



Yates Petroleum Corp.

Lea County
Red Raider "BKS" State
#2H
OH

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Survey: MWD 2

Pathfinder X & Y Survey Report

01 February, 2011

PATHFINDER
A Schlumberger Company



Pathfinder
Pathfinder X & Y Survey Report



Company:	Yates Petroleum Corp.	Local Co-ordinate Reference:	Well #2H
Project:	Lea County	TVD Reference:	WELL @ 3578.00usft (Original Well Elev)
Site:	Red Raider "BKS" State	MD Reference:	WELL @ 3578.00usft (Original Well Elev)
Well:	#2H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Single User Db

Project:	Lea County	System Datum:	Mean Sea Level
Map System:	US State Plane 1983		
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site:	Red Raider "BKS" State		
Site Position:		Northing:	435,587.689 usft
From:	Map	Easting:	791,523.608 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 11' 41.717 N
		Longitude:	103° 31' 28.367 W
		Grid Convergence:	0.43 °

Well:	#2H					
Well Position	+N/-S	0.00 usft	Northing:	435,587.689 usft	Latitude:	32° 11' 41.717 N
	+E/-W	0.00 usft	Easting:	791,523.608 usft	Longitude:	103° 31' 28.367 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	3,566.00 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	12/17/10	7.61	60.20	48,687

Design:	OH			
Audit Notes:				
Version:	1.0	Phase:	ACTUAL	Tie On Depth: 0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	179.57

Survey Program	Date	02/01/11		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
8,980.00	10,010.00	MWD (OH)	MWD	MWD - Standard



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Company: Yales Petroleum Corp.
Project: Lea County
Site: Red Raider "BKS" State
Well: #2H
Wellbore: OH
Design: OH

Local Co-ordinate Reference:
TVD Reference:
MD Reference:
North Reference:
Survey Calculation Method:
Database:
Well #2H
WELL @ 3578.00usft (Original Well Elev)
WELL @ 3578.00usft (Original Well Elev)
Grid:
Minimum Curvature
EDM 5000.1 Single User Db

Survey											
MD (usft)	Inc (°)	Azi (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)	
8,890.00	1.00	119.43	8,888.67	-5,310.67	37.19	65.77	-36.70	0.00	435,624.88	791,589.38	
8,980.00	3.17	171.71	8,978.61	-5,400.61	34.34	66.82	-33.84	2.98	435,622.03	791,590.42	
KOP-8980.00°MD,3.17°INC,171.71°AZI,8978.61°TVD											
9,012.00	8.09	181.17	9,010.45	-5,432.45	31.21	66.90	-30.71	15.59	435,618.90	791,590.51	
9,043.00	13.10	183.99	9,040.91	-5,462.91	25.53	66.61	-25.02	16.24	435,613.21	791,590.22	
9,074.00	18.38	183.92	9,070.74	-5,492.74	17.14	66.03	-16.64	17.03	435,604.83	791,589.64	
9,106.00	23.13	183.49	9,100.65	-5,522.65	5.83	65.30	-5.34	14.85	435,593.51	791,588.91	
9,136.00	26.82	182.26	9,127.84	-5,549.84	-6.82	64.68	7.31	12.42	435,580.87	791,588.28	
9,167.00	29.02	180.79	9,155.23	-5,577.23	-21.33	64.30	21.81	7.44	435,566.36	791,587.91	
9,199.00	31.66	178.93	9,182.85	-5,604.85	-37.49	64.35	37.97	8.76	435,550.20	791,587.95	
9,230.00	34.56	178.71	9,208.81	-5,630.81	-54.42	64.70	54.90	9.36	435,533.27	791,588.30	
9,260.00	37.64	179.49	9,233.05	-5,655.05	-72.09	64.97	72.58	10.38	435,515.60	791,588.58	
9,292.00	40.19	180.55	9,257.95	-5,679.95	-92.19	64.96	92.68	8.24	435,495.50	791,588.57	
9,323.00	43.09	181.75	9,281.11	-5,703.11	-112.78	64.54	113.26	9.70	435,474.91	791,588.15	
9,354.00	45.90	182.70	9,303.22	-5,725.22	-134.49	63.69	134.96	9.32	435,453.20	791,587.30	
9,385.00	48.45	182.50	9,324.29	-5,746.29	-157.20	62.66	157.67	8.24	435,430.49	791,586.27	
9,417.00	51.97	181.16	9,344.77	-5,766.77	-181.77	61.88	182.23	11.46	435,405.92	791,585.49	
9,447.00	55.57	180.18	9,362.50	-5,784.50	-205.96	61.60	206.42	12.29	435,381.72	791,585.21	
9,479.00	59.27	179.12	9,379.73	-5,801.73	-232.92	61.77	233.38	11.89	435,354.77	791,585.38	
9,509.00	62.70	178.91	9,394.28	-5,816.28	-259.15	62.23	259.61	11.45	435,328.54	791,585.83	
9,541.00	66.39	179.42	9,408.03	-5,830.03	-288.04	62.64	288.50	11.62	435,299.65	791,586.25	
9,572.00	69.29	179.93	9,419.72	-5,841.72	-316.74	62.81	317.20	9.48	435,270.95	791,586.41	
9,603.00	72.19	180.45	9,429.94	-5,851.94	-346.00	62.71	346.46	9.49	435,241.69	791,586.32	
9,638.00	75.45	181.18	9,439.70	-5,861.70	-379.61	62.23	380.07	9.53	435,208.08	791,585.84	
9,669.00	77.73	181.64	9,446.89	-5,868.89	-409.75	61.49	410.20	7.50	435,177.94	791,585.09	
9,701.00	80.90	181.31	9,452.82	-5,874.82	-441.18	60.68	441.63	9.96	435,146.51	791,584.28	
9,731.00	82.92	180.11	9,457.04	-5,879.04	-470.88	60.31	471.32	7.81	435,116.81	791,583.92	



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PATHFINDER
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Company: Yates Petroleum Corp.
Project: Lea County
Site: Red Raider "BKS" State
Well: #2H
Wellbore: OH
Design: OH

Local Co-ordinate Reference: Well #2H
TVD Reference: WELL @ 3578.00usft (Original Well Elev)
MD Reference: WELL @ 3578.00usft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1 Single User Db

Survey

MD (usft)	Inc (°)	Azi (°)	TVD (usft)	TVDS (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLog (°/100usft)	Northing (usft)	Easting (usft)
9,763.00	83.01	178.47	9,460.96	-5,882.96	-502.64	60.70	503.08	5.09	435,085.05	791,584.31
9,794.00	85.03	178.72	9,464.19	-5,886.19	-533.46	61.46	533.90	6.57	435,054.23	791,585.07
9,825.00	88.55	180.26	9,465.92	-5,887.92	-564.40	61.73	564.85	12.39	435,023.29	791,585.34
9,856.00	89.87	181.14	9,466.35	-5,888.35	-595.39	61.36	595.84	5.12	434,992.29	791,584.96
EOC-9856.00°MD,89.87°INC,181.14°AZI,9466.35°TVD										
9,919.00	89.87	180.59	9,466.49	-5,888.49	-658.39	60.40	658.82	0.87	434,929.30	791,584.01
10,011.00	89.34	179.09	9,467.13	-5,889.13	-750.38	60.66	750.82	1.73	434,837.31	791,584.27
10,105.00	89.87	179.01	9,467.78	-5,889.78	-844.37	62.22	844.81	0.57	434,743.32	791,585.83
10,199.00	90.22	179.01	9,467.70	-5,889.70	-938.35	63.84	938.80	0.37	434,649.34	791,587.45
10,293.00	91.98	179.97	9,465.90	-5,887.90	-1,032.33	64.68	1,032.78	2.13	434,555.36	791,588.29
10,387.00	90.66	180.15	9,463.73	-5,885.73	-1,126.30	64.58	1,126.75	1.42	434,461.39	791,588.19
10,480.00	89.16	180.32	9,463.88	-5,885.88	-1,219.30	64.20	1,219.74	1.62	434,368.39	791,587.81
10,573.00	89.60	179.45	9,464.89	-5,886.89	-1,312.29	64.39	1,312.73	1.05	434,275.40	791,587.99
10,665.00	89.69	178.89	9,465.46	-5,887.46	-1,404.28	65.72	1,404.73	0.62	434,183.41	791,589.33
10,758.00	90.31	178.98	9,465.46	-5,887.46	-1,497.26	67.45	1,497.72	0.67	434,090.43	791,591.06
10,851.00	90.48	179.32	9,464.81	-5,886.81	-1,590.25	68.83	1,590.72	0.41	433,997.44	791,592.44
10,943.00	89.60	180.98	9,464.75	-5,886.75	-1,682.24	68.59	1,682.71	2.04	433,905.45	791,592.19
11,036.00	90.04	180.69	9,465.04	-5,887.04	-1,775.23	67.23	1,775.69	0.57	433,812.46	791,590.84
11,129.00	90.66	180.39	9,464.47	-5,886.47	-1,868.23	66.36	1,868.67	0.74	433,719.46	791,589.96
11,223.00	89.52	181.04	9,464.33	-5,886.33	-1,962.22	65.18	1,962.65	1.40	433,625.47	791,588.79
11,316.00	89.69	180.98	9,464.97	-5,886.97	-2,055.20	63.54	2,055.62	0.19	433,532.49	791,587.15
11,410.00	90.13	180.90	9,465.12	-5,887.12	-2,149.19	62.00	2,149.59	0.48	433,438.50	791,585.61
11,502.00	90.48	180.66	9,464.63	-5,886.63	-2,241.18	60.75	2,241.57	0.46	433,346.51	791,584.36
11,596.00	90.40	179.75	9,463.90	-5,885.90	-2,335.17	60.41	2,335.56	0.97	433,252.52	791,584.02
11,690.00	89.96	180.33	9,463.61	-5,885.61	-2,429.17	60.35	2,429.56	0.77	433,158.52	791,583.95
11,781.00	90.22	179.62	9,463.47	-5,885.47	-2,520.17	60.39	2,520.55	0.83	433,067.52	791,583.99
11,875.00	89.60	180.56	9,463.61	-5,885.61	-2,614.17	60.24	2,614.55	1.20	432,973.52	791,583.85



Pathfinder
Pathfinder X & Y Survey Report



Company: Yates Petroleum Corp.
Project: Lea County
Site: Red Raider "BKS" State
Well: #2H
Wellbore: OH
Design: OH

Local Co-ordinate Reference:
TVD Reference:
MD Reference:
North Reference:
Survey Calculation Method:
Database:
Well #2H
WELL @ 3578.00usft (Original Well Elev)
WELL @ 3578.00usft (Original Well Elev)
Grid
Minimum Curvature
EDM 5000,1 Single User Db

Survey

MD (usft)	Inc (°)	Azi (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)
11,968.00	89.87	180.61	9,464.04	-5,886.04	-2,707.16	59.29	2,707.53	0.30	432,880.53	791,582.90
12,061.00	90.13	180.12	9,464.04	-5,886.04	-2,800.16	58.70	2,800.52	0.60	432,787.53	791,582.30
12,154.00	90.22	179.86	9,463.76	-5,885.76	-2,893.16	58.71	2,893.52	0.30	432,694.53	791,582.32
12,247.00	90.40	179.58	9,463.26	-5,885.26	-2,986.16	59.17	2,986.52	0.36	432,601.53	791,582.78
12,341.00	89.78	180.31	9,463.11	-5,885.11	-3,080.16	59.26	3,080.51	1.02	432,507.53	791,582.87
12,435.00	89.78	179.97	9,463.47	-5,885.47	-3,174.16	59.03	3,174.51	0.36	432,413.53	791,582.64
12,527.00	89.87	179.83	9,463.75	-5,885.75	-3,266.15	59.19	3,266.51	0.18	432,321.53	791,582.80
12,619.00	90.84	179.19	9,463.18	-5,885.18	-3,358.15	59.98	3,358.50	1.26	432,229.54	791,583.58
12,712.00	90.40	178.99	9,462.17	-5,884.17	-3,451.13	61.45	3,451.49	0.52	432,136.56	791,585.06
12,805.00	89.78	179.53	9,462.03	-5,884.03	-3,544.12	62.65	3,544.49	0.88	432,043.57	791,586.26
12,897.00	90.40	179.28	9,461.88	-5,883.88	-3,636.12	63.61	3,636.49	0.73	431,951.57	791,587.22
12,957.00	90.40	179.47	9,461.46	-5,883.46	-3,696.11	64.26	3,696.49	0.32	431,891.58	791,587.87
13,050.00	90.48	179.66	9,460.75	-5,882.75	-3,789.11	64.97	3,789.49	0.22	431,798.58	791,588.58
13,144.00	91.10	179.66	9,459.45	-5,881.45	-3,883.09	65.53	3,883.48	0.66	431,704.59	791,589.13
13,238.00	90.84	180.60	9,457.86	-5,879.86	-3,977.08	65.31	3,977.46	1.04	431,610.61	791,588.92
13,332.00	90.13	180.74	9,457.07	-5,879.07	-4,071.07	64.21	4,071.44	0.77	431,516.62	791,587.82
13,426.00	90.48	180.46	9,456.57	-5,878.57	-4,165.06	63.23	4,165.42	0.48	431,422.63	791,586.84
13,521.00	90.66	180.94	9,455.62	-5,877.62	-4,260.05	62.07	4,260.40	0.54	431,327.64	791,585.68
13,615.00	89.69	182.47	9,455.33	-5,877.33	-4,354.00	59.27	4,354.33	1.93	431,233.68	791,582.88
13,710.00	90.04	182.34	9,455.56	-5,877.56	-4,448.92	55.29	4,449.21	0.39	431,138.77	791,578.89
13,802.00	90.40	181.88	9,455.21	-5,877.21	-4,540.86	51.90	4,541.12	0.63	431,046.83	791,575.51
13,879.00	90.40	181.88	9,454.67	-5,876.67	-4,617.81	49.37	4,618.05	0.00	430,969.88	791,572.98

BHL-13879.00°MD,90.40°INC,181.88°AZI, 9454.67°TVD, 4618.05°VS, -4617.81°N, 49.37°E



Pathfinder
Pathfinder X & Y Survey Report

PATHFINDER
A Schlumberger Company

Company:	Yates Petroleum Corp.	Local Co-ordinate Reference:	Well #2H
Project:	Lea County	TVD Reference:	WELL @ 3578.00usft (Original Well Elev)
Site:	Red Raider "BKS" State	MD Reference:	WELL @ 3578.00usft (Original Well Elev)
Well:	#2H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Single User Db

Survey Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
8,980.00	8,978.61	34.34	66.82	KOP-8980.00°MD,3.17°INC,171.71°AZI,8978.61°TVD
9,856.00	9,466.35	-595.39	61.36	EOC-9856.00°MD,89.87°INC,181.14°AZI,9466.35°TVD
13,879.00	9,454.67	-4,617.81	49.37	BHL-13879.00°MD,90.40°INC,181.88°AZI, 9454.67°TVD, 4618.05°VS, -4617.81'

Checked By: _____	Approved By: _____	Date: _____
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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

Project: Lea County
Site: Red Raider "BKS" State
Well: #2H
Wellbore: OH
Plan: Plan #5 (#2H/OH)



Azimuths to Grid North
True North: -0.43°
Magnetic North: 7.18°

Magnetic Field
Strength: 48586.9snT
Dip Angle: 60.20°
Date: 12/17/2010
Model: IGRF200510

SECTION DETAILS									
MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
9731.00	84.68	181.03	9456.79	-470.88	59.99	0.00	0.00	471.32	
9843.64	84.00	172.00	9467.92	-582.65	66.79	8.00	-94.76	583.14	
9998.24	92.90	180.60	9472.11	-736.57	75.72	8.00	44.21	737.13	
10140.61	90.05	180.62	9468.44	-878.87	75.21	2.00	179.60	879.41	
13880.79	90.05	180.62	9465.00	-4618.83	34.75	0.00	0.00	4618.96	PBHL(RR#2H)

WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N/-S	+E/-W	Northing	Easting	Shape
PBHL(RR#2H)	9465.00	-4618.83	34.75	430968.864	791558.360	Point

WELL DETAILS: #2H

Ground Elevation: 3566.00
RKB Elevation: WELL @ 3578.00usft (Original Well Elev)
Rig Name: Original Well Elev

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slat
0.00	0.00	435587.689	791523.608	32° 11' 41.717 N	103° 31' 28.367 W	

