X & Y Survey Report



Company: Murchison Oil & Gas
Project: Eddy County
Site: Carbon Valley '25' Fed Com
Well: #4H
Wellbore: Original Hole
Design: Original Hole

Local Co-ordinate Reference: Well #4H
TVD Reference: WELL1 @ 3523.00ft (18' KB Correction)
MD Reference: WELL1 @ 3523.00ft (18' KB Correction)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: 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)
10,675.00	91.29	270.20	6,291.61	2,768.61	465.62	-4,430.67	4,454.99	1.76	689,090.12	570,365.54
10,707.00	91.57	269.49	6,290.82	2,767.82	465.54	-4,462.66	4,486.81	2.38	689,090.04	570,333.55
10,723.00	92.01	269.44	6,290.32	2,767.32	465.39	-4,478.65	4,502.71	2.77	689,089.89	570,317.56
10,780.00	92.01	269.44	6,288.32	2,765.32	464.83	-4,535.61	4,559.34	0.00	689,089.33	570,260.60

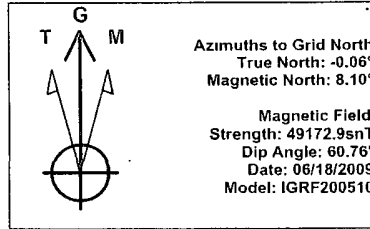
Targets

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#3(#4H) - survey misses by 253.40ft at 10780.00ft MD (6288.32 TVD, 464.83 N, -4535.61 E) - Point	0.00	0.00	6,229.00	474.00	-4,781.80	689,098.502	570,014.408	32° 53' 39.534 N	104° 14' 23.660 W
PBHL #2 - survey misses by 281.73ft at 10780.00ft MD (6288.32 TVD, 464.83 N, -4535.61 E) - Point	0.00	0.00	6,410.00	533.70	-4,780.20	689,158.205	570,016.009	32° 53' 40.124 N	104° 14' 23.640 W
PBHL - survey misses by 420.16ft at 10780.00ft MD (6288.32 TVD, 464.83 N, -4535.61 E) - Point	0.00	0.00	6,245.00	803.70	-4,780.20	689,428.205	570,016.009	32° 53' 42.796 N	104° 14' 23.637 W

Checked By: _____ Approved By: _____ Date: _____

Murchison Oil & Gas

Project: Eddy County
Site: Carbon Valley '25' Fed Com
Well: #4H
Wellbore: Original Hole
Plan: Plan #6 (#4H/Original Hole)



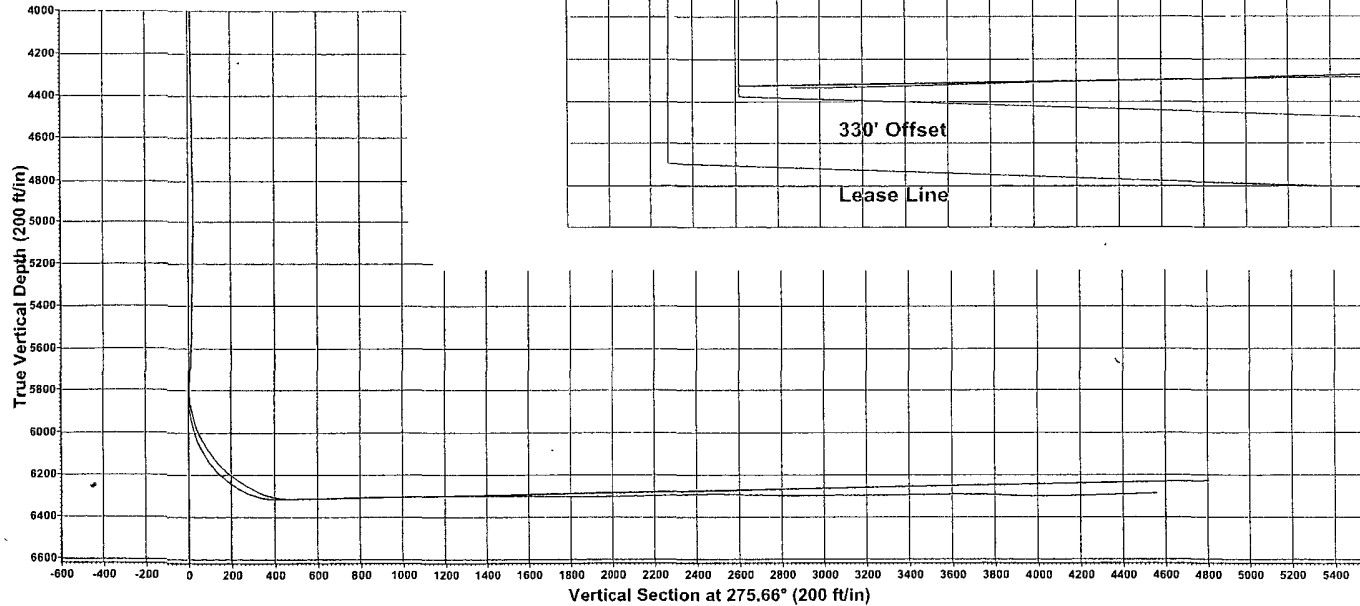
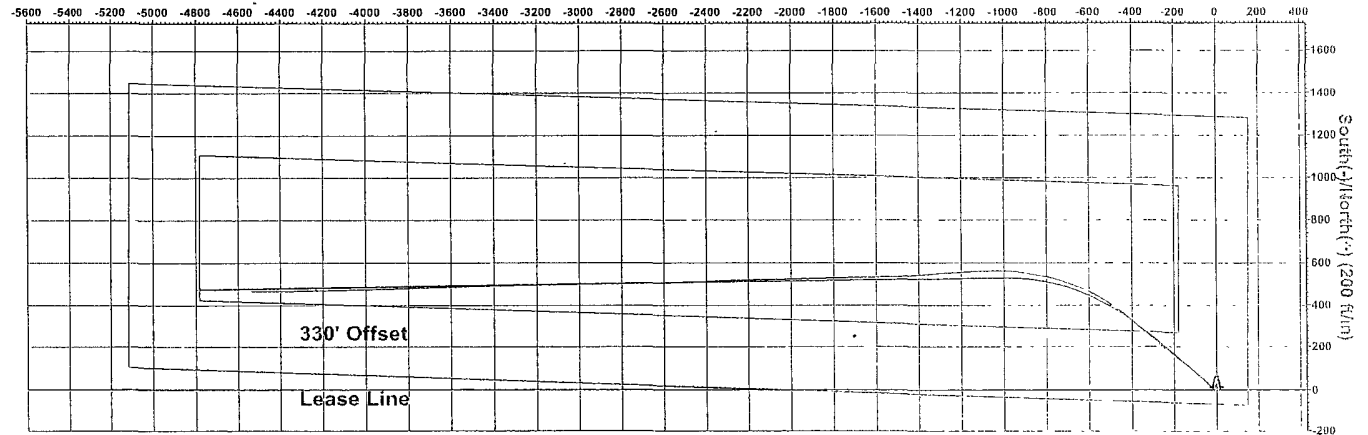
PATHFINDER

WELL DETAILS #4H						
Ground Elevation: 3505.00						
RKB Elevation: WELL1 @ 3523.00ft (18' KB Correction)						
Rig Name: 18' KB Correction						
+N/-S	+E/-W	Northing	Eastings	Latitude	Longitude	Slot
0.00	0.00	688624.502	574796.208	32° 53' 34.798 N	104° 13' 27.581 W	

SECTION DETAILS										
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	5805.00	2.87	95.43	5804.48	-3.80	-9.33	0.00	0.00	8.91	
2	6608.54	91.14	308.50	6317.00	319.60	-392.92	11.64	-146.87	422.53	
3	7283.40	91.14	269.20	6303.44	527.01	-1000.45	6.00	-89.59	1047.56	
4	7283.83	91.13	269.20	6303.43	527.00	-1000.46	3.00	-165.74	1047.98	
5	11049.85	91.13	269.20	6228.00	474.00	-4781.80	0.00	0.00	4805.24	PBHL#3(#4H)

WELLBORE TARGET DETAILS (MAP CO-ORDINATES)						Shape
Name	TVD	+N/-S	+E/-W	Northing	Eastings	
PBHL#3(#4H)	6228.00	474.00	-4781.80	689098.502	570014.408	
PBHL #2	6245.00	803.70	-4780.20	689428.205	570016.009	
PBHL #2	6410.00	533.70	-4780.20	689158.205	570016.009	

West(-)/East(+) (200 ft/in)



PROJECT DETAILS: Eddy County
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

Plan: Plan #6 (#4H/Original Hole)

Created By: Nate Bingham Date: 8/22, October 06 2009