



Yates Petroleum Corp.

Lea County
Herkimer "BQF" Federal
#1H
OH

Survey: MWD #1

Pathfinder X & Y Survey Report

27 October, 2010

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SUR: K-21-25s-36e, 1980/S & 1980/W
BHL: C-21-25s-36e, 4912/S & 1980/W
API #30-025-20381

PATHFINDER[®]
A Schlumberger Company



Pathfinder
Pathfinder X & Y Survey Report

PATHFINDER
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Company: Yates Petroleum Corp.
Project: Lea County
Site: Herkimer "BQF" Federal
Well: #1H
Wellbore: OH
Design: OH

Local Co-ordinate Reference: Well #1H
TVD Reference: WELL @ 3088.00ft (Original Well Elev)
MD Reference: WELL @ 3088.00ft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Midland Database

Project: Lea 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: Herkimer "BQF" Federal

Site Position: Northing: 406,846.089 ft Latitude: 32° 6' 50.591 N
From: Map Easting: 869,869.947 ft Longitude: 103° 16' 19.997 W
Position Uncertainty: 0.00 ft Slot Radius: " Grid Convergence: 0.56 °

Well: #1H

Well Position: +N/-S 0.00 ft Northing: 406,846.089 ft Latitude: 32° 6' 50.591 N
+E/-W 0.00 ft Easting: 869,869.947 ft Longitude: 103° 16' 19.997 W
Position Uncertainty: 0.00 ft Wellhead Elevation: ft Ground Level: 3,069.00 ft

Wellbore: OH

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	09/16/10	7.52	60.18	48,693

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	359.48



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Survey Program	Date 10/27/10				
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
100.00	6,936.00	GYRO (OH)	CB-GYRO-MS	Camera based gyro multishot	
7,044.00	10,121.00	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)
	6,936.00	3.52	94.73	6,930.16	3,842.16	83.73	187.29	82.03	0.00	406,929.82	870,057.24
KOP-6936.00' MD, 3.52° INC, 94.73° AZI, 6930.16' TVD											
	7,044.00	13.01	13.55	7,037.13	3,949.13	95.33	193.47	93.57	11.98	406,941.42	870,063.42
	7,075.00	17.94	14.78	7,066.99	3,978.99	103.34	195.51	101.56	15.94	406,949.43	870,065.45
	7,107.00	22.86	12.85	7,096.98	4,008.98	114.17	198.15	112.37	15.52	406,960.26	870,068.10
	7,138.00	27.26	10.92	7,125.05	4,037.05	127.02	200.83	125.19	14.43	406,973.11	870,070.78
	7,170.00	28.58	9.16	7,153.33	4,065.33	141.77	203.44	139.92	4.86	406,987.86	870,073.39
	7,202.00	31.39	6.08	7,181.04	4,093.04	157.62	205.54	155.75	10.01	407,003.71	870,075.49
	7,234.00	32.54	4.24	7,208.19	4,120.19	174.49	207.06	172.61	4.71	407,020.58	870,077.01
	7,265.00	35.26	2.13	7,233.92	4,145.92	191.75	208.01	189.86	9.56	407,037.84	870,077.96
	7,297.00	38.34	0.54	7,259.54	4,171.54	210.91	208.45	209.01	10.07	407,057.00	870,078.40
	7,329.00	40.36	0.63	7,284.28	4,196.28	231.20	208.66	229.30	6.32	407,077.29	870,078.60
	7,361.00	44.58	359.84	7,307.88	4,219.88	252.80	208.74	250.90	13.29	407,098.89	870,078.69
	7,393.00	46.43	358.17	7,330.31	4,242.31	275.62	208.34	273.72	6.88	407,121.71	870,078.28
	7,423.00	47.13	356.59	7,350.85	4,262.85	297.46	207.34	295.56	4.49	407,143.55	870,077.28
	7,455.00	50.03	356.06	7,372.02	4,284.02	321.40	205.80	319.52	9.15	407,167.49	870,075.74
	7,488.00	51.88	355.97	7,392.81	4,304.81	346.97	204.01	345.10	5.61	407,193.06	870,073.96
	7,517.00	51.62	356.33	7,410.76	4,322.76	369.69	202.48	367.84	1.32	407,215.78	870,072.43
	7,548.00	54.69	356.15	7,429.35	4,341.35	394.44	200.86	392.60	9.91	407,240.53	870,070.80
	7,580.00	57.42	355.18	7,447.22	4,359.22	420.91	198.85	419.09	8.89	407,267.00	870,068.79
	7,612.00	59.97	352.95	7,463.85	4,375.85	448.10	196.01	446.30	9.95	407,294.19	870,065.96



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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)	
7,628.00	61.91	351.95	7,471.62	4,383.62	461.96	194.17	460.18	13.30	407,308.05	870,064.12	
7,660.00	66.39	352.42	7,485.57	4,397.57	490.49	190.26	488.74	14.06	407,336.57	870,060.21	
7,692.00	68.68	354.09	7,497.79	4,409.79	519.85	186.79	518.13	8.63	407,365.94	870,056.74	
7,723.00	70.70	355.12	7,508.55	4,420.55	548.79	184.06	547.10	7.22	407,394.88	870,054.01	
7,755.00	72.63	355.79	7,518.62	4,430.62	579.07	181.66	577.40	6.35	407,425.16	870,051.60	
7,787.00	74.92	356.09	7,527.56	4,439.56	609.72	179.48	608.06	7.21	407,455.81	870,049.43	
7,819.00	77.29	355.93	7,535.24	4,447.24	640.70	177.32	639.07	7.42	407,486.79	870,047.27	
7,850.00	78.88	356.16	7,541.64	4,453.64	670.96	175.23	669.34	5.18	407,517.05	870,045.17	
7,882.00	81.43	356.14	7,547.11	4,459.11	702.42	173.11	700.82	7.97	407,548.51	870,043.06	
7,914.00	83.80	356.26	7,551.23	4,463.23	734.08	171.01	732.50	7.42	407,580.17	870,040.95	
7,946.00	87.23	356.19	7,553.73	4,465.73	765.91	168.91	764.34	10.72	407,612.00	870,038.85	
7,977.00	89.43	356.94	7,554.63	4,466.63	796.84	167.05	795.29	7.50	407,642.93	870,037.00	
EOC-7977.00°MD,89.43°INC,356.94°AZI,7554.63°TVD,7.50°DLS, 795.29°VS, 796.84°N, 167.05°E											
8,009.00	90.40	357.46	7,554.68	4,466.68	828.80	165.49	827.26	3.44	407,674.89	870,035.44	
8,041.00	90.75	357.00	7,554.36	4,466.36	860.76	163.94	859.23	1.81	407,706.85	870,033.89	
8,104.00	88.55	354.15	7,554.74	4,466.74	923.56	159.08	922.08	5.71	407,769.65	870,029.03	
8,168.00	89.25	350.25	7,555.97	4,467.97	986.94	150.40	985.54	6.19	407,833.03	870,020.35	
8,231.00	89.34	349.47	7,556.75	4,468.75	1,048.95	139.31	1,047.65	1.25	407,895.04	870,009.26	
8,294.00	90.48	350.91	7,556.85	4,468.85	1,111.03	128.58	1,109.82	2.92	407,957.12	869,998.52	
8,357.00	90.48	351.42	7,556.32	4,468.32	1,173.28	118.90	1,172.15	0.81	408,019.37	869,988.85	
8,421.00	91.19	353.58	7,555.39	4,467.39	1,236.72	110.55	1,235.67	3.55	408,082.81	869,980.49	
8,484.00	91.63	355.63	7,553.84	4,465.84	1,299.42	104.63	1,298.42	3.33	408,145.51	869,974.57	
8,548.00	92.15	356.64	7,551.73	4,463.73	1,363.24	100.31	1,362.27	1.77	408,209.33	869,970.26	
8,611.00	92.24	357.72	7,549.31	4,461.31	1,426.11	97.22	1,425.17	1.72	408,272.20	869,967.16	
8,674.00	90.84	357.67	7,547.62	4,459.62	1,489.04	94.68	1,488.12	2.22	408,335.13	869,964.63	
8,738.00	90.48	357.67	7,546.88	4,458.88	1,552.98	92.08	1,552.08	0.56	408,399.07	869,962.03	
8,801.00	90.31	357.23	7,546.45	4,458.45	1,615.92	89.28	1,615.04	0.75	408,462.01	869,959.23	



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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)
8,864.00	90.13	357.46	7,546.21	4,458.21	1,678.85	86.36	1,678.00	0.46	408,524.94	869,956.31
8,928.00	90.84	356.93	7,545.66	4,457.66	1,742.77	83.23	1,741.94	1.38	408,588.86	869,953.18
8,991.00	91.36	356.82	7,544.45	4,456.45	1,805.66	79.80	1,804.87	0.84	408,651.75	869,949.74
9,055.00	90.40	356.56	7,543.47	4,455.47	1,869.55	76.10	1,868.78	1.55	408,715.64	869,946.05
9,118.00	89.87	357.37	7,543.32	4,455.32	1,932.46	72.77	1,931.72	1.54	408,778.55	869,942.71
9,182.00	90.57	357.77	7,543.08	4,455.08	1,996.40	70.05	1,995.68	1.26	408,842.49	869,940.00
9,245.00	91.36	357.87	7,542.02	4,454.02	2,059.35	67.66	2,058.65	1.26	408,905.44	869,937.60
9,308.00	90.92	356.98	7,540.76	4,452.76	2,122.27	64.83	2,121.59	1.58	408,968.36	869,934.77
9,372.00	90.13	354.37	7,540.18	4,452.18	2,186.08	60.00	2,185.44	4.26	409,032.17	869,929.95
9,435.00	90.66	354.50	7,539.74	4,451.74	2,248.78	53.89	2,248.20	0.87	409,094.87	869,923.84
9,499.00	91.71	354.44	7,538.42	4,450.42	2,312.47	47.72	2,311.94	1.64	409,158.56	869,917.67
9,562.00	94.00	353.74	7,535.28	4,447.28	2,375.05	41.25	2,374.58	3.80	409,221.14	869,911.19
9,625.00	94.00	354.40	7,530.89	4,442.89	2,437.56	34.75	2,437.14	1.05	409,283.65	869,904.70
9,689.00	92.68	356.45	7,527.16	4,439.16	2,501.24	29.66	2,500.87	3.81	409,347.33	869,899.61
9,752.00	92.59	355.64	7,524.26	4,436.26	2,564.03	25.32	2,563.69	1.29	409,410.12	869,895.27
9,815.00	90.75	356.73	7,522.43	4,434.43	2,626.86	21.13	2,626.56	3.39	409,472.95	869,891.08
9,879.00	90.48	356.23	7,521.74	4,433.74	2,690.73	17.20	2,690.47	0.89	409,536.82	869,887.15
9,942.00	91.19	356.05	7,520.82	4,432.82	2,753.58	12.96	2,753.35	1.16	409,599.67	869,882.91
10,006.00	91.98	356.13	7,519.05	4,431.05	2,817.41	8.60	2,817.21	1.24	409,663.50	869,878.54
10,059.00	91.80	355.40	7,517.30	4,429.30	2,870.23	4.68	2,870.07	1.42	409,716.32	869,874.63
10,121.00	91.80	355.40	7,515.35	4,427.35	2,932.00	-0.29	2,931.89	0.00	409,778.09	869,869.66

BHL-10121.00°MD,91.80°INC,355.40°AZI, 7515.35°TVD, 2931.89°VS, 2932.00°N, -0.29°E



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Pathfinder X & Y Survey Report

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A Schlumberger Company

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Project: Lea County
Site: Herkimer "BQF" Federal
Well: #1H
Wellbore: OH
Design: OH

Local Co-ordinate Reference: Well #1H
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North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: 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									
PBHL(HERK#1)	0.00	0.00	7,550.00	2,968.55	-27.00	409,814.642	869,842.949	32° 7' 19.966 N	103° 16' 19.971 W
- survey misses target center by 57.01ft at 10121.00ft MD (7515.35 TVD, 2932.00 N, -0.29 E)									
- Point									

Survey Annotations

Measured Depth	Vertical Depth	Local Coordinates		Comment
(ft)	(ft)	+N/-S	+E/-W	
		(ft)	(ft)	
6,936.00	6,930.16	83.73	187.29	KOP-6936.00°MD,3.52°INC,94.73°AZI,6930.16°TVD
7,977.00	7,554.63	796.84	167.05	EOC-7977.00°MD,89.43°INC,356.94°AZI,7554.63°TVD,7.50°DLS, 795.1
10,121.00	7,515.35	2,932.00	-0.29	BHL-10121.00°MD,91.80°INC,355.40°AZI, 7515.35°TVD, 2931.89°VS, 2

Checked By: _____ Approved By: _____ Date: _____



Project: Lea County
Site: Herklimer "BQF" Fed
Well: #1H
Wellbore: OH
Plan: Plan #2 (#1H/OH)



Azimuths to Grid North
True North: -0.56°
Magnetic North: 6.95°

Magnetic Field
Strength: 48693.4snT
Dip Angle: 60.18°
Date: 09/16/2010
Model: IGRF200510

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PROJECT DETAILS: Lea 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

SECTION DETAILS										
Sec	MD	Inc	Azi	TVD	+N-S	+E-W	DLeg	TFace	VSec	Target
1	6936.00	3.52	94.73	6930.16	83.73	187.29	0.00	0.00	82.03	
2	6977.00	3.52	94.73	6971.08	83.52	189.80	0.00	0.00	81.80	
3	7884.64	90.00	355.01	7550.00	658.40	174.84	9.98	-99.70	658.79	
4	10203.58	90.00	355.01	7550.00	2968.55	-26.87	0.00	0.00	2968.68	PBHL(HERK#1)

WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N-S	+E-W	Northing	Easting	Shape
PBHL(HERK#1)	7550.00	2968.55	-27.00	409814.642	869842.949	Point

WELL DETAILS: #1H

Ground Elevation: 3069.00
RKB Elevation: WELL @ 3088.00ft (Original Well Elev)
Rig Name: Original Well Elev

+N-S	+E-W	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	406846.089	869859.947	32° 0' 50.91 N	103° 16' 19.997 W	

