



Yates Petroleum Corp.

Eddy County

Juniper "BIP" Federal

#9H

OH

Survey: MWD #1

Pathfinder X & Y Survey Report

08 February, 2010

PATHFINDER



Pathfinder Energy Services

Pathfinder X & Y Survey Report



Company: Yates Petroleum Corp.
Project: Eddy County
Site: Juniper "BIP" Federal
Well: #9H
Wellbore: OH
Design: OH

Local Co-ordinate Reference: Well #9H
TVD Reference: Well1 @ 3022.50ft (Patriot #5)
MD Reference: Well1 @ 3022.50ft (Patriot #5)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Midland Database

Project: Eddy County

Map System: US State Plane 1983
Geo Datum: North American Datum 1983
Map Zone: New Mexico Eastern Zone

System Datum: Mean Sea Level

Site: Juniper "BIP" Federal

Site Position: Northing: 452,382.500 ft Latitude: 32° 14' 35.626 N
From: Map Easting: 645,120.500 ft Longitude: 103° 59' 51.534 W
Position Uncertainty: 0.00 ft Slot Radius: " Grid Convergence: 0.18°

Well: #9H

Well Position: +N/-S 0.00 ft Northing: 451,139.500 ft Latitude: 32° 14' 23.314 N
+E/-W 0.00 ft Easting: 645,476.900 ft Longitude: 103° 59' 47.429 W
Position Uncertainty: 0.00 ft Wellhead Elevation: ft Ground Level: 2,996.00 ft

Wellbore: OH

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	01/10/2010	7.96	60.16	48,724

Design: OH

Audit Notes:

Version: 1.0 Phase: ACTUAL Tie On Depth: 0.00

Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.00	0.00	0.00	82.97



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Well1 @ 3022.50ft (Patriot #5)
Grid
Minimum Curvature
Midland Database

Survey Program Date 02/08/2010

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
200.00	5,120.00	GYRO (OH)	CB-GYRO-MS	Camera based gyro multishot
5,167.00	12,043.00	MWD #1 (OH)	MWD	MWD - Standard

MD (ft)	Inc (°)	Azi (°)	TVD (ft)	TVDSS (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)	Northing (ft)	Easting (ft)
5,120.00	1.00	195.54	5,118.86	2,096.36	-1.32	6.12	5.91	0.00	451,138.18	645,483.02
5,167.00	1.14	201.63	5,165.85	2,143.35	-2.15	5.84	5.53	0.38	451,137.35	645,482.74
5,261.00	0.44	240.78	5,259.84	2,237.34	-3.19	5.18	4.75	0.90	451,136.31	645,482.08
5,355.00	0.35	273.94	5,353.84	2,331.34	-3.35	4.58	4.13	0.26	451,136.15	645,481.48
5,449.00	1.06	340.31	5,447.84	2,425.34	-2.51	4.00	3.66	1.04	451,136.99	645,480.90
5,543.00	2.90	348.69	5,541.78	2,519.28	0.64	3.24	3.29	1.98	451,140.14	645,480.14
5,638.00	5.01	349.49	5,636.54	2,614.04	7.07	2.91	2.86	2.22	451,146.57	645,478.91
5,700.00	6.63	352.58	5,698.22	2,675.72	13.29	1.06	2.67	2.66	451,152.79	645,477.96
5,794.00	9.06	355.94	5,791.34	2,768.84	26.05	-0.17	3.02	2.63	451,165.55	645,476.73
5,889.00	9.67	359.11	5,885.07	2,862.57	41.49	-0.82	4.26	0.84	451,180.99	645,476.08
5,983.00	9.58	0.46	5,977.75	2,955.25	57.21	-0.88	6.13	0.26	451,196.71	645,476.02
6,077.00	9.42	2.80	6,070.46	3,047.96	72.71	-0.44	8.46	0.44	451,212.21	645,476.46
6,171.00	8.35	2.63	6,163.33	3,140.83	87.21	0.24	10.92	1.14	451,226.71	645,477.14
6,265.00	9.50	1.07	6,256.19	3,233.69	101.79	0.70	13.16	1.25	451,241.29	645,477.60
6,359.00	8.79	2.80	6,348.99	3,326.49	116.72	1.20	15.47	0.81	451,256.22	645,478.10
6,453.00	9.41	359.59	6,441.81	3,419.31	131.58	1.49	17.59	0.85	451,271.08	645,478.39
6,548.00	9.15	357.90	6,535.57	3,513.07	146.89	1.16	19.13	0.40	451,286.39	645,478.06
6,642.00	8.44	356.35	6,628.46	3,605.96	161.24	0.45	20.18	0.80	451,300.74	645,477.35
6,736.00	7.83	359.04	6,721.52	3,699.02	174.53	-0.10	21.26	0.76	451,314.03	645,476.80
6,830.00	6.07	352.72	6,814.82	3,792.32	185.86	-0.83	21.92	2.04	451,325.36	645,476.07
6,924.00	4.57	345.41	6,908.42	3,885.92	194.42	-2.41	21.41	1.75	451,333.92	645,474.49



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Survey

MD (ft)	Inc (°)	Azi (°)	TVD (ft)	TVDSS (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)	Northing (ft)	Easting (ft)
11,304.00	88.55	86.85	7,772.78	4,750.28	502.65	3,687.70	3,721.50	1.33	451,642.15	649,164.60
11,367.00	89.43	86.66	7,773.89	4,751.39	506.22	3,750.59	3,784.35	1.43	451,645.72	649,227.49
11,429.00	89.25	86.70	7,774.61	4,752.11	509.81	3,812.48	3,846.22	0.30	451,649.31	649,289.38
11,492.00	88.37	85.96	7,775.91	4,753.41	513.83	3,875.34	3,909.09	1.80	451,653.33	649,352.24
11,555.00	87.32	84.25	7,778.28	4,755.78	519.19	3,938.06	3,972.00	3.21	451,658.69	649,414.96
11,618.00	88.99	84.35	7,780.31	4,757.81	525.44	4,000.72	4,034.95	2.66	451,664.94	649,477.62
11,680.00	89.43	83.58	7,781.17	4,758.67	531.96	4,062.37	4,096.93	1.43	451,671.46	649,539.27
11,743.00	91.45	84.30	7,780.68	4,758.18	538.61	4,125.01	4,159.92	3.40	451,678.11	649,601.91
11,806.00	89.60	83.79	7,780.11	4,757.61	545.15	4,187.66	4,222.90	3.05	451,684.65	649,664.56
11,869.00	89.60	84.38	7,780.55	4,758.05	551.64	4,250.33	4,285.89	0.94	451,691.14	649,727.23
11,932.00	89.52	84.18	7,781.03	4,758.53	557.92	4,313.01	4,348.87	0.34	451,697.42	649,789.91
11,964.00	89.60	84.57	7,781.27	4,758.77	561.05	4,344.86	4,380.86	1.24	451,700.55	649,821.76
12,043.00	89.60	84.57	7,781.83	4,759.33	568.53	4,423.50	4,459.83	0.00	451,708.03	649,900.40

BHL-12043.00°MD, 89.60°INC, 84.57°AZI, 7781.83°TVD, 4459.83°VS, 568.53°N, 4423.50°E



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Survey											
MD (ft)	Inc (°)	Azi (°)	TVD (ft)	TVDSS (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (%/100ft)	Northing (ft)	Easting (ft)	
9,610.00	92.42	85.45	7,754.46	4,731.96	378.35	1,998.97	2,030.24	3.90	451,517.85	647,475.87	
9,673.00	92.86	85.50	7,751.56	4,729.06	383.31	2,061.70	2,093.12	0.70	451,522.81	647,538.60	
9,735.00	92.51	85.51	7,748.66	4,726.16	388.16	2,123.44	2,154.99	0.56	451,527.66	647,600.34	
9,798.00	90.75	85.77	7,746.86	4,724.36	392.95	2,186.23	2,217.89	2.82	451,532.45	647,663.13	
9,861.00	91.10	85.68	7,745.85	4,723.35	397.65	2,249.05	2,280.81	0.57	451,537.15	647,725.95	
9,923.00	90.04	86.00	7,745.23	4,722.73	402.14	2,310.88	2,342.73	1.79	451,541.64	647,787.78	
9,986.00	89.69	86.02	7,745.38	4,722.88	406.53	2,373.73	2,405.64	0.56	451,546.03	647,850.63	
10,049.00	88.81	86.25	7,746.20	4,723.70	410.77	2,436.58	2,468.54	1.44	451,550.27	647,913.48	
10,112.00	88.20	85.80	7,747.85	4,725.35	415.14	2,499.41	2,531.43	1.20	451,554.64	647,976.31	
10,175.00	87.85	85.71	7,750.02	4,727.52	419.80	2,562.20	2,594.31	0.57	451,559.30	648,039.10	
10,237.00	88.11	85.07	7,752.20	4,729.70	424.78	2,623.96	2,656.22	1.11	451,564.28	648,100.86	
10,300.00	88.99	85.68	7,753.80	4,731.30	429.86	2,686.73	2,719.14	1.70	451,569.36	648,163.63	
10,363.00	89.25	85.17	7,754.77	4,732.27	434.88	2,749.52	2,782.08	0.91	451,574.38	648,226.42	
10,426.00	88.81	85.50	7,755.83	4,733.33	440.01	2,812.30	2,845.01	0.87	451,579.51	648,289.20	
10,489.00	87.67	84.04	7,757.77	4,735.27	445.75	2,875.01	2,907.95	2.94	451,585.25	648,351.91	
10,551.00	88.02	83.68	7,760.10	4,737.60	452.37	2,936.61	2,969.90	0.81	451,591.87	648,413.51	
10,614.00	88.90	87.93	7,761.79	4,739.29	456.98	2,999.40	3,032.78	6.89	451,596.48	648,476.30	
10,677.00	89.25	84.58	7,762.81	4,740.31	461.09	3,062.25	3,095.66	5.35	451,600.59	648,539.15	
10,739.00	89.96	85.29	7,763.24	4,740.74	466.57	3,124.01	3,157.63	1.62	451,606.07	648,600.91	
10,802.00	89.52	85.47	7,763.52	4,741.02	471.64	3,186.80	3,220.57	0.75	451,611.14	648,663.70	
10,866.00	89.52	85.91	7,764.06	4,741.56	476.45	3,250.62	3,284.49	0.69	451,615.95	648,727.52	
10,928.00	89.60	86.48	7,764.54	4,742.04	480.56	3,312.48	3,346.39	0.93	451,620.06	648,789.38	
10,991.00	89.87	86.55	7,764.83	4,742.33	484.39	3,375.36	3,409.27	0.44	451,623.89	648,852.26	
11,054.00	89.69	86.65	7,765.07	4,742.57	488.13	3,438.25	3,472.15	0.33	451,627.63	648,915.15	
11,117.00	88.02	86.79	7,766.33	4,743.83	491.73	3,501.13	3,535.00	2.66	451,631.23	648,978.03	
11,179.00	88.02	86.55	7,768.47	4,745.97	495.33	3,562.99	3,596.83	0.39	451,634.83	649,039.89	
11,241.00	87.76	86.58	7,770.75	4,748.25	499.04	3,624.84	3,658.67	0.42	451,638.54	649,101.74	



Pathfinder Energy Services Pathfinder X & Y Survey Report



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

Well #9H
Well1 @ 3022.50ft (Patriot #5)
Well1 @ 3022.50ft (Patriot #5)
Grid
Minimum Curvature
Midland Database

Targets

Target Name	Dip Angle	Dip Dir	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- hit/miss target	(°)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)		
- Shape									
End of S-Well	0.00	0.00	7,019.00	200.00	0.00	451,339.500	645,476.900	32° 14' 25.293 N	103° 59' 47.422 W
- survey misses target center by 5.51ft at 7034.68ft MD (7018.78 TVD, 202.30 N, -5.00 E)									
- Point									
PBHL(JUN#9H)	0.00	0.00	7,750.00	552.55	4,475.18	451,692.049	649,952.084	32° 14' 28.640 N	103° 58' 55.301 W
- survey misses target center by 62.77ft at 12043.00ft MD (7781.83 TVD, 568.53 N, 4423.50 E)									
- Point									

Survey Annotations

Measured Depth	Vertical Depth	Local Coordinates		Comment
(ft)	(ft)	+N/-S (ft)	+E/-W (ft)	
12,043.00	7,781.83	568.53	4,423.50	BHL-12043.00'MD, 89.60°INC, 84.57°AZI, 7781.83'TVD, 4459.83'VS, 56

Checked By: _____ Approved By: _____ Date: _____



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6,988.00	4.57	340.13	6,972.21	3,949.71	199.28	-3.92	20.50	0.66	451,338.78	645,472.98
7,082.00	2.02	340.80	7,066.05	4,043.55	204.37	-5.73	19.32	2.71	451,343.87	645,471.17
7,176.00	1.49	70.45	7,160.02	4,137.52	206.34	-5.13	20.17	2.66	451,345.84	645,471.77
7,270.00	1.14	99.09	7,254.00	4,231.50	206.60	-3.05	22.26	0.78	451,346.10	645,473.85
7,321.00	1.23	115.81	7,304.99	4,282.49	206.29	-2.06	23.20	0.70	451,345.79	645,474.84
7,352.00	2.90	95.55	7,335.97	4,313.47	206.07	-0.98	24.25	5.80	451,345.57	645,475.92
7,383.00	6.42	89.78	7,366.86	4,344.36	206.00	1.54	26.74	11.44	451,345.50	645,478.44
7,415.00	10.11	91.00	7,398.52	4,376.02	205.95	6.13	31.30	11.54	451,345.45	645,483.03
7,446.00	13.63	92.15	7,428.85	4,406.35	205.77	12.51	37.60	11.38	451,345.27	645,489.41
7,475.00	16.71	92.04	7,456.84	4,434.34	205.49	20.09	45.09	10.62	451,344.99	645,496.99
7,540.00	23.74	86.38	7,517.80	4,495.30	205.99	42.52	67.41	11.21	451,345.49	645,519.42
7,572.00	27.00	84.34	7,546.71	4,524.21	207.11	56.18	81.10	10.55	451,346.61	645,533.08
7,603.00	30.78	81.52	7,573.85	4,551.35	208.97	71.03	96.07	12.96	451,348.47	645,547.93
7,634.00	35.35	79.03	7,599.62	4,577.32	211.85	87.69	112.96	15.38	451,351.35	645,564.59
7,666.00	40.01	77.52	7,625.14	4,602.64	215.84	106.83	132.45	14.84	451,355.34	645,583.73
7,697.00	44.14	76.16	7,648.15	4,625.65	220.58	127.05	153.09	13.64	451,360.08	645,603.95
7,728.00	48.89	75.69	7,669.47	4,646.97	226.05	148.86	175.41	15.36	451,365.55	645,625.76
7,760.00	54.17	74.94	7,689.37	4,666.87	232.40	173.09	200.23	16.60	451,371.90	645,649.99
7,791.00	59.97	74.20	7,706.22	4,683.72	239.33	198.16	225.96	18.82	451,378.83	645,675.06
7,822.00	65.95	73.63	7,720.31	4,697.81	246.98	224.67	253.21	19.36	451,386.48	645,701.57
7,847.00	70.52	73.75	7,729.57	4,707.07	253.50	246.95	276.12	18.29	451,393.00	645,723.85
7,883.00	76.33	74.92	7,739.84	4,717.34	262.80	280.16	310.22	16.44	451,402.30	645,757.06
7,915.00	80.28	77.91	7,746.33	4,723.83	270.16	310.61	341.34	15.36	451,409.66	645,787.51
7,947.00	82.31	79.66	7,751.17	4,728.67	276.31	341.64	372.89	8.33	451,415.81	645,818.54
7,978.00	84.33	80.10	7,754.77	4,732.27	281.72	371.65	403.63	6.67	451,421.22	645,848.85
8,010.00	86.35	80.46	7,757.37	4,734.87	287.10	403.38	435.49	6.41	451,426.60	645,880.28
8,041.00	88.99	80.81	7,758.63	4,736.13	292.14	433.94	466.43	8.59	451,431.64	645,910.84



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8,072.00	90.13	82.56	7,758.87	4,736.37	296.62	464.61	497.42	6.74	451,436.12	645,941.51
8,104.00	89.89	83.71	7,758.87	4,736.37	300.45	496.38	529.42	3.67	451,439.95	645,973.28
8,135.00	89.96	83.36	7,758.91	4,736.41	303.94	527.18	560.42	1.15	451,443.44	646,004.08
8,167.00	90.84	84.06	7,758.68	4,736.18	307.44	558.99	592.41	3.51	451,446.94	646,035.89
8,198.00	93.12	84.94	7,757.61	4,735.11	310.41	539.83	623.38	7.88	451,449.91	646,066.73
8,229.00	94.09	87.75	7,755.66	4,733.16	312.39	620.70	654.26	9.57	451,451.89	646,097.60
8,292.00	94.97	87.75	7,750.69	4,728.19	314.85	683.45	716.85	1.40	451,454.35	646,160.35
8,355.00	93.03	88.28	7,746.29	4,723.79	317.03	746.26	779.45	3.19	451,456.53	646,223.16
8,418.00	91.28	37.90	7,743.92	4,721.42	319.13	809.18	842.15	2.84	451,458.63	646,286.08
8,480.00	90.75	98.35	7,742.83	4,720.33	321.16	871.13	903.89	1.12	451,460.66	646,348.03
8,543.00	89.25	88.39	7,742.83	4,720.33	322.95	934.11	966.61	2.38	451,462.45	646,411.01
8,606.00	87.85	88.39	7,744.42	4,721.92	324.72	997.06	1,029.30	2.22	451,464.22	646,473.96
8,669.00	86.61	88.20	7,747.46	4,724.96	326.59	1,059.96	1,091.96	1.99	451,466.09	646,536.86
8,731.00	87.69	88.66	7,750.55	4,728.05	328.29	1,121.85	1,153.60	1.89	451,467.79	646,598.75
8,794.00	88.64	89.46	7,752.56	4,730.06	329.32	1,184.81	1,216.21	1.97	451,468.82	646,661.71
8,857.00	89.78	89.58	7,753.43	4,730.93	329.85	1,247.80	1,278.79	1.82	451,469.35	646,724.70
8,919.00	88.99	88.30	7,754.10	4,731.60	330.99	1,309.79	1,340.45	2.43	451,470.49	646,786.69
8,982.00	89.96	83.31	7,754.68	4,732.18	332.86	1,372.76	1,403.17	1.54	451,472.36	646,849.66
9,045.00	88.99	87.58	7,755.25	4,732.75	335.11	1,435.71	1,465.93	1.93	451,474.61	646,912.61
9,108.00	89.52	86.69	7,756.07	4,733.57	338.26	1,498.63	1,528.76	1.64	451,477.76	646,975.53
9,170.00	89.96	86.50	7,756.35	4,733.85	341.95	1,560.52	1,590.64	0.77	451,481.45	647,037.42
9,233.00	89.43	85.48	7,756.69	4,734.19	346.35	1,623.36	1,653.55	1.82	451,485.85	647,100.26
9,296.00	90.66	85.93	7,756.64	4,734.14	351.07	1,686.18	1,716.47	2.08	451,490.57	647,163.08
9,359.00	90.22	85.14	7,756.16	4,733.66	355.97	1,748.99	1,779.41	1.44	451,495.47	647,225.89
9,422.00	90.13	85.14	7,755.96	4,733.46	361.31	1,811.76	1,842.36	0.14	451,500.81	647,288.66
9,484.00	89.87	84.76	7,755.96	4,733.46	366.77	1,873.52	1,904.32	0.74	451,506.27	647,350.42
9,547.00	90.22	84.35	7,755.91	4,733.41	372.75	1,936.24	1,967.30	0.86	451,512.25	647,413.14