

OPERATOR
WELL/LEASE
COUNTY

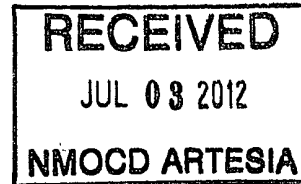
YATES PETROLEUM CORPORATION
GRATEFUL BOD FEDERAL COM # 2H
EDDY

511-5099

STATE OF NEW MEXICO
DEVIATION REPORT

30-015-38518

163	0.41
330	0 10
561	0 88
841	0 85
1,180	1 03
1,545	0.86
1,893	0.15
2,240	0 52
2,586	0.15
2,933	1 06
3,250	0.56
3,568	0.81
4,137	0 83
4,422	1.25
4,636	0 86
4,890	1 01
5,238	2.57
5,363	1.80
5,491	1 23
5,640	0 70



STATE OF TEXAS

COUNTY OF MIDLAND

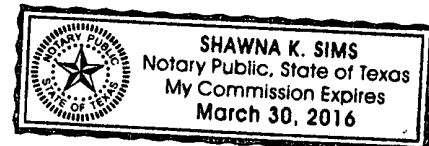
BY

A handwritten signature in cursive script, appearing to read "Kyle Hollingsworth", written over a horizontal line.

The foregoing instrument was acknowledged before me on
Kyle Hollingsworth on behalf of Patterson-UTI Drilling Company LLC.

5/16/12, by

A handwritten signature in cursive script, appearing to read "Shawna K. Sims", written over a horizontal line.
Notary Public for Midland County, Texas
My Commission Expires:





Yates Petroleum Corp.

Eddy County (NAD 83)

Grateful "BOD" Federal Com

#2H

OH

Design: OH

PathfinderX & Y Report

14 May, 2012

PATHFINDER
A Schlumberger Company



Pathfinder
PathfinderX & Y Report

PATHFINDER
A Schlumberger Company

Company:	Yates Petroleum Corp.	Local Co-ordinate Reference:	Well #2H
Project:	Eddy County (NAD 83)	TVD Reference:	KB = 18.5 @ 3512.5usft (Silver Oak 10)
Site:	Grateful"BOD" Federal Com	MD Reference:	KB = 18.5 @ 3512.5usft (Silver Oak 10)
Well:	#2H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Single User Db

Project:	Eddy County (NAD 83)		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site:	Grateful"BOD" Federal Com		
Site Position:		Northing:	636,817.300 usft
From:	Map	Easting:	637,435.100 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16
		Latitude:	32.750
		Longitude:	-104.021
		Grid Convergence:	0.17 °

Well:	#2H					
Well Position	+N/-S	0.0 usft	Northing:	636,817.300 usft	Latitude:	32.750
	+E/-W	0.0 usft	Easting:	637,435.100 usft	Longitude:	-104.021
Position Uncertainty	0.0 usft	Wellhead Elevation:	usft	Ground Level:	3,494.0 usft	

Wellbore:	OH				
Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
			(°)	(°)	(nT)
	IGRF200510	3/13/2012	7.73	60.60	48,847

Design:	OH				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction	
	(usft)	(usft)	(usft)	(°)	
	0.0	0.0	0.0	306.96	



Pathfinder PathfinderX & Y Report



Company: Yates Petroleum Corp.
Project: Eddy County (NAD 83)
Site: Grateful BOD Federal Com
Well: #2H
Wellbore: OH
Design: OH

Local Co-ordinate Reference: Well #2H
TVD Reference: KB = 18.5 @ 3512.5usft (Silver Oak 10)
MD Reference: KB = 18.5 @ 3512.5usft (Silver Oak 10)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1 Single User Db

Survey Program		Date: 5/14/2012		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
200.0	7,260.0	Gyro #1 (OH)	CTG-SR-SS	Continuous gyro - surface ref: s/s
7,440.0	12,247.0	MWD #1 (OH)	MWD	MWD - Standard

Survey											
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northings (usft)	Easting (usft)	
0.0	0.00	0.00	0.0	-3,512.5	0.0	0.0	0.0	0.00	636,817.30	637,435.10	
200.0	0.25	315.75	200.0	-3,312.5	0.3	-0.3	0.4	0.12	636,817.61	637,434.80	
400.0	0.25	177.99	400.0	-3,112.5	0.2	-0.6	0.6	0.23	636,817.49	637,434.51	
600.0	0.50	3.18	600.0	-2,912.5	0.6	-0.5	0.8	0.37	636,817.92	637,434.57	
800.0	0.50	81.36	800.0	-2,712.5	1.6	0.4	0.7	0.32	636,818.93	637,435.48	
1,000.0	1.75	69.54	999.9	-2,512.6	2.8	4.1	-1.6	0.63	636,820.13	637,439.21	
1,200.0	1.00	79.82	1,199.9	-2,312.6	4.2	8.7	-4.4	0.39	636,821.50	637,443.78	
1,400.0	1.00	89.00	1,399.9	-2,112.6	4.5	12.1	-7.0	0.08	636,821.84	637,447.25	
1,600.0	0.75	20.18	1,599.8	-1,912.7	5.8	-14.3	-8.0	0.51	636,823.10	637,449.44	
1,800.0	0.50	22.23	1,799.8	-1,712.7	7.8	15.1	-7.4	0.13	636,825.14	637,450.23	
2,000.0	0.25	55.41	1,999.8	-1,512.7	8.9	15.8	-7.3	0.16	636,826.19	637,450.91	
2,200.0	0.50	257.60	2,199.8	-1,312.7	9.0	15.3	-6.9	0.37	636,826.25	637,450.42	
2,400.0	1.00	273.78	2,399.8	-1,112.7	8.9	12.7	-4.8	0.27	636,826.18	637,447.83	
2,600.0	1.00	241.03	2,599.8	-912.7	8.1	9.5	-2.7	0.28	636,825.45	637,444.56	
2,800.0	0.25	281.21	2,799.8	-712.7	7.4	7.5	-1.6	0.41	636,824.69	637,442.60	
3,000.0	0.50	248.37	2,999.8	-512.7	7.2	6.3	-0.7	0.16	636,824.45	637,441.37	
3,200.0	0.75	264.56	3,199.7	-312.8	6.7	4.2	0.7	0.15	636,824.01	637,439.25	
3,400.0	0.75	288.71	3,399.7	-112.8	7.0	1.6	2.9	0.16	636,824.30	637,436.71	
3,600.0	0.25	157.87	3,599.7	87.2	7.0	0.5	3.8	0.47	636,824.32	637,435.63	
3,800.0	0.75	230.98	3,799.7	287.2	5.8	-0.3	3.7	0.36	636,823.09	637,434.78	
4,000.0	0.25	246.09	3,999.7	487.2	4.8	-1.7	-4.3	0.26	636,822.09	637,433.36	



Pathfinder PathfinderX & Y Report

PATHFINDER
A Schlumberger Company

Company: Yates Petroleum Corp.
Project: Eddy County (NAD 83)
Site: Grateful BOD: Federal Com
Well: #2H
Wellbore: OH
Design: OH

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

Well #2H
KB = 18.5 @ 3512.5usft (Silver Oak 10)
KB = 18.5 @ 3512.5usft (Silver Oak 10)
Grid
Minimum Curvature
EDM 5000.1 Single User Db.

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (*/100usft)	Northing (usft)	Easting (usft)
4,200.0	0.75	233.20	4,199.7	687.2	3.8	-3.2	4.8	0.25	636,821.13	637,431.92
4,400.0	1.25	270.33	4,399.7	887.2	3.1	-6.4	7.0	0.40	636,820.36	637,428.69
4,600.0	1.00	287.46	4,599.6	1,087.1	3.6	-10.3	10.4	0.21	636,820.89	637,424.84
4,800.0	1.00	272.58	4,799.6	1,287.1	4.2	-13.7	13.4	0.13	636,821.49	637,421.43
5,000.0	2.25	316.77	4,999.5	1,487.0	7.1	-18.1	18.8	0.84	636,824.43	637,417.00
5,200.0	2.50	285.45	5,199.4	1,686.9	11.2	-25.0	26.7	0.65	636,828.46	637,410.11
5,400.0	1.75	294.57	5,399.2	1,886.7	13.6	-32.0	33.7	0.41	636,830.89	637,403.12
5,600.0	1.25	330.68	5,599.2	2,086.7	16.8	-35.8	38.7	0.52	636,834.06	637,399.28
5,800.0	1.75	295.86	5,799.1	2,286.6	20.0	-39.6	43.7	0.51	636,837.29	637,395.46
6,000.0	2.00	300.99	5,999.0	2,486.5	23.1	-45.4	50.2	0.15	636,840.42	637,389.72
6,200.0	2.00	304.12	6,198.9	2,686.4	26.9	-51.3	57.1	0.05	636,844.18	637,383.84
6,400.0	2.00	299.25	6,398.7	2,886.2	30.5	-57.2	64.1	0.08	636,847.84	637,377.91
6,600.0	1.50	305.41	6,598.7	3,086.2	33.8	-62.4	70.1	0.27	636,851.06	637,372.73
6,800.0	1.25	329.53	6,798.6	3,286.1	37.2	-65.6	74.8	0.31	636,854.46	637,369.49
7,000.0	1.75	373	6,998.5	3,486.0	42.1	-66.5	78.5	0.50	636,859.39	637,368.58
7,200.0	1.75	358.17	7,198.4	3,685.9	48.2	-66.4	82.0	0.08	636,865.49	637,368.68
7,260.0	1.75	358.51	7,258.4	3,745.9	50.0	-66.5	83.2	0.02	636,867.32	637,368.63
7,440.0	1.76	303.24	7,438.3	3,925.8	54.3	-68.9	87.7	0.90	636,871.58	637,366.25
7,472.0	5.10	284.05	7,470.3	3,957.8	54.9	-70.6	89.5	10.89	636,872.20	637,364.46
KOP: 7472.0 MD, 7470.3 TVD, 54.9 N, -70.6 E										
7,504.0	9.15	278.62	7,502.0	3,989.5	55.6	-74.5	93.0	12.82	636,872.92	637,360.56
7,536.0	13.54	274.80	7,533.4	4,020.9	56.3	-80.8	98.4	13.91	636,873.62	637,354.31
7,567.0	18.29	272.27	7,563.2	4,050.7	56.8	-89.3	105.5	15.48	636,874.11	637,345.83
7,599.0	22.95	270.44	7,593.1	4,080.6	57.1	-100.5	114.6	14.70	636,874.36	637,334.56
7,631.0	27.26	269.12	7,622.1	4,109.6	57.0	-114.1	125.4	13.58	636,874.30	637,320.99
7,663.0	30.34	267.45	7,650.1	4,137.6	56.5	-129.5	137.5	9.95	636,873.82	637,305.58
7,694.0	32.98	266.22	7,676.5	4,164.0	55.6	-145.8	149.9	8.77	636,872.92	637,289.34



Pathfinder
PathfinderX & Y Report

PATHFINDER
A Schlumberger Company

Company: Yates Petroleum Corp.
Project: Eddy County (NAD 83)
Site: GratefulBOD Federal Com
Well: #2H
Wellbore: OH
Design: OH

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

Well #2H
KB = 18.5 @ 3512.5usft (Silver Oak 10)
KB = 18.5 @ 3512.5usft (Silver Oak 10)
Grid
Minimum Curvature
EDM 5000.1 Single User Db

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)
7,726.0	36.58	264.11	7,702.8	4,190.3	54.1	-163.9	163.5	11.86	636,871.37	637,271.16
7,757.0	40.71	262.00	7,727.0	4,214.5	51.7	-183.2	177.4	13.98	636,869.01	637,251.95
7,789.0	43.88	260.68	7,750.7	4,238.2	48.5	-204.4	192.5	10.29	636,865.76	637,230.67
7,821.0	46.08	259.63	7,773.3	4,260.8	44.6	-226.7	208.0	7.26	636,861.89	637,208.38
7,853.0	48.72	259.63	7,795.0	4,282.5	40.4	-249.9	223.9	8.25	636,857.65	637,185.21
7,884.0	51.79	260.16	7,814.8	4,302.3	36.2	-273.3	240.2	9.99	636,853.47	637,161.75
7,916.0	55.13	260.51	7,833.8	4,321.3	31.9	-298.7	257.8	10.47	636,849.16	637,136.41
7,948.0	58.21	259.72	7,851.4	4,338.9	27.3	-325.0	276.1	9.84	636,844.56	637,110.07
7,980.0	59.71	258.66	7,867.9	4,355.4	22.1	-352.0	294.5	5.48	636,839.42	637,083.14
8,012.0	60.23	258.05	7,883.9	4,371.4	16.5	-379.1	312.8	2.32	636,833.83	637,056.01
8,044.0	62.96	258.84	7,899.2	4,386.7	10.9	-406.7	331.5	8.80	636,828.19	637,028.43
8,076.0	66.83	259.19	7,912.7	4,400.2	5.4	-435.1	350.9	12.13	636,822.67	636,999.99
8,107.0	70.96	259.37	7,923.9	4,411.4	0.0	-463.5	370.4	13.33	636,817.30	636,971.58
8,139.0	73.78	259.60	7,933.6	4,421.1	-5.6	-493.5	391.0	8.84	636,811.73	636,941.60
8,171.0	77.38	259.86	7,941.6	4,429.1	-11.1	-524.0	412.0	11.28	636,806.21	636,911.11
8,203.0	82.22	259.09	7,947.2	4,434.7	-16.8	-554.9	433.3	15.31	636,800.46	636,880.16
8,236.0	87.58	258.50	7,950.2	4,437.7	-23.2	-587.2	455.2	16.34	636,794.07	636,847.93
8,266.0	90.22	257.99	7,950.7	4,438.2	-29.3	-616.5	475.0	8.96	636,787.96	636,818.56
LP = 8266.0 MD, 7950.7 TVD, -29.3° N, -616.5° E										
8,298.0	92.86	257.24	7,949.9	4,437.4	-36.2	-647.8	495.8	8.58	636,781.10	636,787.32
8,356.0	94.18	257.17	7,946.3	4,433.8	-49.0	-704.2	533.2	2.28	636,768.28	636,730.87
8,420.0	93.39	257.96	7,942.1	4,429.6	-62.8	-766.6	574.8	1.74	636,754.53	636,668.51
8,483.0	92.59	258.66	7,938.8	4,426.3	-75.5	-828.2	616.4	1.69	636,741.78	636,606.90
8,547.0	92.59	259.02	7,935.9	4,423.4	-87.9	-890.9	659.0	0.56	636,729.41	636,544.18
8,610.0	91.45	260.25	7,933.7	4,421.2	-99.2	-952.9	701.7	2.66	636,718.08	636,482.24
8,674.0	91.89	261.56	7,931.8	4,419.3	-109.3	-1,016.0	746.1	2.16	636,707.97	636,419.08
8,738.0	92.51	262.88	7,929.4	4,416.9	-118.0	-1,079.4	791.5	2.28	636,699.31	636,355.71



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Minimum Curvature
EDM 5000.1 Single User Db

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)
8,801.0	92.51	264.46	7,926.6	4,414.1	-124.9	-1,141.9	837.3	2.51	636,692.37	636,293.16
8,865.0	90.92	265.52	7,924.7	4,412.2	-130.5	-1,205.7	884.9	2.99	636,686.79	636,229.44
8,929.0	90.66	265.61	7,923.8	4,411.3	-135.5	-1,269.5	932.9	0.43	636,681.84	636,165.63
8,992.0	90.66	266.05	7,923.1	4,410.6	-140.0	-1,332.3	980.4	0.70	636,677.26	636,102.81
9,056.0	90.75	267.80	7,922.3	4,409.8	-143.5	-1,396.2	1,029.3	2.74	636,673.82	636,038.91
9,119.0	90.22	267.36	7,921.8	4,409.3	-146.1	-1,459.1	1,078.0	1.09	636,671.16	635,975.96
9,183.0	89.60	267.45	7,921.9	4,409.4	-149.0	-1,523.1	1,127.4	0.98	636,668.27	635,912.03
9,246.0	91.19	268.86	7,921.4	4,408.9	-151.1	-1,586.0	1,176.5	3.37	636,666.24	635,849.07
9,310.0	90.92	268.51	7,920.2	4,407.7	-152.5	-1,650.0	1,226.7	0.69	636,664.77	635,785.10
9,373.0	90.40	268.60	7,919.5	4,407.0	-154.1	-1,713.0	1,276.1	0.84	636,663.18	635,722.12
9,437.0	91.19	266.92	7,918.6	4,406.1	-156.6	-1,776.9	1,325.7	2.90	636,660.68	635,658.18
9,501.0	90.48	266.40	7,917.7	4,405.2	-160.3	-1,840.8	1,374.5	1.38	636,656.95	635,594.29
9,564.0	90.66	266.66	7,917.1	4,404.6	-164.2	-1,903.7	1,422.4	0.50	636,653.14	635,531.41
9,627.0	89.96	266.22	7,916.7	4,404.2	-168.1	-1,966.6	1,470.3	1.31	636,649.23	635,468.54
9,691.0	91.01	266.13	7,916.2	4,403.7	-172.3	-2,030.4	1,518.8	1.65	636,644.96	635,404.68
9,754.0	91.63	267.45	7,914.7	4,402.2	-175.9	-2,093.3	1,566.9	2.31	636,641.43	635,341.80
9,818.0	90.84	267.19	7,913.4	4,400.9	-178.9	-2,157.2	1,616.2	1.30	636,638.44	635,277.88
9,881.0	91.01	267.28	7,912.3	4,399.8	-181.9	-2,220.1	1,664.6	0.31	636,635.40	635,214.97
9,945.0	92.33	265.96	7,910.5	4,398.0	-185.7	-2,284.0	1,713.4	2.92	636,631.63	635,151.11
10,008.0	92.24	266.57	7,908.0	4,395.5	-189.8	-2,346.8	1,761.1	0.98	636,627.53	635,088.29
10,072.0	92.15	266.75	7,905.5	4,393.0	-193.5	-2,410.7	1,809.9	0.31	636,623.80	635,024.45
10,136.0	92.15	266.84	7,903.1	4,390.6	-197.1	-2,474.5	1,858.7	0.14	636,620.23	634,960.59
10,200.0	92.07	266.84	7,900.8	4,388.3	-200.6	-2,538.4	1,907.6	0.12	636,616.70	634,896.73
10,263.0	91.89	266.92	7,898.6	4,386.1	-204.0	-2,601.2	1,955.8	0.31	636,613.27	634,833.86
10,327.0	91.63	267.10	7,896.6	4,384.1	-207.4	-2,665.1	2,004.9	0.49	636,609.94	634,769.98
10,390.0	91.54	267.01	7,894.9	4,382.4	-210.6	-2,728.0	2,053.2	0.20	636,606.70	634,707.09
10,454.0	91.80	266.13	7,893.0	4,380.5	-214.4	-2,791.9	2,101.9	1.43	636,602.87	634,643.23



Pathfinder

PathfinderX & Y Report

PATHFINDER
A Schlumberger Company

Company: Yates Petroleum Corp.
Project: Eddy County (NAD83)
Site: Grateful BOD Federal Com
Well: #2H
Wellbore: OH
Design: OH

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

Well #2H
KB = 18.5 @ 3512.5usft (Silver Oak 10)
KB = 18.5 @ 3512.5usft (Silver Oak 10)
Grid
Minimum Curvature
EDM 5000.1 Single User Db

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)
10,517.0	91.54	266.57	7,891.2	4,378.7	-218.4	-2,854.7	2,149.7	0.81	636,598.86	634,580.39
10,581.0	91.54	266.40	7,889.4	4,376.9	-222.4	-2,918.6	2,198.4	0.27	636,594.94	634,516.53
10,644.0	91.71	266.31	7,887.7	4,375.2	-226.4	-2,981.4	2,246.2	0.31	636,590.94	634,453.68
10,708.0	91.45	265.78	7,885.9	4,373.4	-230.8	-3,045.2	2,294.5	0.92	636,586.53	634,389.86
10,771.0	90.31	264.46	7,884.9	4,372.4	-236.1	-3,108.0	2,341.4	2.77	636,581.17	634,327.10
10,835.0	90.04	264.99	7,884.7	4,372.2	-242.0	-3,171.7	2,388.8	0.93	636,575.28	634,263.37
10,898.0	89.96	265.96	7,884.7	4,372.2	-247.0	-3,234.5	2,436.0	1.54	636,570.31	634,200.57
10,962.0	90.75	266.22	7,884.3	4,371.8	-251.4	-3,298.4	2,484.4	1.30	636,565.95	634,136.72
11,026.0	92.42	265.34	7,882.6	4,370.1	-256.1	-3,362.2	2,532.6	2.95	636,561.24	634,072.92
11,089.0	91.89	265.34	7,880.2	4,367.7	-261.2	-3,424.9	2,579.6	0.84	636,556.13	634,010.17
11,152.0	91.71	265.34	7,878.2	4,365.7	-266.3	-3,487.7	2,626.7	0.29	636,551.01	633,947.41
11,216.0	91.63	265.87	7,876.4	4,363.9	-271.2	-3,551.5	2,674.7	0.84	636,546.11	633,883.62
11,279.0	91.98	266.05	7,874.4	4,361.9	-275.6	-3,614.3	2,722.2	0.62	636,541.67	633,820.81
11,343.0	91.71	265.69	7,872.3	4,359.8	-280.2	-3,678.1	2,770.5	0.70	636,537.07	633,757.01
11,406.0	90.92	263.50	7,870.9	4,358.4	-286.2	-3,740.8	2,817.0	3.69	636,531.13	633,694.31
11,470.0	91.45	263.41	7,869.5	4,357.0	-293.5	-3,804.4	2,863.4	0.84	636,523.84	633,630.74
11,533.0	91.63	263.50	7,867.8	4,355.3	-300.6	-3,866.9	2,909.1	0.32	636,516.66	633,568.18
11,597.0	91.71	263.59	7,866.0	4,353.5	-307.8	-3,930.5	2,955.5	0.19	636,509.47	633,504.61
11,660.0	91.63	263.41	7,864.1	4,351.6	-315.0	-3,993.1	3,001.2	0.31	636,502.34	633,442.04
11,724.0	90.75	263.59	7,862.8	4,350.3	-322.2	-4,056.6	3,047.7	1.40	636,495.10	633,378.47
11,787.0	90.40	263.85	7,862.2	4,349.7	-329.1	-4,119.3	3,093.6	0.69	636,488.21	633,315.85
11,851.0	90.66	264.82	7,861.6	4,349.1	-335.4	-4,182.9	3,140.7	1.57	636,481.89	633,252.16
11,915.0	90.84	264.46	7,860.8	4,348.3	-341.4	-4,246.6	3,188.0	0.63	636,475.91	633,188.45
11,978.0	91.98	264.29	7,859.2	4,346.7	-347.6	-4,309.3	3,234.4	1.83	636,469.74	633,125.77
12,042.0	92.07	264.38	7,856.9	4,344.4	-353.9	-4,373.0	3,281.4	0.20	636,463.43	633,062.13
12,106.0	92.42	263.85	7,854.4	4,341.9	-360.4	-4,436.6	3,328.3	0.99	636,456.87	632,998.51
12,169.0	92.86	264.02	7,851.5	4,339.0	-367.1	-4,499.2	3,374.3	0.75	636,450.22	632,935.93



Pathfinder
PathfinderX & Y Report



Company: Yates Petroleum Corp.
Project: Eddy County, (NAD 83)
Site: Grateful BOD Federal Com
Well: #2H
Wellbore: OH
Design: OH

Local Co-ordinate Reference: Well #2H
TVD Reference: KB = 18.5 @ 3512.5usft (Silver Oak 10)
MD Reference: KB = 18.5 @ 3512.5usft (Silver Oak 10)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000:1 Single User Db

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (*/100usft)	Northing (usft)	Easting (usft)
12,247.0	92.86	264.02	7,847.6	4,335.1	-375.2	-4,576.6	3,431.3	0.00	636,442.10	632,858.45
BHL: 12247.0 MD, 7847.6 TVD, -375.2 N, -4576.6 E										

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N-S (usft)	+E-W (usft)	
7,472.0	7,470.3	54.9	-70.6	KOP - 7472.0 MD, 7470.3 TVD, 54.9 N, -70.6 E
8,266.0	7,950.7	-29.3	-616.5	LP - 8266.0 MD, 7950.7 TVD, -29.3 N, -616.5 E
12,247.0	7,847.6	-375.2	-4,576.6	BHL: 12247.0 MD, 7847.6 TVD, -375.2 N, -4576.6 E

Checked By: _____

Approved By: _____

Date: _____



**ATES
PETROLEUM
CORPORATION**

Project: Eddy County (NAD 83)
Site: Grateful "BOD" Federal Com
Well: #2H
Wellbore: OH
Plan: Post Gyro Plan #3

PROJECT DETAILS: Eddy County (NAD 83)
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

PATHFINDER®

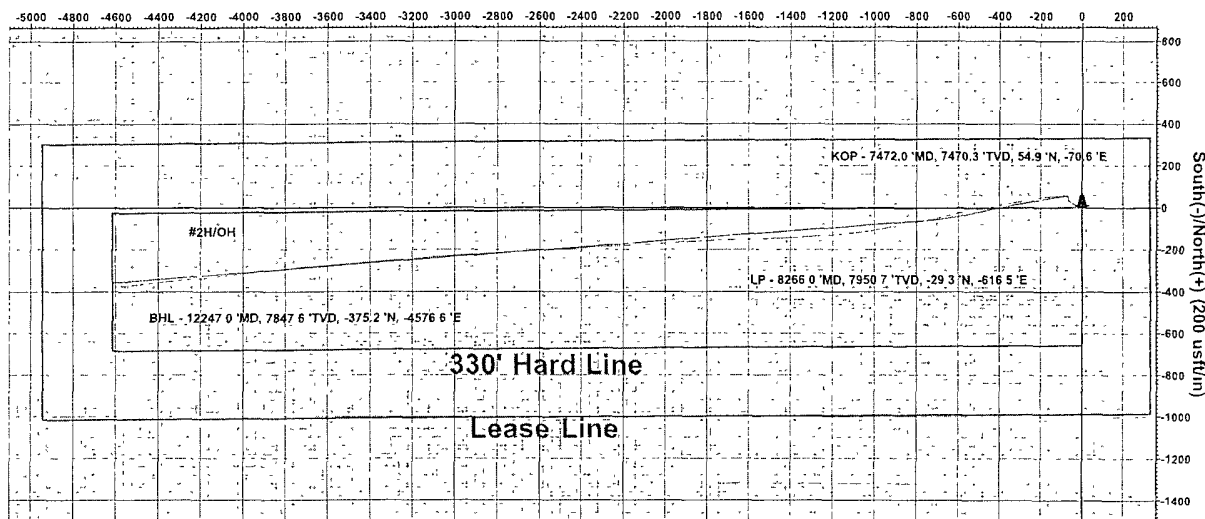
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WELL DETAILS #2H

Ground Elevation: 3494.0
RKB Elevation: KB = 18.5 @ 3512.5usft (Silver Oak 10)
Rig Name: Silver Oak 10

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	636817.300	637435.100	32.750	-104.021	

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



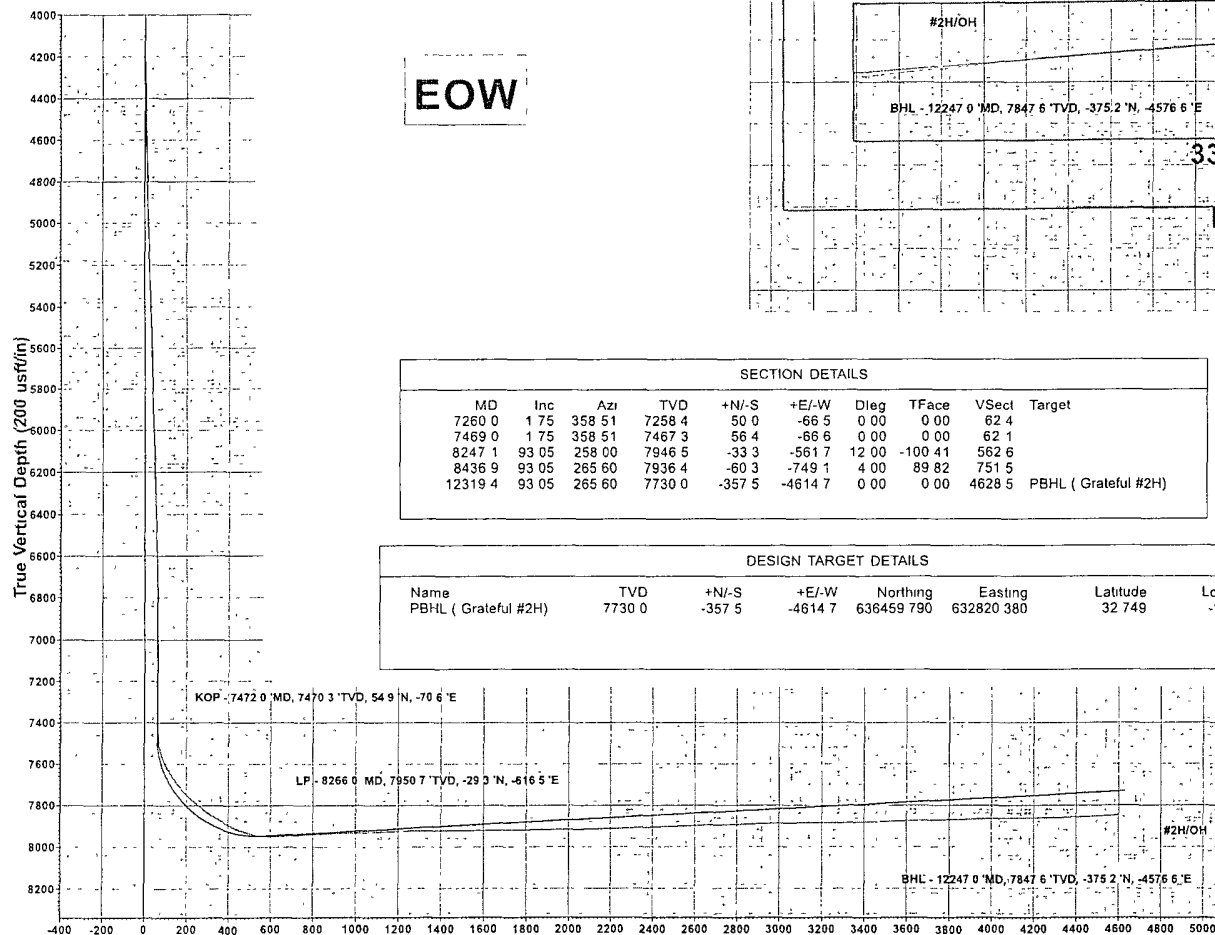
EOW

SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSecl	Target
7260.0	1.75	358.51	7258.4	50.0	-66.5	0.00	0.00	82.4	
7469.0	1.75	358.51	7467.3	56.4	-66.6	0.00	0.00	62.1	
8247.1	93.05	258.00	7946.5	-33.3	-561.7	12.00	-100.41	562.6	
8436.9	93.05	265.60	7936.4	-60.3	-749.1	4.00	89.82	751.5	
12319.4	93.05	265.60	7730.0	-357.5	-4614.7	0.00	0.00	4628.5	PBHL (Grateful #2H)

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
PBHL (Grateful #2H)	7730.0	-357.5	-4614.7	636459.790	632820.380	32.749	-104.036



Vertical Section at 265.57° (200 usft/in)



Azimuths to Grid North
True North -0.17°
Magnetic North -7.56°

Magnetic Field
Strength 48847.4nT
Dip Angle 60.60°
Date 3/13/2012
Model IGRF200510

Plan: Post Gyro Plan #3 (#2H/OH)

Created By: Sam Biffle Date: 10/15, May 14 2012

Checked: _____ Date: _____

Notes:
1. See Section 10.0
2. See Section 10.0
3. See Section 10.0
4. See Section 10.0
5. See Section 10.0
6. See Section 10.0
7. See Section 10.0
8. See Section 10.0
9. See Section 10.0
10. See Section 10.0

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	C L O S U R E		Dogleg Severity Deg/100
							Distance FT	Direction Deg	
2000.00	.25	55.41	1999.82	8.89	15.81	-16.45	18.14	60.65	.16
2200.00	.50	257.60	2199.82	8.95	15.32	-15.97	17.74	59.70	.37
2400.00	1.00	273.78	2399.81	8.88	12.73	-13.38	15.52	55.10	.27
2600.00	1.00	241.03	2599.78	8.15	9.46	-10.06	12.49	49.26	.28
2800.00	.25	281.21	2799.76	7.39	7.50	-8.05	10.53	45.45	.41
3000.00	.50	248.37	2999.76	7.15	6.27	-6.80	9.51	41.22	.16
3200.00	.75	264.56	3199.75	6.71	4.15	-4.66	7.89	31.76	.15
3400.00	.75	288.71	3399.73	7.00	1.61	-2.14	7.18	12.94	.16
3600.00	.25	157.87	3599.73	7.02	.53	-1.07	7.04	4.34	.47
3800.00	.75	230.98	3799.72	5.79	-.32	-.13	5.80	356.84	.36
4000.00	.25	246.09	3999.71	4.79	-1.74	1.36	5.09	340.08	.26
4200.00	.75	233.20	4199.70	3.83	-3.18	2.88	4.98	320.25	.25
4400.00	1.25	270.33	4399.67	3.06	-6.41	6.16	7.10	295.48	.40
4600.00	1.00	287.46	4599.64	3.59	-10.26	9.95	10.87	289.30	.21
4800.00	1.00	272.58	4799.61	4.19	-13.67	13.30	14.30	287.06	.13
5000.00	2.25	316.77	4999.53	7.13	-18.10	17.49	19.45	291.51	.84
5200.00	2.50	285.45	5199.36	11.16	-24.99	24.06	27.37	294.05	.65
5400.00	1.75	294.57	5399.23	13.59	-31.98	30.83	34.74	293.02	.41
5600.00	1.25	330.68	5599.16	16.76	-35.82	34.42	39.55	295.07	.52
5800.00	1.75	295.86	5799.09	19.99	-39.64	37.97	44.39	296.77	.51
6000.00	2.00	300.99	5998.99	23.12	-45.38	43.46	50.93	297.00	.15
6200.00	2.00	304.12	6198.87	26.88	-51.26	49.03	57.88	297.67	.05
6400.00	2.00	299.25	6398.74	30.54	-57.19	54.66	64.84	298.10	.08
6600.00	1.50	305.41	6598.65	33.76	-62.37	59.58	70.92	298.43	.27
6800.00	1.25	329.53	6798.59	37.16	-65.61	62.54	75.40	299.53	.31
7000.00	1.75	3.73	6998.53	42.09	-66.52	63.07	78.71	302.32	.50
7200.00	1.75	358.17	7198.44	48.19	-66.42	62.50	82.06	305.96	.08
Last Survey Depth Recorded									
7260.00	1.75	358.51	7258.41	50.02	-66.47	62.41	83.19	306.96	.02



A Schlumberger Company

DIRECTIONAL SURVEY REPORT

YATES PETROLEUM

***GRATEFUL "BOD" FEDERAL COM. #2H -
SHC***

EDDY COUNTY, NEW MEXICO

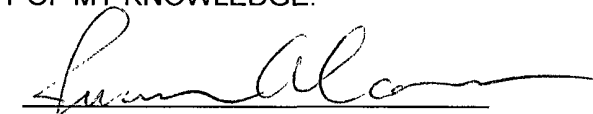
PREPARED BY: JUAN ALCOCER

DIRECTIONAL SURVEY COMPANY REPORT:

1. NAME OF SURVEYING COMPANY: PATHFINDER ENERGY SERVICES
2. NAME OF PERSON(S) PERFORMING SURVEY:
A) DAVID BAKER
3. POSITION OF SAID PERSON(S): (A-F) SURVEYORS (FIELD ENGINEERS)
4. DATE(S) ON WHICH SURVEY WAS PERFORMED: 04-24-12 TO 04-26-12
5. STATE IN WHICH SURVEY WAS PERFORMED: NEW MEXICO
6. LOCATION OF WELL: EDDY COUNTY, NM
7. TYPE OF SURVEY(S) PERFORMED: GAMMA-RAY
8. COMPLETE IDENTIFICATION OF WELL:

YATES PETROLEUM
GRATEFUL "BOD" FEDERAL COM. #2H - SHC
EDDY COUNTY, NM
RIG: PATTERSON 511
9. SURVEY CERTIFIED FROM: 6,059 TO 7,346 FEET MEASURED DEPTH.

THIS IS TO VERIFY THAT ATTACHED DOCUMENTS SHOWING THE WELL TO BE
DISPLACED AT 42.14 FEET ON A BEARING OF 337.10 DEGREES FROM THE
CENTER OF THE ROTARY TABLE AT A PROJECTED BIT DEPTH OF 7,439 FEET,
ARE TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE.



JUAN ALCOCER
MWD COORDINATOR

PathFinder Energy Services, Inc.

BHL Report

Page 01/01
Tie-in Date: 04/25/2012
Date Completed: 04/26/2012

YATES PETROLEUM
GRATEFUL BOD FED COM 2H
EDDY COUNTY, NEW MEXICO
Rig:PATTERSON #511
PathFinder Office Supervisor: JUAN ALCOCER
PathFinder Field Engineers:DAVID BAKER
PRITHWISH DAS

Survey Horiz. Reference:WELLHEAD
Ref Coordinates: LAT:32.45.0.9271 N LON:104.1.14.7280 W
GRID Reference:NAD83 new mexico east Transverse Mercator
Ref GRID Coord: X: 637435.1000 Y: 636817.3000
North Aligned To:GRID NORTH
Total Magnetic Correction: 7.56° EAST TO GRID
Vertical Section Plane: 265.57
Survey Vert. Reference: 18.50' Kelly Bushing To Ground
Altitude:3494.00' Ground To MSL

Measured Depth	7439.00	(feet)
Inclination	1.49	(deg)
Azimuth	4.89	(deg)
True Vertical Depth	7438.34	(feet)
Vertical Section	13.35	(feet)
Survey X cord	637418.70	(feet)
Survey Y cord	636856.12	(feet)
Survey Lat	32.75036438 N	(deg)
Survey Lon	104.02081075 W	(deg)
Rectangular Corr. N/S	38.82 N	(feet)
Rectangular Corr. E/W	16.40 W	(feet)
Closure Distance	42.14	(feet)
Direction of Closure	337.10	(deg)
Dogleg Severity	0.00	(deg/100ft)

PathFinder Energy Services, Inc.

Survey Report

YATES PETROLEUM
 GRATEFUL BOD FED COM 2H
 EDDY COUNTY, NEW MEXICO
 Rig:PATTERSON #511
 PathFinder Office Supervisor: JUAN ALCOCER
 PathFinder Field Engineers: DAVID BAKER
 PRITHWISH DAS

Page 01/01
 Tie-in Date: 04/25/2012
 Date Completed: 04/26/2012
 Survey Horiz. Reference:WELLHEAD
 Ref Coordinates: LAT:32.45.0.9271 N LON:104.1.14.7280 W
 GRID Reference:NAD83 new mexico east Transverse Mercator
 Ref GRID Coord: X: 637435.1000 Y: 636817.3000
 North Aligned To:GRID NORTH
 Total Magnetic Correction: 7.56° EAST TO GRID
 Vertical Section Plane: 265.57
 Survey Vert. Reference: 18.50' Kelly Bushing To Ground
 Altitude:3494.00' Ground To MSL

Survey Calculations by RX5 V6.04A using Minimum Curvature

Measured Depth (ft)	Incl (deg)	Drift Dir. (deg)	TVD (ft)	Course Length (ft)	Vertical Section (ft)	TOTAL Rectangular Offsets (ft) (ft)		Closure Dist Dir (ft) (deg)		DLS (dg/100ft)
TIE IN ASSUMING VERTICAL DEPTH @ 5859' MD.										
5859.00	0.00	0.00	5859.00	0.00	-0.00	0.00	0.00	0.00@	0.00	0.00
THE FOLLOWING ARE PATHFINDER MWD SURVEYS.										
6059.00	2.11	307.80	6058.95	200.00	2.73	2.26 N	2.91 W	3.68@	307.80	1.05
6229.00	1.93	325.45	6228.85	170.00	6.48	6.53 N	7.01 W	9.58@	313.00	0.38
6419.00	2.11	321.95	6418.73	190.00	10.02	11.92 N	10.98 W	16.21@	317.37	0.12
6583.00	1.23	343.51	6582.66	164.00	12.06	15.99 N	13.34 W	20.82@	320.17	0.65
6774.00	1.49	343.77	6773.61	191.00	13.00	20.34 N	14.61 W	25.04@	324.30	0.14
6964.00	1.76	345.43	6963.53	190.00	14.02	25.53 N	16.04 W	30.15@	327.87	0.14
7155.00	1.67	359.55	7154.45	191.00	14.34	31.16 N	16.80 W	35.39@	331.67	0.23
7346.00	1.49	4.89	7345.38	191.00	13.74	36.41 N	16.61 W	40.02@	335.48	0.12
STRAIGHT LINE PROJECTION TO BIT @ 7439' MD										
7439.00	1.49	4.89	7438.34	93.00	13.35	38.82 N	16.40 W	42.14@	337.10	0.00



A Schlumberger Company

TIE-IN SURVEY INFORMATION SHEET

CLIENT INFORMATION

CLIENT:	YATES PETROLEUM		
LEASE / WELL No.:	GRATEFUL BOD FED COM	2H	
WELL LOCATION:	EDDY COUNTY		
COUNTY / STATE / COUNTRY:	EDDY	NEW MEXICO	USA
RIG:	PATTERSON 511		
API WELL No:	30-015-38518		
JOB No:	12MLD0154		
P.O. / AFE No.			
DIRECTIONAL COMPANY:	PES		

WELL SITE INFORMATION

TOTAL MAGNETIC CORRECTION (TMC):			
On Wall Plat:	7.56	LWD Calculated:	7.558
Agreed Upon:		7.56	
X =	637435.100000	Feet	Y = 636817.300000
		Feet	
SITE LATITUDE:	32.750258	SITE LONGITUDE:	104.020758
GRID SYSTEM:	TRUE ☐ UTM ☐ LAMBERT ☒	ZONE:	NEW MEXICO EAST
PROPOSED DRIFT DIRECTION:	265.57		
KELLY BUSHING ELEVATION:	18.5		
ALTITUDE:	3494	Feet	WATER DEPTH:
		Feet	

TIE-IN SURVEY

MEASURED DEPTH:	5859		
DRIFT ANGLE:	0		
DRIFT DIRECTION:	0		
TRUE VERTICAL DEPTH:	5859		
VERTICAL SECTION:	0		
RECTANGULAR COORDINATE (N / S) :	0		
RECTANGULAR COORDINATE (E / W) :	0		
CLOSURE DISTANCE / DIRECTION:	0	0	
SURVEY CALCULATION METHOD:	AA ☐	MC ☒	RC ☐ BT ☐
SOURCE OF TIE-IN DATA (COMPANY):			
COPY OF TIE-IN SURVEY REPORT	☒ YES		☐ NO

WELL PLAN

KICKOFF DEPTH:	5921	TOTAL DEPTH:	7439
KICKOFF ANGLE:	0	MAX ANGLE:	1.49

PES Engineers:

D.BAKER

P.DAS

**Signature of both field engineers required if applicable

Directional Driller:

DATE: 24-Apr-2012



A Schlumberger Company

PathFinder Energy Services, Inc. Magnetic & Grid Calculations

Yates Petroleum Corp.
Grateful BOD Federal Com #2H
Eddy County, NM
Rig:Patterson 511

Thu Apr 19 15:36:22 2012

Coordinates

Latitude: 32.750258 N (32 deg. 45 min. 0.9271 sec.)
Longitude: 104.020758 W (-104 deg. 1 min. 14.7280 sec.)
Elevation: 3512.50 feet.
Calculation Date: Apr/19/2012

Magnetic Calculations

Model: IGRF2010
Dip Angle: 60.5752 degrees
Total Magnetic Field: 0.48798 gauss
Magnetic Declination: 7.729427 degrees
Horizontal Intensity: 0.239737 gauss
To Convert a Magnetic Dir. to a TRUE North Dir. Add 7.729427 Degr

Transverse Mercator Grid Calculations NAD83

Grid System: Transverse Mercator: new mexico east
Ellipsoid: GRS80
X: 637435.1000 feet
Y: 636817.3000 feet
True to Grid: (convergence) -0.169098 degrees
Magnetic to Grid: 7.560329 degrees
To Convert a Magnetic Dir. to a GRID dir. Add 7.560329 Degr.

PathFinder Energy Services, Inc.

Magnetic & Grid Calculations

ON LOCATION

Tue Apr 24 12:40:42 2012

Coordinates

Latitude: 32.750258 N (32 deg. 45 min. 0.9271 sec.)
Longitude: 104.020758 W (-104 deg. 1 min. 14.7280 sec.)
Elevation: 3512.50 feet.
Calculation Date: Apr/24/2012

Magnetic Calculations

Model: IGRF2010
Dip Angle: 60.5749 degrees
Total Magnetic Field: 0.48797 gauss
Magnetic Declination: 7.727746 degrees
Horizontal Intensity: 0.239733 gauss
To Convert a Magnetic Dir. to a TRUE North Dir. Add 7.727746 Degr

Transverse Mercator Grid Calculations NAD83

Grid System: Transverse Mercator: new mexico east
Ellipsoid: GRS80
X: 637435.1000 feet
Y: 636817.3000 feet
True to Grid: (convergence) -0.169098 degrees
Magnetic to Grid: 7.558648 degrees
To Convert a Magnetic Dir. to a GRID dir. Add 7.558648 Degr.



A Schlumberger Company

DIRECTIONAL SURVEY REPORT

YATES PETROLEUM

GRATEFUL "BOD" FEDERAL COM. #2H

EDDY COUNTY, NEW MEXICO

PREPARED BY: JUAN ALCOCER

Pathfinder

6213 WCR 112
Midland, Texas 79706
Tel (432)687-1647
Fax (432)687-1544

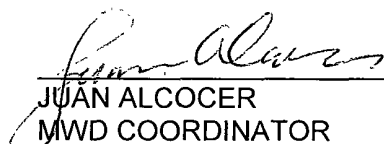


DIRECTIONAL SURVEY COMPANY REPORT:

1. NAME OF SURVEYING COMPANY: PATHFINDER ENERGY SERVICES
2. NAME OF PERSON(S) PERFORMING SURVEY:
A) DAVID BAKER
3. POSITION OF SAID PERSON(S): (A-F) SURVEYORS (FIELD ENGINEERS)
4. DATE(S) ON WHICH SURVEY WAS PERFORMED: 04-24-12 TO 05-11-12
5. STATE IN WHICH SURVEY WAS PERFORMED: NEW MEXICO
6. LOCATION OF WELL: EDDY COUNTY, NM
7. TYPE OF SURVEY(S) PERFORMED: GAMMA-RAY
8. COMPLETE IDENTIFICATION OF WELL:

YATES PETROLEUM
GRATEFUL "BOD" FEDERAL COM. #2H
EDDY COUNTY, NM
RIG: PATTERSON 511
9. SURVEY CERTIFIED FROM: 7,440 TO 12,169 FEET MEASURED DEPTH.

THIS IS TO VERIFY THAT ATTACHED DOCUMENTS SHOWING THE WELL TO BE
DISPLACED AT 4,592.00 FEET ON A BEARING OF 265.31 DEGREES FROM THE
CENTER OF THE ROTARY TABLE AT A PROJECTED BIT DEPTH OF 12,247 FEET,
ARE TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE.



JUAN ALCOCER
MWD COORDINATOR

PathFinder Energy Services, Inc.

BHL Report

Page 01/01
Tie-in Date: 04/25/2012
Date Completed: 05/11/2012

YATES PETROLEUM
GRATEFUL BOD FED COM 2H
EDDY COUNTY, NEW MEXICO
Rig:PATTERSON # 511
PathFinder Office Supervisor: JUAN ALCOCER
PathFinder Field Engineers:DAVID BAKER
PRITHWISH DAS
SEAN MOORE

Survey Horiz. Reference:WELLHEAD
Ref Coordinates: LAT:32.45.0.9271 N LON:104.1.14.7280 W
GRID Reference:NAD83 new mexico east Transverse Mercator
Ref GRID Coord: X: 637435.1000 Y: 636817.3000
North Aligned To:GRID NORTH
Total Magnetic Correction: 7.56° EAST TO GRID
Vertical Section Plane: 265.57
Survey Vert. Reference: 18.50' Kelly Bushing To Ground
Altitude:3494.00' Ground To MSL

Measured Depth	12247.00	(feet)
Inclination	92.86	(deg)
Azimuth	264.02	(deg)
True Vertical Depth	7847.65	(feet)
Vertical Section	4591.95	(feet)
Survey X cord	632858.45	(feet)
Survey Y cord	636442.10	(feet)
Survey Lat	32.74926250 N	(deg)
Survey Lon	104.03564743 W	(deg)
Rectangular Corr. N/S	375.20 S	(feet)
Rectangular Corr. E/W	4576.65 W	(feet)
Closure Distance	4592.00	(feet)
Direction of Closure	265.31	(deg)
Dogleg Severity	0.00	(deg/100ft)

PathFinder Energy Services, Inc.

Survey Report

YATES PETROLEUM

GRATEFUL BOD FED COM 2H / AP1#: 30-015-38518

SAND TANK; BONE SPRING

Rig:PATTERSON # 511

PathFinder Office Supervisor: JUAN ALCOCER

PathFinder Field Engineers: DAVID BAKER

PRITHWISH DAS

SEAN MOORE

Survey Calculations by RX5 V6.04A using Minimum Curvature

Survey Horiz. Reference:WELLHEAD

Ref Coordinates: LAT:32.45.0.9271 N LON:104.1.14.7280 W

GRID Reference:NAD83 new mexico east Transverse Mercator

Ref GRID Coord: X: 637435.1000 Y: 636817.3000

North Aligned To:GRID NORTH

Total Magnetic Correction: 7.56° EAST TO GRID

Vertical Section Plane: 265.57

Survey Vert. Reference: 18.50' Kelly Bushing To Ground

Altitude:3494.00' Ground To MSL

Measured Depth (ft)	Incl (deg)	Drift Dir. (deg)	TVD (ft)	Vertical Section (ft)	TOTAL Rectangular Offsets (ft) (ft)		Closure Dist Dir (ft) (deg)		DLS (dg/100ft)	TEMP (F)	Course Length (ft)
THE FOLLOWING ARE MS ENERGY MULTI-SHOT GYROSCOPIC SURVEYS.											
0.00	0.00	0.00	0.00	-0.00	0.00 N	0.00 E	0.00@	0.72	0.00	0.00	0.00
200.00	0.25	315.75	200.00	0.28	0.31 N	0.30 W	0.44@	315.90	0.13	0.00	200.00
400.00	0.25	177.99	400.00	0.58	0.19 N	0.59 W	0.62@	287.80	0.23	0.00	200.00
600.00	0.50	3.18	600.00	0.48	0.63 N	0.53 W	0.82@	319.75	0.38	0.00	200.00
800.00	0.50	81.36	799.99	-0.51	1.63 N	0.38 E	1.67@	13.18	0.32	0.00	200.00
1000.00	1.75	69.54	999.95	-4.31	2.83 N	4.11 E	4.98@	55.45	0.63	0.00	200.00
1200.00	1.00	79.82	1199.89	-8.98	4.20 N	8.68 E	9.65@	64.17	0.39	0.00	200.00
1400.00	1.00	89.00	1399.86	-12.46	4.54 N	12.15 E	12.97@	69.50	0.08	0.00	200.00
1600.00	0.75	20.18	1599.84	-14.75	5.80 N	14.34 E	15.47@	67.98	0.50	0.00	200.00
1800.00	0.50	22.23	1799.83	-15.69	7.84 N	15.13 E	17.04@	62.61	0.13	0.00	200.00
2000.00	0.25	55.41	1999.83	-16.45	8.89 N	15.81 E	18.14@	60.65	0.16	0.00	200.00
2200.00	0.50	257.60	2199.82	-15.97	8.95 N	15.32 E	17.75@	59.70	0.37	0.00	200.00
2400.00	1.00	273.78	2399.81	-13.38	8.88 N	12.73 E	15.52@	55.09	0.27	0.00	200.00
2600.00	1.00	241.03	2599.78	-10.06	8.15 N	9.46 E	12.49@	49.25	0.28	0.00	200.00
2800.00	0.25	281.21	2799.77	-8.05	7.39 N	7.50 E	10.53@	45.44	0.41	0.00	200.00
3000.00	0.50	248.37	2999.76	-6.80	7.15 N	6.27 E	9.51@	41.21	0.16	0.00	200.00
3200.00	0.75	264.56	3199.75	-4.66	6.71 N	4.15 E	7.89@	31.75	0.15	0.00	200.00
3400.00	0.75	288.71	3399.73	-2.14	7.00 N	1.61 E	7.19@	12.93	0.16	0.00	200.00
3600.00	0.25	157.87	3599.73	-1.07	7.02 N	0.53 E	7.04@	4.34	0.47	0.00	200.00
3800.00	0.75	230.98	3799.72	-0.13	5.79 N	0.32 W	5.80@	356.84	0.36	0.00	200.00
4000.00	0.25	246.09	3999.71	1.36	4.79 N	1.74 W	5.09@	340.08	0.26	0.00	200.00
4200.00	0.75	233.20	4199.70	2.88	3.83 N	3.18 W	4.98@	320.27	0.25	0.00	200.00
4400.00	1.25	270.33	4399.68	6.16	3.06 N	6.41 W	7.10@	295.49	0.40	0.00	200.00

PathFinder Energy Services, Inc.

Survey Report

YATES PETROLEUM
GRATEFUL BOD FED COM 2H / AP1#: 30-015-38518
SAND TANK; BONE SPRING
RIG:PATTERSON # 511

Page 02/06

Measured Depth (ft)	Incl (deg)	Drift Dir. (deg)	TVD (ft)	Vertical Section (ft)	TOTAL Rectangular Offsets (ft) (ft)		Closure Dist Dir (ft) (deg)		DLS (dg/100ft)	TEMP (F)	Course Length (ft)
4600.00	1.00	287.46	4599.64	9.95	3.59 N	10.26 W	10.87@	289.30	0.21	0.00	200.00
4800.00	1.00	272.58	4799.61	13.30	4.20 N	13.67 W	14.30@	287.07	0.13	0.00	200.00
5000.00	2.25	316.77	4999.53	17.49	7.13 N	18.10 W	19.46@	291.51	0.84	0.00	200.00
5200.00	2.50	285.45	5199.37	24.06	11.16 N	24.99 W	27.37@	294.06	0.65	0.00	200.00
5400.00	1.75	294.57	5399.23	30.83	13.59 N	31.97 W	34.74@	293.03	0.41	0.00	200.00
5600.00	1.25	330.68	5599.16	34.42	16.76 N	35.82 W	39.55@	295.08	0.52	0.00	200.00
5800.00	1.75	295.86	5799.10	37.97	20.00 N	39.64 W	44.40@	296.77	0.51	0.00	200.00
6000.00	2.00	300.99	5998.99	43.46	23.12 N	45.38 W	50.93@	297.00	0.15	0.00	200.00
6200.00	2.00	304.12	6198.87	49.03	26.88 N	51.26 W	57.88@	297.67	0.05	0.00	200.00
6400.00	2.00	299.25	6398.75	54.66	30.54 N	57.19 W	64.84@	298.10	0.09	0.00	200.00
6600.00	1.50	305.41	6598.65	59.58	33.76 N	62.37 W	70.92@	298.43	0.27	0.00	200.00
6800.00	1.25	329.53	6798.60	62.54	37.16 N	65.61 W	75.40@	299.53	0.31	0.00	200.00
7000.00	1.75	3.73	6998.53	63.07	42.09 N	66.52 W	78.72@	302.32	0.50	0.00	200.00
7200.00	1.75	358.17	7198.44	62.50	48.19 N	66.42 W	82.06@	305.96	0.09	0.00	200.00
** TIED INTO MS ENERGY MULTI-SHOT GYROSCOPIC SURVEY @ 7260' MD.											
7260.00	1.75	358.51	7258.41	62.41	50.02 N	66.47 W	83.19@	306.96	0.02	0.00	60.00
THE FOLLOWING ARE PATHFINDER MWD SURVEYS.											
7440.00	1.76	303.24	7438.34	64.45	54.28 N	68.85 W	87.68@	308.25	0.90	115.48	180.00
7472.00	5.10	284.05	7470.28	66.19	54.90 N	70.64 W	89.47@	307.85	10.89	115.48	32.00
7504.00	9.15	278.62	7502.02	70.02	55.62 N	74.54 W	93.01@	306.73	12.82	119.09	32.00
7536.00	13.54	274.80	7533.39	76.20	56.32 N	80.79 W	98.49@	304.88	13.91	119.09	32.00
7567.00	18.29	272.27	7563.19	84.62	56.82 N	89.28 W	105.82@	302.47	15.48	119.09	31.00
7599.00	22.95	270.44	7593.14	95.83	57.06 N	100.54 W	115.60@	299.58	14.70	122.71	32.00
7631.00	27.26	269.12	7622.11	109.37	57.00 N	114.11 W	127.55@	296.54	13.58	122.71	32.00
7663.00	30.34	267.45	7650.15	124.76	56.53 N	129.52 W	141.31@	293.58	9.95	119.09	32.00
7694.00	32.98	266.22	7676.53	141.03	55.62 N	145.76 W	156.01@	290.89	8.77	122.71	31.00
7726.00	36.58	264.11	7702.81	159.28	54.07 N	163.94 W	172.63@	288.25	11.86	126.32	32.00

PathFinder Energy Services, Inc.

Survey Report

YATES PETROLEUM
GRATEFUL BOD FED COM 2H / AP1#: 30-015-38518
SAND TANK; BONE SPRING
RIG: PATTERSON # 511

Page 03/06

Measured Depth (ft)	Incl (deg)	Drift Dir. (deg)	TVD (ft)	Vertical Section (ft)	TOTAL Rectangular Offsets (ft)		Closure Dist Dir (ft) (deg)		DLS (dg/100ft)	TEMP (F)	Course Length (ft)
7757.00	40.71	262.00	7727.02	178.61	51.71 N	183.15 W	190.31@	285.77	13.98	126.32	31.00
7789.00	43.88	260.68	7750.69	200.08	48.46 N	204.43 W	210.10@	283.34	10.29	126.32	32.00
7821.00	46.08	259.63	7773.32	222.60	44.59 N	226.72 W	231.06@	281.13	7.26	126.32	32.00
7853.00	48.72	259.63	7794.98	246.02	40.35 N	249.89 W	253.12@	279.17	8.25	126.32	32.00
7884.00	51.79	260.16	7814.80	269.74	36.17 N	273.35 W	275.73@	277.54	9.99	126.32	31.00
7916.00	55.13	260.51	7833.85	295.34	31.86 N	298.69 W	300.39@	276.09	10.47	129.94	32.00
7948.00	58.21	259.72	7851.43	321.95	27.27 N	325.03 W	326.17@	274.80	9.84	126.32	32.00
7980.00	59.71	258.66	7867.93	349.20	22.12 N	351.96 W	352.65@	273.60	5.48	126.32	32.00
8012.00	60.23	258.05	7883.94	376.68	16.53 N	379.09 W	379.45@	272.50	2.32	126.32	32.00
8044.00	62.96	258.84	7899.16	404.61	10.90 N	406.67 W	406.81@	271.53	8.80	126.32	32.00
8076.00	66.83	259.19	7912.74	433.39	5.38 N	435.11 W	435.14@	270.71	12.13	126.32	32.00
8107.00	70.96	259.37	7923.90	462.13	0.00 S	463.52 W	463.52@	270.00	13.33	126.32	31.00
8139.00	73.78	259.60	7933.59	492.45	5.57 S	493.50 W	493.53@	269.35	8.84	115.48	32.00
8171.00	77.38	259.86	7941.56	523.28	11.09 S	523.99 W	524.11@	268.79	11.28	119.09	32.00
8203.00	82.22	259.09	7947.22	554.59	16.84 S	554.94 W	555.20@	268.26	15.31	119.09	32.00
8236.00	87.58	258.50	7950.15	587.21	23.23 S	587.17 W	587.63@	267.73	16.34	122.71	33.00
8266.00	90.22	257.99	7950.73	616.96	29.34 S	616.54 W	617.23@	267.28	8.96	122.71	30.00
8298.00	92.86	257.24	7949.87	648.64	36.20 S	647.78 W	648.79@	266.80	8.58	122.71	32.00
8356.00	94.18	257.17	7946.31	705.91	49.02 S	704.23 W	705.93@	266.02	2.28	115.48	58.00
8420.00	93.39	257.96	7942.08	769.15	62.77 S	766.59 W	769.16@	265.32	1.74	119.09	64.00
8483.00	92.59	258.66	7938.80	831.56	75.52 S	828.20 W	831.63@	264.79	1.69	119.09	63.00
8547.00	92.59	259.02	7935.91	895.05	87.89 S	890.92 W	895.25@	264.37	0.56	122.71	64.00
8610.00	91.45	260.25	7933.68	957.67	99.22 S	952.86 W	958.01@	264.06	2.66	122.71	63.00
8674.00	91.89	261.56	7931.82	1021.43	109.33 S	1016.02 W	1021.89@	263.86	2.16	122.71	64.00
8738.00	92.51	262.88	7929.36	1085.27	117.99 S	1079.38 W	1085.81@	263.76	2.28	122.71	64.00
8801.00	92.51	264.46	7926.60	1148.18	124.93 S	1141.94 W	1148.75@	263.76	2.51	122.71	63.00
8865.00	90.92	265.52	7924.69	1212.14	130.51 S	1205.66 W	1212.71@	263.82	2.98	122.71	64.00

PathFinder Energy Services, Inc.

Survey Report

YATES PETROLEUM
GRATEFUL BOD FED COM 2H / AP1#: 30-015-38518
SAND TANK; BONE SPRING
RIG:PATTERSON # 511

Page 04/06

Measured Depth (ft)	Incl (deg)	Drift Dir. (deg)	TVD (ft)	Vertical Section (ft)	TOTAL Rectangular Offsets (ft) (ft)		Closure Dist Dir (ft) (deg)		DLS (dg/100ft)	TEMP (F)	Course Length (ft)
8929.00	90.66	265.61	7923.81	1276.14	135.46 S	1269.47 W	1276.67@	263.91	0.43	122.71	64.00
8992.00	90.66	266.05	7923.08	1339.13	140.04 S	1332.29 W	1339.63@	264.00	0.70	122.71	63.00
9056.00	90.75	267.80	7922.29	1403.11	143.48 S	1396.19 W	1403.55@	264.13	2.74	126.32	64.00
9119.00	90.22	267.36	7921.76	1466.06	146.14 S	1459.14 W	1466.44@	264.28	1.09	126.32	63.00
9183.00	89.60	267.45	7921.86	1530.03	149.03 S	1523.07 W	1530.34@	264.41	0.98	126.32	64.00
9246.00	91.19	268.86	7921.42	1592.96	151.06 S	1586.03 W	1593.21@	264.56	3.37	126.32	63.00
9310.00	90.92	268.51	7920.25	1656.86	152.53 S	1650.00 W	1657.04@	264.72	0.69	126.32	64.00
9373.00	90.40	268.60	7919.52	1719.77	154.12 S	1712.98 W	1719.90@	264.86	0.84	126.32	63.00
9437.00	91.19	266.92	7918.63	1783.71	156.62 S	1776.92 W	1783.81@	264.96	2.90	126.32	64.00
9501.00	90.48	266.40	7917.70	1847.69	160.35 S	1840.81 W	1847.78@	265.02	1.37	126.32	64.00
9564.00	90.66	266.66	7917.07	1910.68	164.16 S	1903.69 W	1910.75@	265.07	0.50	129.94	63.00
9627.00	89.96	266.22	7916.73	1973.67	168.07 S	1966.56 W	1973.73@	265.12	1.31	129.94	63.00
9691.00	91.01	266.13	7916.19	2037.66	172.34 S	2030.42 W	2037.72@	265.15	1.65	129.94	64.00
9754.00	91.63	267.45	7914.74	2100.63	175.87 S	2093.30 W	2100.68@	265.20	2.31	129.94	63.00
9818.00	90.84	267.19	7913.36	2164.59	178.86 S	2157.22 W	2164.62@	265.26	1.30	129.94	64.00
9881.00	91.01	267.28	7912.34	2227.55	181.90 S	2220.13 W	2227.57@	265.32	0.31	129.94	63.00
9945.00	92.33	265.96	7910.48	2291.51	185.67 S	2283.99 W	2291.53@	265.35	2.92	129.94	64.00
10008.00	92.24	266.57	7907.97	2354.46	189.77 S	2346.81 W	2354.47@	265.38	0.98	129.94	63.00
10072.00	92.15	266.75	7905.51	2418.40	193.50 S	2410.65 W	2418.41@	265.41	0.31	129.94	64.00
10136.00	92.15	266.84	7903.11	2482.34	197.07 S	2474.51 W	2482.34@	265.45	0.14	133.55	64.00
10200.00	92.07	266.84	7900.76	2546.28	200.60 S	2538.37 W	2546.28@	265.48	0.13	133.55	64.00
10263.00	91.89	266.92	7898.58	2609.22	204.02 S	2601.24 W	2609.23@	265.52	0.31	133.55	63.00
10327.00	91.63	267.10	7896.62	2673.17	207.36 S	2665.12 W	2673.17@	265.55	0.49	133.55	64.00
10390.00	91.54	267.01	7894.87	2736.13	210.60 S	2728.01 W	2736.13@	265.59	0.20	133.55	63.00
10454.00	91.80	266.13	7893.01	2800.09	214.42 S	2791.87 W	2800.09@	265.61	1.43	133.55	64.00
10517.00	91.54	266.57	7891.17	2863.06	218.43 S	2854.71 W	2863.06@	265.62	0.81	133.55	63.00
10581.00	91.54	266.40	7889.45	2927.03	222.36 S	2918.57 W	2927.03@	265.64	0.27	133.55	64.00

PathFinder Energy Services, Inc.

Survey Report

YATES PETROLEUM
GRATEFUL BOD FED COM 2H / AP1#: 30-015-38518
SAND TANK; BONE SPRING
RIG:PATTERSON # 511

Page 05/06

Measured Depth (ft)	Incl (deg)	Drift Dir. (deg)	TVD (ft)	Vertical Section (ft)	TOTAL Rectangular Offsets (ft) (ft)		Closure Dist Dir (ft) (deg)		DLS (dg/100ft)	TEMP (F)	Course Length (ft)
10644.00	91.71	266.31	7887.66	2990.00	226.36 S	2981.42 W	2990.00@	265.66	0.31	133.55	63.00
10708.00	91.45	265.78	7885.90	3053.97	230.77 S	3045.24 W	3053.97@	265.67	0.92	133.55	64.00
10771.00	90.31	264.46	7884.93	3116.96	236.13 S	3108.00 W	3116.96@	265.66	2.77	133.55	63.00
10835.00	90.04	264.99	7884.74	3180.95	242.01 S	3171.73 W	3180.95@	265.64	0.93	129.94	64.00
10898.00	89.96	265.96	7884.74	3243.95	246.98 S	3234.53 W	3243.95@	265.63	1.55	133.55	63.00
10962.00	90.75	266.22	7884.34	3307.94	251.35 S	3298.38 W	3307.95@	265.64	1.30	133.55	64.00
11026.00	92.42	265.34	7882.57	3371.92	256.06 S	3362.18 W	3371.92@	265.64	2.95	133.55	64.00
11089.00	91.89	265.34	7880.20	3434.87	261.17 S	3424.93 W	3434.87@	265.64	0.84	133.55	63.00
11152.00	91.71	265.34	7878.22	3497.84	266.29 S	3487.69 W	3497.84@	265.63	0.29	133.55	63.00
11216.00	91.63	265.87	7876.36	3561.81	271.19 S	3551.48 W	3561.81@	265.63	0.84	133.55	64.00
11279.00	91.98	266.05	7874.37	3624.78	275.63 S	3614.29 W	3624.78@	265.64	0.63	133.55	63.00
11343.00	91.71	265.69	7872.31	3688.75	280.23 S	3678.09 W	3688.75@	265.64	0.70	133.55	64.00
11406.00	90.92	263.50	7870.87	3751.72	286.16 S	3740.79 W	3751.72@	265.63	3.70	137.17	63.00
11470.00	91.45	263.41	7869.54	3815.66	293.46 S	3804.36 W	3815.66@	265.59	0.84	137.17	64.00
11533.00	91.63	263.50	7867.85	3878.59	300.64 S	3866.92 W	3878.59@	265.55	0.32	137.17	63.00
11597.00	91.71	263.59	7865.98	3942.52	307.83 S	3930.49 W	3942.53@	265.52	0.19	137.17	64.00
11660.00	91.63	263.41	7864.15	4005.46	314.96 S	3993.06 W	4005.46@	265.49	0.31	133.55	63.00
11724.00	90.75	263.59	7862.82	4069.40	322.20 S	4056.63 W	4069.41@	265.46	1.40	133.55	64.00
11787.00	90.40	263.85	7862.19	4132.36	329.09 S	4119.25 W	4132.38@	265.43	0.69	133.55	63.00
11851.00	90.66	264.82	7861.60	4196.35	335.41 S	4182.94 W	4196.36@	265.42	1.57	137.17	64.00
11915.00	90.84	264.46	7860.76	4260.33	341.39 S	4246.65 W	4260.35@	265.40	0.63	137.17	64.00
11978.00	91.98	264.29	7859.21	4323.30	347.56 S	4309.33 W	4323.32@	265.39	1.83	137.17	63.00
12042.00	92.07	264.38	7856.95	4387.24	353.87 S	4372.97 W	4387.27@	265.37	0.20	137.17	64.00
12106.00	92.42	263.85	7854.44	4451.17	360.43 S	4436.59 W	4451.20@	265.36	0.99	137.17	64.00
12169.00	92.86	264.02	7851.54	4514.08	367.08 S	4499.17 W	4514.12@	265.34	0.75	137.17	63.00
STRAIGHT-LINE PROJECTION TO BIT DEPTH AT 12247' MD.											
12247.00	92.86	264.02	7847.65	4591.95	375.20 S	4576.65 W	4592.00@	265.31	0.00	0.00	78.00

PathFinder Energy Services, Inc.

Survey Report

YATES PETROLEUM
GRATEFUL BOD FED COM 2H / AP1#: 30-015-38518
SAND TANK; BONE SPRING
RIG:PATTERSON # 511

Page 06/06

**** The survey data at tie-in point was furnished by a recognized survey company and entered as submitted. Survey stations above the tie-in point represent recalculated data by PathFinder Energy Services, Inc. and may reflect minor changes due to rounding differences between survey programs. Only survey stations taken by qualified PathFinder personnel are subject to certification.**



A Schlumberger Company

TIE-IN SURVEY INFORMATION SHEET**CLIENT INFORMATION**

CLIENT:	YATES PETROLEUM		
LEASE / WELL No.:	GRATEFUL BOD FED COM	2H	
WELL LOCATION:	EDDY COUNTY		
COUNTY / STATE / COUNTRY:	EDDY	NEW MEXICO	USA
RIG:	PATTERSON 511		
API WELL No:	30-015-38518		
JOB No:	12MLD0154		
P.O. / AFE No.	102960		
DIRECTIONAL COMPANY:	PES		

WELL SITE INFORMATION

TOTAL MAGNETIC CORRECTION (TMC):			
On Wall Plat:	7.56	LWD Calculated:	7.558
Agreed Upon:		7.56	
X =	637435.100000	Feet	Y = 636817.300000
		Feet	
SITE LATITUDE:	32.750258	SITE LONGITUDE:	104.020758
GRID SYSTEM:	TRUE ☐ UTM ☐ LAMBERT ☒	ZONE:	NEW MEXICO EAST
PROPOSED DRIFT DIRECTION:	265.57		
KELLY BUSHING ELEVATION:	18.5		
ALTITUDE:	3494	Feet	WATER DEPTH:
		Feet	

TIE-IN SURVEY

MEASURED DEPTH:	7260		
DRIFT ANGLE:	1.75		
DRIFT DIRECTION:	358.51		
TRUE VERTICAL DEPTH:	7258.41		
VERTICAL SECTION:	62.41		
RECTANGULAR COORDINATE (N / S) :	50.02 N		
RECTANGULAR COORDINATE (E / W) :	66.47 W		
CLOSURE DISTANCE / DIRECTION:	83.19	306.96	
SURVEY CALCULATION METHOD:	AA ☐	MC ☒	RC ☐ BT ☐
SOURCE OF TIE-IN DATA (COMPANY):	MS ENERGY		
COPY OF TIE-IN SURVEY REPORT	☒ YES		☐ NO

WELL PLAN

KICKOFF DEPTH:	7439	TOTAL DEPTH:	12380
KICKOFF ANGLE:	0	MAX ANGLE:	93.05

PES Engineers:

D.BAKER

**Signature of both field engineers required if applicable

P.DAS

Directional Driller:

DATE: 24-Apr-2012

MS ENERGY SERVICES
ODESSA, TEXAS

OB NUMBER: SVCO-120598

WELL NAME: GRATEFUL BOD FED COM #2H

INRUN SURVEY
BY MINIMUM CURVATURE

MEAS. DEPTH	VERT. DEPTH	VERT. SECT.	L/R PROP.	INCL	BEARING AZIMUTH	COORDINATES LATITUDE DEPARTURE	D-LEG /100	D-LEG /CL	STATION DISP.	DISPLACEMENT DIRECTION
0.0	0.00	0.00	0.000	00.00	000.00	0.00 N 0.00 E	0.00		0.00 AT	000.00
200.0	200.00	0.28	0.335	00.25	315.75	0.31 N 0.30 W	0.13	0.25	0.44 AT	315.75
400.0	400.00	0.58	0.234	00.25	177.99	0.19 N 0.59 W	0.23	0.47	0.62 AT	287.66
600.0	600.00	0.48	0.663	00.50	003.18	0.62 N 0.53 W	0.37	0.75	0.82 AT	319.67
800.0	799.99	-0.51	1.592	00.50	081.36	1.63 N 0.38 E	0.32	0.63	1.67 AT	013.19
1000.0	999.95	-4.31	2.500	01.75	069.54	2.83 N 4.11 E	0.63	1.26	4.98 AT	055.46
1200.0	1199.89	-8.98	3.518	01.00	079.82	4.20 N 8.68 E	0.39	0.79	9.65 AT	064.18
1400.0	1399.86	-12.46	3.588	01.00	089.00	4.54 N 12.15 E	0.08	0.16	12.97 AT	069.51
1600.0	1599.84	-14.75	4.674	00.75	020.18	5.80 N 14.34 E	0.51	1.01	15.47 AT	067.99
1800.0	1799.83	-15.69	6.644	00.50	022.23	7.84 N 15.13 E	0.13	0.25	17.03 AT	062.61
2000.0	1999.82	-16.45	7.643	00.25	055.41	8.89 N 15.81 E	0.16	0.32	18.14 AT	060.65
2200.0	2199.82	-15.97	7.741	00.50	257.60	8.95 N 15.32 E	0.37	0.74	17.74 AT	059.70
2400.0	2399.81	-13.38	7.870	01.00	273.78	8.88 N 12.73 E	0.27	0.54	15.52 AT	055.10
2600.0	2599.78	-10.06	7.394	01.00	241.03	8.15 N 9.46 E	0.28	0.56	12.49 AT	049.26
2800.0	2799.76	-8.05	6.787	00.25	281.21	7.39 N 7.50 E	0.41	0.82	10.53 AT	045.45
3000.0	2999.76	-6.80	6.646	00.50	248.37	7.15 N 6.27 E	0.16	0.32	9.51 AT	041.22
3200.0	3199.75	-4.66	6.365	00.75	264.56	6.71 N 4.15 E	0.15	0.30	7.89 AT	031.76
3400.0	3399.73	-2.14	6.856	00.75	288.71	7.00 N 1.61 E	0.16	0.31	7.18 AT	012.94
3600.0	3599.73	-1.07	6.955	00.25	157.87	7.02 N 0.53 E	0.47	0.93	7.04 AT	004.34
3800.0	3799.72	-0.13	5.796	00.75	230.98	5.79 N 0.32 W	0.36	0.72	5.80 AT	356.84
4000.0	3999.71	1.36	4.908	00.25	246.09	4.79 N 1.74 W	0.26	0.51	5.09 AT	340.08
4200.0	4199.70	2.88	4.061	00.75	233.20	3.83 N 3.18 W	0.25	0.51	4.98 AT	320.25
4400.0	4399.67	6.16	3.542	01.25	270.33	3.06 N 6.41 W	0.40	0.79	7.10 AT	295.48
4600.0	4599.64	9.95	4.373	01.00	287.46	3.59 N 10.26 W	0.21	0.42	10.87 AT	289.30
4800.0	4799.61	13.30	5.237	01.00	272.58	4.19 N 13.67 W	0.13	0.26	14.30 AT	287.06
5000.0	4999.53	17.49	8.510	02.25	316.77	7.13 N 18.10 W	0.84	1.68	19.45 AT	291.51
5200.0	5199.36	24.06	13.053	02.50	285.45	11.16 N 24.99 W	0.65	1.30	27.37 AT	294.05
5400.0	5399.23	30.83	16.017	01.75	294.57	13.59 N 31.98 W	0.41	0.82	34.74 AT	293.02
5600.0	5599.16	34.42	19.476	01.25	330.68	16.76 N 35.82 W	0.52	1.04	39.55 AT	295.07
5800.0	5799.09	37.97	22.996	01.75	295.86	19.99 N 39.64 W	0.51	1.02	44.39 AT	296.77
6000.0	5998.99	43.46	26.559	02.00	300.99	23.12 N 45.38 W	0.15	0.30	50.93 AT	297.00
6200.0	6198.87	49.03	30.756	02.00	304.12	26.88 N 51.26 W	0.05	0.11	57.88 AT	297.67
6400.0	6398.74	54.66	34.867	02.00	299.25	30.54 N 57.19 W	0.08	0.17	64.84 AT	298.10
6600.0	6598.65	59.58	38.479	01.50	305.41	33.76 N 62.37 W	0.27	0.53	70.92 AT	298.43
6800.0	6798.59	62.54	42.116	01.25	329.53	37.16 N 65.61 W	0.31	0.62	75.40 AT	299.53
7000.0	6998.53	63.07	47.099	01.75	003.73	42.09 N 66.52 W	0.50	1.00	78.71 AT	302.32
7200.0	7198.44	62.50	53.173	01.75	358.17	48.19 N 66.42 W	0.08	0.17	82.06 AT	305.96
7260.0	7258.41	62.41	55.003	01.75	358.51	50.02 N 66.47 W	0.02	0.01	83.19 AT	306.96

E-IN

* THE HORIZONTAL DISPLACEMENT AT THE DEPTH OF *
* ***** *
* 7260.00 FEET EQUALS 83.19 FEET AT 306.96 *
* ***** *



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PathFinder Energy Services, Inc. Magnetic & Grid Calculations

Yates Petroleum Corp.
Grateful BOD Federal Com #2H
Eddy County, NM
Rig:Patterson 511

Thu Apr 19 15:36:22 2012

Coordinates

Latitude: 32.750258 N (32 deg. 45 min. 0.9271 sec.)
Longitude: 104.020758 W (-104 deg. 1 min. 14.7280 sec.)
Elevation: 3512.50 feet.
Calculation Date: Apr/19/2012

Magnetic Calculations

Model: IGRF2010
Dip Angle: 60.5752 degrees
Total Magnetic Field: 0.48798 gauss
Magnetic Declination: 7.729427 degrees
Horizontal Intensity: 0.239737 gauss
To Convert a Magnetic Dir. to a TRUE North Dir. Add 7.729427 Degr

Transverse Mercator Grid Calculations NAD83

Grid System: Transverse Mercator: new mexico east
Ellipsoid: GRS80
X: 637435.1000 feet
Y: 636817.3000 feet
True to Grid: (convergence) -0.169098 degrees
Magnetic to Grid: 7.560329 degrees
To Convert a Magnetic Dir. to a GRID dir. Add 7.560329 Degr.

PathFinder Energy Services, Inc.

Magnetic & Grid Calculations

ON LOCATION

Tue Apr 24 12:40:42 2012

Coordinates

Latitude: 32.750258 N (32 deg. 45 min. 0.9271 sec.)
Longitude: 104.020758 W (-104 deg. 1 min. 14.7280 sec.)
Elevation: 3512.50 feet.
Calculation Date: Apr/24/2012

Magnetic Calculations

Model: IGRF2010
Dip Angle: 60.5749 degrees
Total Magnetic Field: 0.48797 gauss
Magnetic Declination: 7.727746 degrees
Horizontal Intensity: 0.239733 gauss
To Convert a Magnetic Dir. to a TRUE North Dir. Add 7.727746 Degs

Transverse Mercator Grid Calculations NAD83

Grid System: Transverse Mercator: new mexico east
Ellipsoid: GRS80
X: 637435.1000 feet
Y: 636817.3000 feet
True to Grid: (convergence) -0.169098 degrees
Magnetic to Grid: 7.558648 degrees
To Convert a Magnetic Dir. to a GRID dir. Add 7.558648 Degs.