



Yates Petroleum Corp.

Eddy County
Knoll AOK Federal #3H
#3H
OH

Survey: MWD #1

Pathfinder X & Y Survey Report

09 March, 2009

PATHFINDER

36.015.35907



Pathfinder Energy Services
Pathfinder X & Y Survey Report



Company: Yates Petroleum Corp.
Project: Eddy County
Site: Knoll AOK Federal #3H
Well: #3H
Wellbore: OH
Design: OH

Local Co-ordinate Reference: Well #3H
TVD Reference: WELL @ 3075.00ft (Patriot 6)
MD Reference: WELL @ 3075.00ft (Patriot 6)
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: Knoll AOK Federal #3H

Site Position: Northing: 454,022.000 ft Latitude: 32° 14' 51.527 N
From: Map Easting: 655,087.400 ft Longitude: 103° 57' 55.414 W
Position Uncertainty: 0.00 ft Slot Radius: Grid Convergence: 0.20 °

Well: #3H
Well Position: +N/-S 0.00 ft Northing: 454,022.000 ft Latitude: 32° 14' 51.527 N
+E/-W 0.00 ft Easting: 655,087.400 ft Longitude: 103° 57' 55.414 W
Position Uncertainty: 0.00 ft Wellhead Elevation: ft Ground Level: 3,058.00 ft

Wellbore: OH

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	02/17/2009	8.03	60.21	48,849

Design: OH

Audit Notes:
Version: 1.0 Phase: ACTUAL Tie On Depth: 7,435.00
Vertical Section: Depth From (TVD) (ft) +N/-S (ft) +E/-W (ft) Direction (°)
0.00 0.00 0.00 271.29



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Survey Calculation Method:
Database:
Well #3H
WELL @ 3075.00ft (Patriot 6)
WELL @ 3075.00ft (Patriot 6)
Grid
Minimum Curvature
Midland Database

Survey Program Date 03/09/2009

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
938.00	1,520.00	TOTCO Surveys (Pilot Hole)	MWD	MWD - Standard
1,617.00	2,572.00	Pilot Hole MWD (Pilot Hole)	MWD	MWD - Standard
7,461.00	12,230.00	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)
7,435.00	2.21	213.31	7,432.36	4,357.36	-140.86	2.19	-5.37	0.00	453,881.14	655,089.59
7,461.00	3.61	250.18	7,458.33	4,383.33	-141.56	1.15	-4.34	8.73	453,880.44	655,088.55
7,493.00	7.21	287.01	7,490.19	4,415.19	-141.31	-1.72	-1.46	15.09	453,880.69	655,085.68
7,525.00	11.78	295.19	7,521.75	4,446.75	-139.33	-6.60	3.46	14.86	453,882.67	655,080.80
7,556.00	16.18	296.95	7,551.82	4,476.82	-136.03	-13.32	10.25	14.26	453,885.97	655,074.08
7,588.00	20.14	298.81	7,582.22	4,507.22	-131.35	-22.12	19.16	12.51	453,890.65	655,065.28
7,620.00	23.30	300.73	7,611.95	4,536.95	-125.46	-32.39	29.56	10.12	453,896.54	655,055.01
7,652.00	26.03	302.73	7,641.02	4,566.02	-118.43	-43.74	41.06	8.92	453,903.57	655,043.66
7,683.00	29.37	300.84	7,668.47	4,593.47	-110.85	-55.99	53.48	11.14	453,911.15	655,031.41
7,715.00	31.83	298.69	7,696.01	4,621.01	-102.78	-70.14	67.80	8.41	453,919.22	655,017.26
7,747.00	33.50	295.49	7,722.95	4,647.95	-94.92	-85.51	83.35	7.51	453,927.08	655,001.89
7,779.00	35.96	292.20	7,749.25	4,674.25	-87.57	-102.19	100.19	9.66	453,934.43	654,985.21
7,810.00	39.13	291.34	7,773.83	4,698.83	-80.57	-119.73	117.89	10.36	453,941.43	654,967.67
7,842.00	42.47	290.25	7,798.05	4,723.05	-73.15	-139.28	137.59	10.67	453,948.85	654,948.12
7,874.00	46.17	289.63	7,820.94	4,745.94	-65.53	-160.29	158.77	11.64	453,956.47	654,927.11
7,905.00	50.65	289.19	7,841.51	4,766.51	-57.83	-182.15	180.81	14.49	453,964.17	654,905.25
7,937.00	54.87	289.52	7,860.87	4,785.87	-49.39	-206.18	205.02	13.21	453,972.61	654,881.22
7,969.00	59.27	289.87	7,878.26	4,803.26	-40.34	-231.46	230.50	13.78	453,981.66	654,855.94
8,001.00	64.19	291.20	7,893.41	4,818.41	-30.45	-257.84	257.09	15.80	453,991.55	654,829.56
8,032.00	69.91	293.91	7,905.50	4,830.50	-19.49	-284.19	283.68	20.13	454,002.51	654,803.21



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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)
8,064.00	73.95	296.81	7,915.42	4,840.42	-6.46	-311.66	311.44	15.28	454,015.54	654,775.74
8,097.00	76.59	297.22	7,923.81	4,848.81	8.04	-340.09	340.19	8.09	454,030.04	654,747.31
8,128.00	79.23	296.30	7,930.31	4,855.31	21.68	-367.16	367.55	9.00	454,043.68	654,720.24
8,160.00	80.20	293.99	7,936.02	4,861.02	35.06	-395.66	396.35	7.72	454,057.06	654,691.74
8,192.00	80.37	292.08	7,941.42	4,866.42	47.40	-424.68	425.64	5.91	454,069.40	654,662.72
8,223.00	80.90	289.93	7,946.47	4,871.47	58.36	-453.24	454.43	7.05	454,080.36	654,634.16
8,255.00	81.60	287.64	7,951.33	4,876.33	68.55	-483.18	484.60	7.40	454,090.55	654,604.22
8,286.00	82.92	285.67	7,955.51	4,880.51	77.35	-512.60	514.21	7.60	454,099.35	654,574.80
8,318.00	83.62	283.32	7,959.26	4,884.26	85.30	-543.37	545.15	7.61	454,107.30	654,544.03
8,350.00	85.91	281.19	7,962.18	4,887.18	92.06	-574.51	576.43	9.75	454,114.06	654,512.89
8,382.00	87.05	278.65	7,964.15	4,889.15	97.56	-605.96	608.01	8.69	454,119.56	654,481.44
8,413.00	88.29	276.65	7,965.41	4,890.41	101.69	-636.66	638.79	7.59	454,123.69	654,450.74
8,445.00	88.37	274.38	7,966.34	4,891.34	104.76	-668.50	670.69	7.10	454,126.76	654,418.90
8,477.00	87.58	271.78	7,967.47	4,892.47	106.48	-700.43	702.65	8.49	454,128.48	654,386.97
8,508.00	87.76	270.05	7,968.73	4,893.73	106.97	-731.40	733.62	5.61	454,128.97	654,356.00
8,540.00	87.58	269.79	7,970.03	4,895.03	106.93	-763.37	765.59	0.99	454,128.93	654,324.03
8,550.00	87.93	270.01	7,970.42	4,895.42	106.91	-773.36	775.57	4.13	454,128.91	654,314.04
8,582.00	89.96	269.45	7,971.01	4,896.01	106.76	-805.36	807.56	6.58	454,128.76	654,282.04
8,613.00	91.89	269.07	7,970.51	4,895.51	106.36	-836.35	838.53	6.35	454,128.36	654,251.05
8,708.00	94.79	268.78	7,964.98	4,889.98	104.58	-931.16	933.28	3.07	454,126.58	654,156.24
8,803.00	92.85	269.47	7,958.65	4,883.65	103.14	-1,025.93	1,027.99	2.17	454,125.14	654,061.47
8,898.00	91.89	270.34	7,954.72	4,879.72	102.98	-1,120.85	1,122.88	1.36	454,124.98	653,966.55
8,994.00	89.96	270.29	7,953.17	4,878.17	103.51	-1,216.83	1,218.85	2.01	454,125.51	653,870.57
9,089.00	87.67	270.76	7,955.13	4,880.13	104.38	-1,311.80	1,313.82	2.46	454,126.38	653,775.60
9,184.00	87.67	270.56	7,959.00	4,884.00	105.47	-1,406.71	1,408.73	0.21	454,127.47	653,680.69
9,279.00	88.72	270.20	7,961.99	4,886.99	106.10	-1,501.66	1,503.67	1.17	454,128.10	653,585.74
9,374.00	91.01	269.50	7,962.21	4,887.21	105.85	-1,596.66	1,598.63	2.52	454,127.85	653,490.74



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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)
9,469.00	91.28	268.81	7,960.31	4,885.31	104.45	-1,691.63	1,693.55	0.78	454,126.45	653,395.77
9,563.00	91.28	268.80	7,958.21	4,883.21	102.49	-1,785.58	1,787.44	0.01	454,124.49	653,301.82
9,658.00	93.39	270.73	7,954.34	4,879.34	102.10	-1,880.49	1,882.32	3.01	454,124.10	653,206.91
9,753.00	91.54	269.99	7,950.26	4,875.26	102.70	-1,975.40	1,977.21	2.10	454,124.70	653,112.00
9,848.00	93.47	269.22	7,946.11	4,871.11	102.04	-2,070.30	2,072.07	2.19	454,124.04	653,017.10
9,944.00	94.70	268.49	7,939.27	4,864.27	100.13	-2,166.03	2,167.74	1.49	454,122.13	652,921.37
10,038.00	95.94	268.46	7,930.55	4,855.55	97.64	-2,259.59	2,261.22	1.32	454,119.64	652,827.81
10,070.00	94.53	268.42	7,927.63	4,852.63	96.77	-2,291.45	2,293.05	4.41	454,118.77	652,795.95
10,165.00	94.44	268.54	7,920.20	4,845.20	94.26	-2,386.12	2,387.64	0.16	454,116.26	652,701.28
10,260.00	94.62	268.50	7,912.70	4,837.70	91.81	-2,480.80	2,482.23	0.19	454,113.81	652,606.60
10,355.00	94.09	269.09	7,905.49	4,830.49	89.82	-2,575.50	2,576.87	0.83	454,111.82	652,511.90
10,451.00	92.33	269.42	7,900.11	4,825.11	88.57	-2,671.34	2,672.65	1.87	454,110.57	652,416.06
10,546.00	89.96	267.14	7,898.21	4,823.21	85.72	-2,766.26	2,767.49	3.46	454,107.72	652,321.14
10,639.00	91.01	266.60	7,897.43	4,822.43	80.65	-2,859.12	2,860.21	1.27	454,102.65	652,228.28
10,735.00	91.28	268.03	7,895.51	4,820.51	76.15	-2,954.99	2,955.96	1.52	454,098.15	652,132.41
10,830.00	91.28	270.40	7,893.38	4,818.38	74.85	-3,049.95	3,050.86	2.49	454,096.85	652,037.45
10,925.00	91.10	270.43	7,891.41	4,816.41	75.54	-3,144.93	3,145.83	0.19	454,097.54	651,942.47
11,020.00	91.54	270.51	7,889.22	4,814.22	76.32	-3,239.90	3,240.80	0.47	454,098.32	651,847.50
11,115.00	92.15	271.61	7,886.16	4,811.16	78.07	-3,334.83	3,335.75	1.32	454,100.07	651,752.57
11,210.00	92.15	271.85	7,882.60	4,807.60	80.94	-3,429.72	3,430.68	0.25	454,102.94	651,657.68
11,305.00	90.66	270.67	7,880.27	4,805.27	83.03	-3,524.67	3,525.64	2.00	454,105.03	651,562.73
11,400.00	91.10	270.21	7,878.81	4,803.81	83.75	-3,619.65	3,620.62	0.67	454,105.75	651,467.75
11,496.00	91.45	269.65	7,876.68	4,801.68	83.64	-3,715.63	3,716.57	0.69	454,105.64	651,371.77
11,591.00	91.01	270.48	7,874.64	4,799.64	83.75	-3,810.61	3,811.53	0.99	454,105.75	651,276.79
11,686.00	91.36	270.68	7,872.67	4,797.67	84.71	-3,905.58	3,906.50	0.42	454,106.71	651,181.82
11,781.00	91.89	270.54	7,869.98	4,794.98	85.72	-4,000.54	4,001.45	0.58	454,107.72	651,086.86
11,876.00	90.40	270.19	7,868.08	4,793.08	86.32	-4,095.51	4,096.42	1.61	454,108.32	650,991.89



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Survey Calculation Method: Minimum Curvature
Database: Midland Database

Survey

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11,971.00	90.84	270.16	7,867.05	4,792.05	86.61	-4,190.51	4,191.39	0.46	454,108.61	650,896.89
12,067.00	91.63	269.89	7,864.98	4,789.98	86.66	-4,286.48	4,287.35	0.87	454,108.66	650,800.92
12,153.00	92.59	270.17	7,861.82	4,786.82	86.70	-4,372.42	4,373.27	1.16	454,108.70	650,714.98
12,230.00	92.59	270.17	7,858.34	4,783.34	86.93	-4,449.34	4,450.17	0.00	454,108.93	650,638.06

Straight Line Proj. TO Bit @ 12230'MD

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 OH(AOK#3H) - survey misses by 83.29ft at 12230.00ft MD (7858.34 TVD, 86.93 N, -4449.34 E) - Point	0.00	0.00	7,930.00	101.11	-4,489.34	454,123.110	650,598.060	32° 14' 52.677 N	103° 58' 47.686 W

Survey Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	+E/-W (ft)	Comment
12,230.00	7,858.34	86.93	-4,449.34	Straight Line Proj. TO Bit @ 12230'MD

Checked By: _____ Approved By: _____ Date: _____



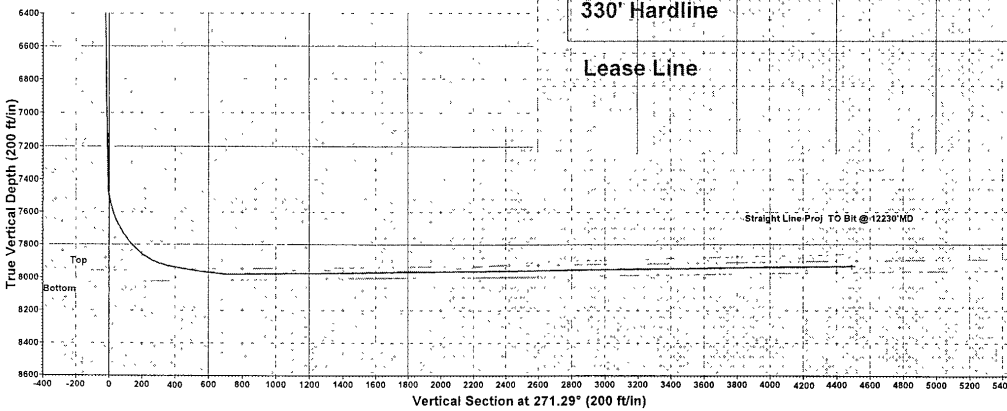
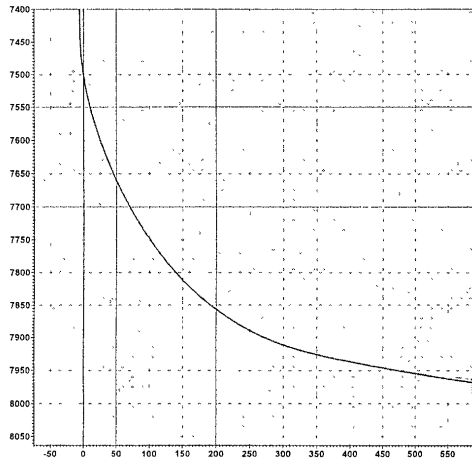
Azimuths to Grid North
True North: 0.20°
Magnetic North: 7.84°

Magnetic Field
Strength: 48848.7nT /
Dip Angle: 60.21°
Date: 02/17/2009
Model: IGRF200510

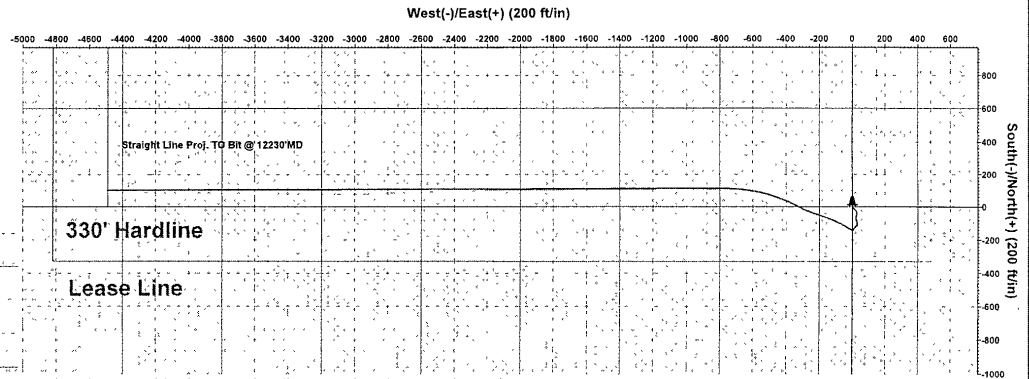
PATHFINDER

EOW

Project: Eddy County
Site: Knoll AOK Federal #3H
Well: #3H
Wellbore: OH
Plan: Plan #3 (#3H/OH)



WELL DETAILS #3H									
Ground Elevation: 3058.00									
RKB Elevation: WELL @ 3075 00ft (Patriot 6)									
Rig Name: Patriot 6									
+N-S	+E-W	Northing	Easting	Latitude	Longitude	Slot			
0 00	0 00	454022 000	655087 400	32° 14' 51.527 N	103° 57' 55.414 W				
SECTION DETAILS									
Sec	MD	Inc	Azi	TVD	+N-S	+E-W	Dleg	TFace	VSec Target
1	8144.00	79.71	295.14	7933.23	28.51	-381.33	0.00	0.00	331.88
2	8322.74	81.35	283.00	7862.74	85.96	-547.64	6.76	-83.25	549.43
3	8573.40	90.78	269.65	7880.00	113.25	-785.36	6.51	-55.31	787.70
4	8630.63	90.78	269.81	7879.10	112.94	-461.58	0.25	91.00	863.91
5	12267.74	90.78	269.81	7930.00	101.11	-4489.34	0.00	0.00	4490.48
PBHL OH(AOK#3H)									
WELLBORE TARGET DETAILS (MAP CO-ORDINATES)									
Name	TVD	+N-S	+E-W	Northing	Easting	Shape			
PBHL OH(AOK#3H)	7930.00	101.11	-4489.34	454123.110	650598.060	Point			



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 #3 (#3H/OH)
Created By: Nate Bingham Date: 6:40, March 09 2009
Checked: _____ Date: _____