

PLEASE KEEP CONFIDENTIAL

30-015-37002

Murchison Oil & Gas

Eddy County (NAD27)
Carbon Valley '25' Fed Com
#5H
OH

Survey: MWD

Pathfinder X & Y Survey Report

12 October, 2010



MR

PATHFINDER®

A Schlumberger Company

Pathfinder

Pathfinder X & Y Survey Report



Company:	Murchison Oil & Gas	Local Co-ordinate Reference:	Well #5H
Project:	Eddy County (NAD27)	TVD Reference:	Well2 @ 3532.00ft (Patterson #74)
Site:	Carbon Valley 25' Fed Com	MD Reference:	Well2 @ 3532.00ft (Patterson #74)
Well:	#5H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Midland Database
Project	Eddy County (NAD27)	System Datum:	Mean Sea Level
Map System:	US State Plane 1927 (Exact solution)		
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site	Carbon Valley 25' Fed Com	Northing:	690,393.100 ft	Latitude:	32° 53' 52.565 N
Site Position:		Easting:	528,843.100 ft	Longitude:	104° 14' 21.704 W
From:	Map	Slot Radius:	"	Grid Convergence:	0.05 °
Position Uncertainty:	0.00 ft				

Well	#5H								
Well Position	+N/-S	0.00 ft	Northing:	687,764.600 ft	Latitude:	32° 53' 26.510 N			
	+E/-W	0.00 ft	Easting:	533,554.600 ft	Longitude:	104° 13' 26.476 W			
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level:	3,510.00 ft			

Wellbore	OH	Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
			IGRF200510	09/27/10	(°)	(°)	(nT)
					8.01	60.73	49,048

Design	OH	Audit Notes:		Phase:	ACTUAL	Tie On Depth:	0.00
Version:	1.0						
Vertical Section:		Depth From (TVD)	+N/-S	+E/-W	Direction		
		(ft)	(ft)	(ft)	(°)		
		0.00	0.00	0.00	272.17		

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Site: Carbon Valley 25' Fed Com
Well: #5H
Wellbore: OH
Design: OH

Local Co-ordinate Reference:
TVD Reference: Well #5H
MD Reference: Well2 @ 3532.00ft (Patterson #74)
North Reference: Well2 @ 3532.00ft (Patterson #74)
Survey Calculation Method: Grid
Database: Minimum Curvature
Midland Database

Survey Program		Date	10/12/10
From	To	Survey (Wellbore)	
(ft)	(ft)		
100.00	5,600.00	GYRO (OH)	
5,668.00	10,730.00	MWD (OH)	
		Tool Name	Description
		CB-GYRO-MS	Camera based gyro multishot
		MWD	MWD - Standard

Survey											
MD	Inc	Azi	TVD	TVDSS	N/S	E/W	V. Sec	D Leg	Northing	Easting	
(ft)	(°)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)	(°/100ft)	(ft)	(ft)	
5,600.00	1.24	108.48	5,599.85	2,067.85	2.96	-14.70	14.80	0.00	687,767.56	533,539.90	
5,668.00	1.58	100.67	5,667.83	2,135.83	2.55	-13.08	13.16	0.57	687,767.15	533,541.52	
5,689.00	1.41	101.48	5,688.83	2,156.83	2.45	-12.54	12.62	0.82	687,767.05	533,542.06	
5,720.00	0.53	79.94	5,719.82	2,187.82	2.40	-12.02	12.11	3.02	687,767.00	533,542.58	
5,752.00	1.67	269.10	5,751.82	2,219.82	2.42	-12.35	12.43	6.86	687,767.02	533,542.25	
5,784.00	4.48	266.52	5,783.77	2,251.77	2.33	-14.06	14.14	8.79	687,766.93	533,540.54	
5,816.00	7.47	266.36	5,815.59	2,283.59	2.13	-17.38	17.45	9.34	687,766.73	533,537.22	
5,847.00	10.73	266.47	5,846.20	2,314.20	1.82	-22.28	22.33	10.52	687,766.42	533,532.32	
5,879.00	14.68	266.93	5,877.41	2,345.41	1.35	-29.30	29.33	12.35	687,765.95	533,525.30	
5,902.00	16.18	266.33	5,899.58	2,367.58	0.94	-35.40	35.41	6.54	687,765.54	533,519.20	
5,934.00	20.31	266.91	5,929.96	2,397.96	0.35	-45.40	45.38	12.92	687,764.95	533,509.20	
5,965.00	23.74	268.49	5,958.70	2,426.70	-0.10	-57.01	56.97	11.23	687,764.50	533,497.59	
5,997.00	27.52	269.45	5,987.54	2,455.54	-0.34	-70.85	70.79	11.88	687,764.26	533,483.75	
6,028.00	30.86	269.74	6,014.60	2,482.60	-0.45	-85.97	85.89	10.78	687,764.15	533,468.63	
6,060.00	34.56	270.05	6,041.52	2,509.52	-0.48	-103.26	103.17	11.57	687,764.12	533,451.34	
6,092.00	38.34	270.05	6,067.26	2,535.26	-0.46	-122.27	122.16	11.81	687,764.14	533,432.33	
6,123.00	42.21	270.26	6,090.90	2,558.90	-0.41	-142.30	142.18	12.49	687,764.19	533,412.30	
6,155.00	46.08	270.40	6,113.86	2,581.86	-0.28	-164.58	164.46	12.10	687,764.32	533,390.02	
6,187.00	49.77	270.70	6,135.30	2,603.30	-0.05	-188.33	188.20	11.55	687,764.55	533,366.27	
6,218.00	53.64	271.16	6,154.51	2,622.51	0.35	-212.65	212.51	12.54	687,764.95	533,341.95	
6,250.00	57.24	271.26	6,172.66	2,640.66	0.91	-239.00	238.86	11.25	687,765.51	533,315.60	

Pathfinder Pathfinder X & Y Survey Report



Company: Murchison Oil & Gas
Project: Eddy County (NAD27)
Site: Carbon Valley 25' Fed Com
Well: #5H
Wellbore: OH
Design: OH

Local Co-ordinate Reference:
TVD Reference:
MD Reference:
North Reference:
Survey Calculation Method:
Database:

Well #5H
Well2 @ 3532.00ft (Patterson #74)
Well2 @ 3532.00ft (Patterson #74)
Grid
Minimum Curvature
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)
	6,282.00	61.38	271.66	6,188.99	2,656.99	1.61	-266.50	266.37	12.98	687,766.21	533,288.10
	6,313.00	65.33	271.61	6,202.89	2,670.89	2.40	-294.19	294.07	12.74	687,767.00	533,260.41
	6,345.00	68.76	272.10	6,215.37	2,683.37	3.36	-323.64	323.53	10.81	687,767.96	533,230.96
	6,377.00	68.76	272.18	6,226.96	2,694.96	4.47	-353.44	353.36	0.23	687,769.07	533,201.16
	6,409.00	68.94	272.21	6,238.50	2,706.50	5.61	-383.26	383.20	0.57	687,770.21	533,171.34
	6,440.00	69.03	272.18	6,249.62	2,717.62	6.72	-412.18	412.14	0.30	687,771.32	533,142.42
	6,471.00	69.12	272.21	6,260.69	2,728.69	7.83	-441.12	441.10	0.30	687,772.43	533,113.48
	6,503.00	69.29	272.34	6,272.05	2,740.05	9.02	-471.01	471.01	0.65	687,773.62	533,083.59
	6,535.00	71.84	272.77	6,282.70	2,750.70	10.36	-501.15	501.18	8.07	687,774.96	533,053.45
	6,567.00	74.66	272.79	6,291.92	2,759.92	11.85	-531.75	531.82	8.81	687,776.45	533,022.85
	6,599.00	76.68	272.79	6,299.84	2,767.84	13.36	-562.72	562.82	6.31	687,777.96	532,991.88
	6,630.00	78.96	273.17	6,306.38	2,774.38	14.93	-592.98	593.12	7.45	687,779.53	532,961.62
	6,662.00	81.91	273.76	6,311.70	2,779.70	16.84	-624.47	624.66	9.40	687,781.44	532,930.13
	6,693.00	83.89	273.54	6,315.53	2,783.53	18.80	-655.17	655.41	6.43	687,783.40	532,899.43
	6,725.00	87.03	272.91	6,318.06	2,786.06	20.59	-687.02	687.30	10.01	687,785.19	532,867.58
	6,757.00	88.27	272.06	6,319.37	2,787.37	21.98	-718.96	719.28	4.70	687,786.58	532,835.64
	6,789.00	88.66	272.41	6,320.23	2,788.23	23.23	-750.92	751.26	1.64	687,787.83	532,803.68
	6,821.00	88.88	272.67	6,320.92	2,788.92	24.65	-782.88	783.26	1.06	687,789.25	532,771.72
	6,851.00	89.22	272.21	6,321.42	2,789.42	25.92	-812.85	813.25	1.91	687,790.52	532,741.75
	6,883.00	89.22	272.82	6,321.85	2,789.85	27.33	-844.82	845.25	1.91	687,791.93	532,709.78
	6,914.00	89.27	272.78	6,322.26	2,790.26	28.84	-875.78	876.24	0.21	687,793.44	532,678.82
	6,946.00	89.55	272.83	6,322.59	2,790.59	30.41	-907.74	908.24	0.89	687,795.01	532,646.86
	6,978.00	89.89	272.83	6,322.75	2,790.75	31.99	-939.70	940.24	1.06	687,796.59	532,614.90
	7,010.00	90.11	272.53	6,322.75	2,790.75	33.48	-971.66	972.24	1.16	687,798.08	532,582.94
	7,042.00	89.55	273.30	6,322.84	2,790.84	35.11	-1,003.62	1,004.23	2.98	687,799.71	532,550.98
	7,073.00	89.89	273.30	6,322.99	2,790.99	36.89	-1,034.57	1,035.23	1.10	687,801.49	532,520.03
	7,105.00	90.22	272.97	6,322.96	2,790.96	38.64	-1,066.52	1,067.22	1.46	687,803.24	532,488.08

Pathfinder

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Company: Murchison Oil & Gas
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 Site: Carbon Valley '25' Fed Com
 Well: #5H
 Wellbore: OH
 Design: OH

Local Co-ordinate Reference:
 TVD Reference: Well2 @ 3532.00ft (Patterson #74)
 MD Reference: Well2 @ 3532.00ft (Patterson #74)
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature
 Database: Midland Database

Survey	MD (ft)	Inc (°)	Azi (°)	TVD (ft)	TVDSS (ft)	N/S (ft)	EW (ft)	V. Sec (ft)	DLeg (°/100ft)	Northing (ft)	Easting (ft)
	7,137.00	89.16	273.42	6,323.14	2,791.14	40.43	-1,096.47	1,099.22	3.60	687,805.03	532,456.13
	7,169.00	89.10	273.68	6,323.62	2,791.62	42.41	-1,130.41	1,131.20	0.83	687,807.01	532,424.19
	7,200.00	87.93	274.26	6,324.42	2,792.42	44.55	-1,161.32	1,162.18	4.21	687,809.15	532,393.28
	7,232.00	88.38	274.02	6,325.45	2,793.45	46.86	-1,193.22	1,194.14	1.59	687,811.46	532,361.38
	7,264.00	88.66	274.16	6,326.28	2,794.28	49.15	-1,225.13	1,226.11	0.98	687,813.75	532,329.47
	7,296.00	89.05	274.27	6,326.92	2,794.92	51.50	-1,257.04	1,258.08	1.27	687,816.10	532,297.56
	7,328.00	88.77	274.25	6,327.53	2,795.53	53.87	-1,288.94	1,290.06	0.88	687,818.47	532,265.66
	7,360.00	87.65	274.35	6,328.53	2,796.53	56.27	-1,320.84	1,322.02	3.51	687,820.87	532,233.76
	7,391.00	87.87	273.58	6,329.74	2,797.74	58.41	-1,351.74	1,352.98	2.58	687,823.01	532,202.86
	7,423.00	88.21	273.61	6,330.84	2,798.84	60.42	-1,383.66	1,384.95	1.07	687,825.02	532,170.94
	7,456.00	88.66	273.93	6,331.71	2,799.71	62.52	-1,415.57	1,416.93	1.73	687,827.12	532,139.03
	7,486.00	87.26	274.37	6,332.81	2,800.81	64.76	-1,446.47	1,447.89	4.73	687,829.36	532,108.13
	7,518.00	86.98	274.82	6,334.42	2,802.42	67.32	-1,478.33	1,479.82	1.65	687,831.92	532,076.27
	7,550.00	87.48	275.01	6,335.97	2,803.97	70.06	-1,510.17	1,511.74	1.67	687,834.66	532,044.43
	7,581.00	88.16	274.44	6,337.15	2,805.15	72.61	-1,541.05	1,542.69	2.86	687,837.21	532,013.55
	7,613.00	88.32	273.68	6,338.13	2,806.13	74.88	-1,572.95	1,574.66	2.43	687,839.48	531,981.65
	7,645.00	88.60	272.53	6,338.99	2,806.99	76.61	-1,604.89	1,606.64	3.70	687,841.21	531,949.71
	7,677.00	89.22	271.97	6,339.60	2,807.60	77.87	-1,636.86	1,638.64	2.61	687,842.47	531,917.74
	7,708.00	89.66	271.72	6,339.90	2,807.90	78.87	-1,667.84	1,669.63	1.63	687,843.47	531,886.76
	7,740.00	90.22	272.25	6,339.93	2,807.93	79.97	-1,699.82	1,701.63	2.41	687,844.57	531,854.78
	7,771.00	90.90	271.93	6,339.63	2,807.63	81.10	-1,730.80	1,732.63	2.42	687,845.70	531,823.80
	7,803.00	91.40	271.76	6,338.99	2,806.99	82.13	-1,762.78	1,764.62	1.65	687,846.73	531,791.82
	7,835.00	91.79	272.00	6,338.10	2,806.10	83.18	-1,794.75	1,796.61	1.43	687,847.78	531,759.85
	7,867.00	92.18	272.00	6,336.99	2,804.99	84.30	-1,826.71	1,828.59	1.22	687,848.90	531,727.89
	7,899.00	92.80	271.90	6,335.60	2,803.60	85.39	-1,858.66	1,860.56	1.96	687,849.99	531,695.94
	7,930.00	91.34	272.25	6,334.48	2,802.48	86.51	-1,889.62	1,891.54	4.84	687,851.11	531,664.98
	7,961.00	91.06	272.58	6,333.83	2,801.83	87.82	-1,920.59	1,922.53	1.40	687,852.42	531,634.01

Pathfinder Pathfinder X & Y Survey Report



Company:	Murchison Oil & Gas	Local Co-ordinate Reference:	Well #5H
Project:	Eddy County (NAD27)	TVD Reference:	Well2 @ 3532.00ft (Patterson #74)
Site:	Carbon Valley 25' Fed Com	MD Reference:	Well2 @ 3532.00ft (Patterson #74)
Well:	#5H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	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)
	7,993.00	91.51	272.43	6,333.11	2,801.11	89.21	-1,952.55	1,954.52	1.48	687,853.81	531,602.05
	8,025.00	91.29	272.39	6,332.33	2,800.33	90.56	-1,984.51	1,986.51	0.70	687,855.16	531,570.09
	8,056.00	91.01	271.89	6,331.71	2,799.71	91.72	-2,015.48	2,017.51	1.85	687,856.32	531,539.12
	8,088.00	89.83	271.45	6,331.47	2,799.47	92.65	-2,047.47	2,049.51	3.94	687,857.25	531,507.13
	8,120.00	90.28	272.00	6,331.44	2,799.44	93.61	-2,079.45	2,081.50	2.22	687,858.21	531,475.15
	8,152.00	89.83	271.57	6,331.41	2,799.41	94.61	-2,111.44	2,113.50	1.95	687,859.21	531,443.16
	8,183.00	90.11	271.58	6,331.43	2,799.43	95.46	-2,142.42	2,144.50	0.90	687,860.06	531,412.18
	8,215.00	88.88	271.62	6,331.71	2,799.71	96.35	-2,174.41	2,176.50	3.85	687,860.95	531,380.19
	8,247.00	88.77	271.78	6,332.37	2,800.37	97.30	-2,206.39	2,208.49	0.61	687,861.90	531,348.21
	8,278.00	89.11	272.02	6,332.94	2,800.94	98.33	-2,237.37	2,239.49	1.34	687,862.93	531,317.23
	8,310.00	89.22	272.45	6,333.41	2,801.41	99.58	-2,269.34	2,271.48	1.39	687,864.18	531,285.26
	8,342.00	88.04	272.48	6,334.17	2,802.17	100.96	-2,301.30	2,303.47	3.69	687,865.56	531,253.30
	8,373.00	87.82	273.25	6,335.29	2,803.29	102.50	-2,332.24	2,334.45	2.58	687,867.10	531,222.36
	8,405.00	88.43	273.19	6,336.34	2,804.34	104.30	-2,364.17	2,366.43	1.92	687,868.90	531,190.43
	8,437.00	88.82	273.19	6,337.11	2,805.11	106.08	-2,396.11	2,398.41	1.22	687,870.68	531,158.49
	8,469.00	89.10	273.67	6,337.69	2,805.69	107.99	-2,428.05	2,430.40	1.74	687,872.59	531,126.55
	8,501.00	89.33	273.95	6,338.13	2,806.13	110.12	-2,459.98	2,462.38	1.13	687,874.72	531,094.62
	8,532.00	89.89	274.14	6,338.34	2,806.34	112.31	-2,490.90	2,493.36	1.91	687,876.91	531,063.70
	8,564.00	90.56	274.16	6,338.21	2,806.21	114.62	-2,522.81	2,525.35	2.09	687,879.22	531,031.79
	8,596.00	91.46	274.93	6,337.65	2,805.65	117.16	-2,554.71	2,557.31	3.70	687,881.76	530,999.89
	8,628.00	91.57	274.31	6,336.80	2,804.80	119.73	-2,586.59	2,589.27	1.97	687,884.33	530,968.01
	8,659.00	91.90	273.13	6,335.86	2,803.86	121.75	-2,617.51	2,620.25	3.95	687,886.35	530,937.09
	8,691.00	90.95	272.86	6,335.07	2,803.07	123.42	-2,648.46	2,652.23	3.09	687,888.02	530,905.14
	8,723.00	90.34	272.60	6,334.71	2,802.71	124.94	-2,681.42	2,684.23	2.07	687,889.54	530,873.18
	8,754.00	90.11	271.96	6,334.59	2,802.59	126.17	-2,712.40	2,715.23	2.19	687,890.77	530,842.20
	8,786.00	90.28	272.13	6,334.48	2,802.48	127.32	-2,744.37	2,747.23	0.75	687,891.92	530,810.23
	8,818.00	90.62	271.90	6,334.22	2,802.22	128.44	-2,776.35	2,779.23	1.28	687,893.04	530,778.25

Pathfinder

Pathfinder X & Y Survey Report



Company: Murchison Oil & Gas
Project: Eddy County (NAD27)
Site: Carbon Valley 25' Fed Com
Well: #5H
Wellbore: OH
Design: OH

Local Co-ordinate Reference:
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North Reference:
Survey Calculation Method:
Database:

Well #5H
Well2 @ 3532.00ft (Patterson #74)
Well2 @ 3532.00ft (Patterson #74)
Grid
Minimum Curvature
Midland Database

Survey	MD (ft)	Inc (°)	Azi (°)	TVD (ft)	TVDSS (ft)	N/S (ft)	EW (ft)	V. Sec (ft)	DLeg (°/100ft)	Northing (ft)	Easting (ft)
	8,849.00	91.12	272.10	6,333.75	2,801.75	129.52	-2,807.33	2,810.22	1.74	687,894.12	530,747.27
	8,881.00	90.34	271.89	6,333.35	2,801.35	130.64	-2,839.31	2,842.22	2.52	687,895.24	530,715.29
	8,913.00	90.34	271.64	6,333.16	2,801.16	131.62	-2,871.29	2,874.22	0.78	687,896.22	530,683.31
	8,945.00	90.50	271.95	6,332.92	2,800.92	132.62	-2,903.28	2,906.22	1.09	687,897.22	530,651.32
	8,976.00	90.73	272.45	6,332.59	2,800.59	133.81	-2,934.25	2,937.21	1.78	687,898.41	530,620.35
	9,008.00	89.78	272.40	6,332.45	2,800.45	135.17	-2,966.22	2,969.21	2.97	687,899.77	530,588.38
	9,040.00	89.50	272.48	6,332.65	2,800.65	136.53	-2,998.19	3,001.21	0.91	687,901.13	530,556.41
	9,071.00	90.00	273.16	6,332.78	2,800.78	138.06	-3,029.15	3,032.21	2.72	687,902.66	530,525.45
	9,103.00	90.06	271.96	6,332.77	2,800.77	139.49	-3,061.12	3,064.21	3.75	687,904.09	530,493.48
	9,135.00	90.45	271.36	6,332.62	2,800.62	140.41	-3,093.11	3,096.21	2.24	687,905.01	530,461.49
	9,167.00	90.62	271.66	6,332.33	2,800.33	141.26	-3,125.10	3,128.20	1.08	687,905.86	530,429.50
	9,198.00	91.01	271.42	6,331.88	2,799.88	142.09	-3,156.08	3,159.20	1.48	687,906.69	530,398.52
	9,230.00	91.74	272.12	6,331.12	2,799.12	143.08	-3,188.06	3,191.19	3.16	687,907.68	530,366.54
	9,262.00	92.24	271.85	6,330.01	2,798.01	144.18	-3,220.02	3,223.17	1.78	687,908.78	530,334.58
	9,294.00	92.13	271.89	6,328.79	2,796.79	145.23	-3,251.98	3,255.14	0.37	687,909.83	530,302.62
	9,326.00	91.40	271.89	6,327.80	2,795.80	146.28	-3,283.94	3,287.13	2.28	687,910.88	530,270.66
	9,358.00	91.90	271.72	6,326.88	2,794.88	147.29	-3,315.92	3,319.11	1.65	687,911.89	530,238.68
	9,389.00	92.07	271.78	6,325.80	2,793.80	148.24	-3,346.88	3,350.10	0.58	687,912.84	530,207.72
	9,421.00	90.62	271.44	6,325.05	2,793.05	149.13	-3,378.86	3,382.08	4.65	687,913.73	530,175.74
	9,453.00	90.56	271.57	6,324.72	2,792.72	149.98	-3,410.85	3,414.08	0.45	687,914.58	530,143.75
	9,485.00	91.17	271.37	6,324.24	2,792.24	150.80	-3,442.83	3,446.07	2.01	687,915.40	530,111.77
	9,516.00	90.67	271.42	6,323.74	2,791.74	151.55	-3,473.82	3,477.07	1.62	687,916.15	530,080.78
	9,547.00	89.44	271.56	6,323.71	2,791.71	152.36	-3,504.81	3,508.06	3.99	687,916.96	530,049.79
	9,579.00	89.55	271.31	6,324.00	2,792.00	153.16	-3,536.80	3,540.06	0.85	687,917.76	530,017.80
	9,611.00	89.55	271.07	6,324.25	2,792.25	153.82	-3,568.79	3,572.05	0.75	687,918.42	529,985.81
	9,642.00	89.05	270.52	6,324.63	2,792.63	154.25	-3,599.78	3,603.04	2.40	687,918.85	529,954.82
	9,674.00	89.50	271.08	6,325.03	2,793.03	154.70	-3,631.78	3,635.03	2.24	687,919.30	529,922.82

Pathfinder

Pathfinder X & Y Survey Report



Company: Murchison Oil & Gas
 Project: Eddy County (NAD27)
 Site: Carbon Valley '25' Fed Com
 Well: #5H
 Wellbore: OH
 Design: OH

Local Co-ordinate Reference: Well #5H
 TVD Reference: Well2 @ 3532.00ft (Patterson #74)
 MD Reference: Well2 @ 3532.00ft (Patterson #74)
 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)
	9,705.00	89.94	271.28	6,325.18	2,793.18	155.34	-3,662.77	3,666.03	1.56	687,919.94	529,891.83
	9,737.00	89.27	271.26	6,325.40	2,793.40	156.05	-3,694.76	3,698.02	2.09	687,920.65	529,859.84
	9,769.00	89.05	271.79	6,325.87	2,793.87	156.90	-3,726.75	3,730.02	1.79	687,921.50	529,827.85
	9,801.00	89.66	272.08	6,326.23	2,794.23	157.98	-3,758.73	3,762.01	2.11	687,922.58	529,795.87
	9,832.00	90.39	272.91	6,326.22	2,794.22	159.33	-3,789.70	3,793.01	3.57	687,923.93	529,764.90
	9,864.00	91.23	273.25	6,325.77	2,793.77	161.05	-3,821.65	3,825.00	2.83	687,925.65	529,732.95
	9,896.00	91.40	272.59	6,325.03	2,793.03	162.68	-3,853.60	3,856.99	2.13	687,927.28	529,701.00
	9,928.00	91.57	273.01	6,324.20	2,792.20	164.24	-3,885.55	3,888.98	1.42	687,928.84	529,669.05
	9,959.00	90.39	273.37	6,323.67	2,791.67	165.96	-3,916.49	3,919.97	3.98	687,930.56	529,638.11
	9,991.00	90.50	273.11	6,323.42	2,791.42	167.77	-3,948.44	3,951.96	0.88	687,932.37	529,606.16
	10,022.00	90.95	272.85	6,323.03	2,791.03	169.38	-3,979.40	3,982.96	1.68	687,933.98	529,575.20
	10,053.00	91.01	273.07	6,322.50	2,790.50	170.99	-4,010.35	4,013.95	0.74	687,935.59	529,544.25
	10,085.00	90.06	273.25	6,322.20	2,790.20	172.75	-4,042.30	4,045.94	3.02	687,937.35	529,512.30
	10,116.00	90.34	273.05	6,322.09	2,790.09	174.45	-4,073.25	4,076.94	1.11	687,939.05	529,481.35
	10,148.00	90.56	273.22	6,321.84	2,789.84	176.20	-4,105.21	4,108.93	0.87	687,940.80	529,449.39
	10,180.00	90.84	273.48	6,321.45	2,789.45	178.07	-4,137.15	4,140.92	1.19	687,942.67	529,417.45
	10,212.00	91.18	273.38	6,320.89	2,788.89	179.99	-4,169.09	4,172.91	1.11	687,944.59	529,385.51
	10,244.00	91.46	273.29	6,320.15	2,788.15	181.85	-4,201.02	4,204.90	0.92	687,946.45	529,353.58
	10,275.00	90.50	273.12	6,319.62	2,787.62	183.58	-4,231.97	4,235.89	3.14	687,948.18	529,322.63
	10,307.00	90.50	272.99	6,319.34	2,787.34	185.29	-4,263.92	4,267.88	0.41	687,949.89	529,290.68
	10,339.00	90.78	272.91	6,318.98	2,786.98	186.93	-4,295.88	4,299.88	0.91	687,951.53	529,258.72
	10,371.00	91.02	273.06	6,318.48	2,786.48	188.60	-4,327.83	4,331.87	0.88	687,953.20	529,226.77
	10,403.00	91.40	272.82	6,317.81	2,785.81	190.24	-4,359.78	4,363.86	1.40	687,954.84	529,194.82
	10,434.00	91.40	273.53	6,317.05	2,785.05	191.96	-4,390.73	4,394.85	2.29	687,956.56	529,163.87
	10,466.00	90.89	273.57	6,316.41	2,784.41	193.94	-4,422.66	4,426.83	1.60	687,958.54	529,131.94
	10,498.00	90.22	274.06	6,316.10	2,784.10	196.07	-4,454.58	4,458.81	2.59	687,960.67	529,100.02
	10,529.00	90.06	274.53	6,316.02	2,784.02	198.39	-4,485.50	4,489.79	1.60	687,962.99	529,069.10

Pathfinder Pathfinder X & Y Survey Report



Company: Murchison Oil & Gas
Project: Eddy County (NAD27)
Site: Carbon Valley 25' Fed Com
Well: #5H
Wellbore: OH
Design: OH

Local Co-ordinate Reference:
TVD Reference: Well #5H
MD Reference: Well2 @ 3532.00ft (Patterson #74)
North Reference: Well2 @ 3532.00ft (Patterson #74)
Survey Calculation Method: Grid
Database: Minimum Curvature
Midland Database

Survey	MD (ft)	Inc (°)	Azi (°)	TVD (ft)	TVDSS (ft)	N/S (ft)	EW (ft)	V. Sec (ft)	DLeg (°/100ft)	Northing (ft)	Easting (ft)
	10,560.00	90.34	274.34	6,315.91	2,783.91	200.79	-4,516.40	4,520.77	1.09	687,965.39	529,038.20
	10,592.00	90.39	274.55	6,315.71	2,783.71	203.27	-4,548.31	4,552.74	0.67	687,967.87	529,006.29
	10,623.00	90.78	274.79	6,315.39	2,783.39	205.79	-4,579.20	4,583.71	1.48	687,970.39	528,975.40
	10,655.00	90.95	274.97	6,314.91	2,782.91	208.51	-4,611.08	4,615.67	0.77	687,973.11	528,943.52
	10,675.00	90.28	275.17	6,314.70	2,782.70	210.28	-4,631.00	4,635.65	3.50	687,974.88	528,923.60
	10,730.00	90.28	275.17	6,314.43	2,782.43	215.23	-4,685.78	4,690.57	0.00	687,979.83	528,868.82
BHL-10730.00MD,90.28°INC,275.17°AZI, 6314.43TVD, 4690.57VS, 215.23N, -4685.78E											

Targets											
Target Name	- hit/miss target	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude	
CV25FF#1 SHL		0.00	0.00	4.00	-329.60	-459.60	687,435.000	533,095.000	32° 53' 23.254 N	104° 13' 31.870 W	
- survey misses target center by 5623.35ft at 5600.00ft MD (5599.85 TVD, 2.96 N, -14.70 E)											
- Circle (radius 200.00)											
PBHL(CV#5H)		0.00	359.93	6,286.50	179.30	-4,728.70	687,943.900	528,825.900	32° 53' 28.330 N	104° 14' 21.931 W	
- survey misses target center by 62.56ft at 10730.00ft MD (6314.43 TVD, 215.23 N, -4685.78 E)											
- Point											

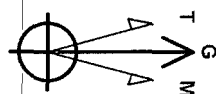
Survey Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	+E/-W (ft)	Comment	
10,730.00	6,314.43	215.23	-4,685.78	BHL-10730.00MD,90.28°INC,275.17°AZI, 6314.43TVD, 4690.57VS, 2	

Checked By: _____ Approved By: _____ Date: _____

Murchison Oil & Gas

Project: Eddy County (NAD27)
Site: Carbon Valley '25' Fed Com

Wellbore: OH
Plan: Plan #4 (#5H/OH)



Azimuths to Grid North
True North: -0.06°
Magnetic North: 7.95°
Magnetic Field
Strength: 49047.6mT
Dip Angle: 60.73°
Date: 03/27/2010
Model: IGRF-200510

PATHFINDER
A Schlumberger Company

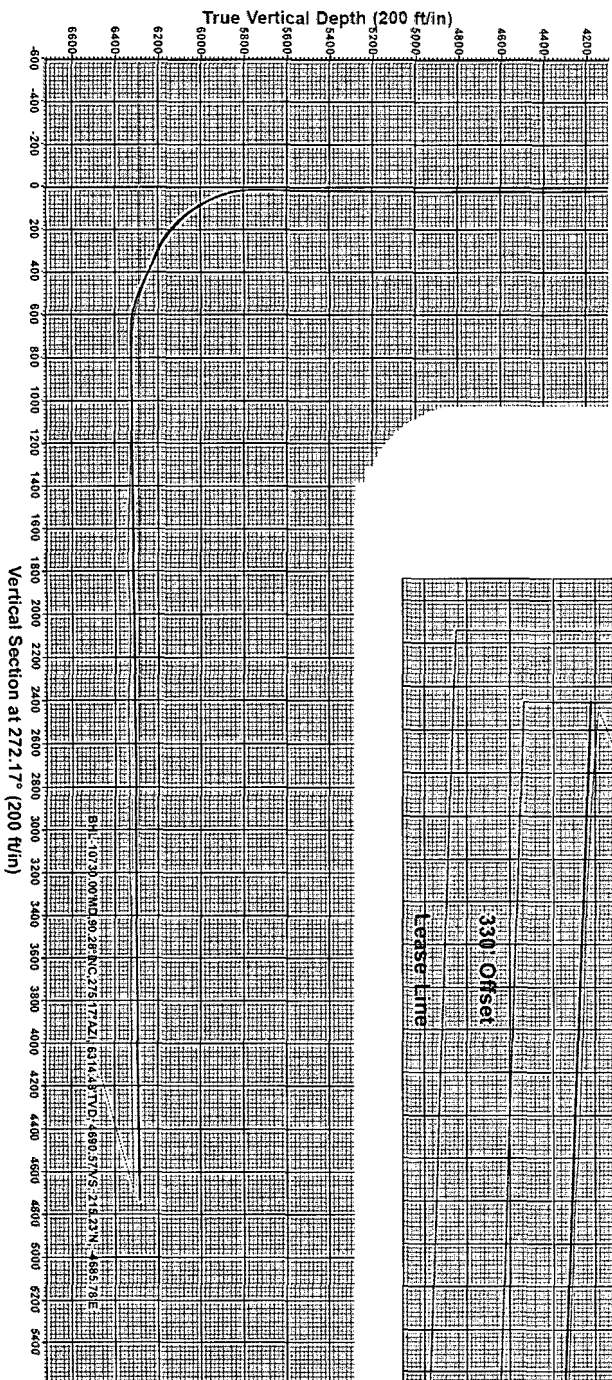
WELL DETAILS: #5H			
Ground Elevation:	2510.00		
RWB Elevation:	Walt 02-553.00ft (Palmon 874)		
Rig Name:	Palmon 874		
Easting	533564.900	Latitude	32° 53' 26.510 N
Northing	68794.800	Longitude	-104° 13' 26.478 W
Shot	0.00		

Sec	MD	Inc	AR	TVD	SECTION DEPTH	WELL	Target
1	5730.00	1.37	103.68	5729.62	2.18	-11.78	0.00
2	6315.57	65.00	272.17	6250.50	11.68	-302.48	11.33
3	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
4	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
5	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
6	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
7	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
8	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
9	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
10	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
11	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
12	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
13	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
14	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
15	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
16	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
17	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
18	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
19	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
20	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
21	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
22	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
23	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
24	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
25	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
26	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
27	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
28	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
29	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
30	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
31	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
32	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
33	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
34	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
35	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
36	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
37	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
38	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
39	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
40	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
41	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
42	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
43	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
44	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
45	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
46	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
47	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
48	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
49	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
50	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
51	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
52	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
53	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
54	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
55	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
56	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
57	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
58	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
59	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
60	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
61	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
62	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
63	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
64	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
65	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
66	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
67	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
68	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
69	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
70	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
71	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
72	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
73	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
74	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
75	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
76	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
77	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
78	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
79	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
80	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
81	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
82	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
83	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
84	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
85	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
86	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
87	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
88	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
89	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
90	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
91	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
92	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
93	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
94	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
95	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
96	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
97	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
98	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
99	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00
100	6318.57	65.00	272.17	6323.50	22.38	-413.73	12.00

Name	TVD	+N/S	+E/W	Northing	Easting	Shape
CV25F#1 SHL	4.00	-329.60	-459.60	68794.800	533085.000	Circle (Radius: 200.00)
PBHL(CV#5H)	6288.50	179.30	-4728.70	68794.800	528825.900	Point

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

South(-)/North(+) (200 ft/in)



PROJECT DETAILS: Eddy County (NAD27)
Geospatial System: NAD 1927 (NADCON CONUS)
Datum: NAD 1927 (NADCON CONUS)
Zone: New Mexico East 3001
System Datum: Mean Sea Level
Local North: Grid

Created By: Neo Bingham Date: 8/23, October 12, 2010