



EOG Resources, Inc.

Eddy County
Holly 5 Fed Com
Holly 5 Fed Com #3H
OH

Survey: MWD

Pathfinder X & Y Survey Report

26 March, 2009

PATHFINDER

30.015.86916



Pathfinder Energy Services
Pathfinder X & Y Survey Report



Company: EOG Resources, Inc.
Project: Eddy County
Site: Holly 5 Fed Com
Well: Holly 5 Fed Com #3H
Wellbore: OH
Design: OH

Local Co-ordinate Reference: Well Holly 5 Fed Com #3H
TVD Reference: WELL @ 3579.00ft (McVay 4)
MD Reference: WELL @ 3579.00ft (McVay 4)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 2003.16 Single User Db

Project	Eddy County		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site		Holly 5 Fed Com			
Site Position:		Northing:		644,271.300 ft	
From:	Map	Easting:		603,575.300 ft	
Position Uncertainty:		Slot Radius:		"	
0.00 ft				Latitude:	
				32° 46' 14.667 N	
				Longitude:	
				103° 59' 46.916 W	
				Grid Convergence:	
				0.18 °	

Well	Holly 5 Fed Com #3H					
Well Position	+N/-S	0.00 ft	Northing:	645,843.100 ft	Latitude:	32° 46' 30.263 N
	+E/-W	0.00 ft	Easting:	602,220.200 ft	Longitude:	104° 0' 2.729 W
Position Uncertainty	0.00 ft	Wellhead Elevation:	ft	Ground Level:	3,561.00 ft	

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	3/13/2009	8.08	60.69	49,152

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	92.24	



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Survey Program		Date 3/26/2009			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
100.00	6,980.00	GYRO (OH)	Gyro	Gyro	
7,137.00	12,015.00	MWD (OH)	MWD	MWD - Standard	

MD (ft)	Inc (")	Azi (")	TVD (ft)	TVDSS (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	D Leg (°/100ft)	Northing (ft)	Easting (ft)
6,980.00	3.40	5.09	6,976.29	3,397.29	125.23	10.25	5.35	0.00	645,968.33	602,230.45
7,137.00	3.17	4.16	7,133.03	3,554.03	134.20	10.98	5.73	0.15	645,977.30	602,231.18
7,200.00	3.17	11.41	7,195.94	3,616.94	137.64	11.45	6.06	0.64	645,980.74	602,231.65
7,231.00	3.17	50.37	7,226.89	3,647.89	139.03	12.28	6.84	6.82	645,982.13	602,232.48
7,263.00	5.80	91.77	7,258.80	3,679.80	139.55	14.58	9.11	12.54	645,982.65	602,234.78
7,294.00	9.32	104.50	7,289.53	3,710.53	138.87	18.58	13.13	12.51	645,981.97	602,238.78
7,325.00	12.84	106.35	7,319.95	3,740.95	137.27	24.31	18.93	11.41	645,980.37	602,244.51
7,357.00	15.83	111.45	7,350.95	3,771.95	134.67	31.79	26.50	10.13	645,977.77	602,251.99
7,388.00	17.85	111.78	7,380.62	3,801.62	131.36	40.14	34.97	6.52	645,974.46	602,260.34
7,420.00	20.22	112.67	7,410.87	3,831.87	127.41	49.80	44.78	7.46	645,970.51	602,270.00
7,450.00	22.42	113.98	7,438.81	3,859.81	123.09	59.81	54.95	7.50	645,966.19	602,280.01
7,481.00	25.24	115.76	7,467.17	3,888.17	117.81	71.16	66.51	9.39	645,960.91	602,291.36
7,512.00	28.14	115.18	7,494.86	3,915.86	111.83	83.74	79.30	9.39	645,954.93	602,303.94
7,543.00	31.57	114.46	7,521.74	3,942.74	105.36	97.74	93.55	11.12	645,948.46	602,317.94
7,575.00	35.61	112.57	7,548.39	3,969.39	98.31	113.98	110.05	13.04	645,941.41	602,334.18
7,607.00	39.83	112.13	7,573.70	3,994.70	90.87	132.08	128.43	13.21	645,933.97	602,352.28
7,638.00	44.05	111.45	7,596.75	4,017.75	83.18	151.32	147.95	13.69	645,926.28	602,371.52
7,670.00	46.52	111.42	7,619.27	4,040.27	74.87	172.48	169.42	7.72	645,917.97	602,392.68
7,701.00	48.45	111.69	7,640.22	4,061.22	66.48	193.73	190.99	6.26	645,909.58	602,413.93
7,733.00	50.65	111.84	7,660.97	4,081.97	57.45	216.35	213.94	6.88	645,900.55	602,436.55
7,764.00	53.46	111.35	7,680.04	4,101.04	48.46	239.08	237.00	9.15	645,891.56	602,459.28

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Survey										
MD (ft)	Inc (°)	Azi (°)	TVD (ft)	TVSS (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)	Northing (ft)	Easting (ft)
7,796.00	57.42	110.58	7,698.18	4,119.18	39.03	263.68	261.95	12.53	645,882.13	602,483.88
7,827.00	60.85	108.97	7,714.09	4,135.09	30.04	288.72	287.32	11.93	645,873.14	602,508.92
7,858.00	62.17	107.79	7,728.87	4,149.87	21.45	314.57	313.49	5.42	645,864.55	602,534.77
7,890.00	63.93	105.60	7,743.38	4,164.38	13.26	341.89	341.11	8.21	645,856.36	602,562.09
7,921.00	66.30	103.41	7,756.42	4,177.42	6.22	369.12	368.59	9.98	645,849.32	602,589.32
7,952.00	68.59	101.46	7,768.31	4,189.31	0.06	397.07	396.76	9.40	645,843.16	602,617.27
7,983.00	71.14	100.13	7,778.98	4,199.98	-5.39	425.66	425.54	9.16	645,837.71	602,645.86
8,014.00	74.13	99.14	7,788.24	4,209.24	-10.34	454.82	454.88	10.12	645,832.76	602,675.02
8,045.00	77.47	98.48	7,795.84	4,216.84	-14.94	484.52	484.73	10.97	645,828.16	602,704.72
8,076.00	80.81	97.81	7,801.68	4,222.68	-19.25	514.65	515.01	10.98	645,823.85	602,734.85
8,170.00	88.81	94.76	7,810.18	4,231.18	-29.47	607.62	608.31	9.10	645,813.63	602,827.82
8,264.00	89.87	93.77	7,811.26	4,232.26	-36.46	701.35	702.24	1.54	645,806.64	602,921.55
8,357.00	89.16	93.47	7,812.05	4,233.05	-42.33	794.16	795.21	0.83	645,800.77	603,014.36
8,450.00	89.08	93.10	7,813.48	4,234.48	-47.66	887.00	888.18	0.41	645,795.44	603,107.20
8,543.00	89.43	92.35	7,814.68	4,235.68	-52.08	979.88	981.17	0.89	645,791.02	603,200.08
8,637.00	89.25	92.56	7,815.77	4,236.77	-56.11	1,073.79	1,075.16	0.29	645,786.99	603,293.99
8,730.00	89.78	91.87	7,816.55	4,237.55	-59.70	1,166.72	1,168.16	0.94	645,783.40	603,386.92
8,823.00	89.69	91.51	7,816.98	4,237.98	-62.45	1,259.67	1,261.15	0.40	645,780.65	603,479.87
8,917.00	89.78	91.66	7,817.42	4,238.42	-65.05	1,353.64	1,355.15	0.19	645,778.05	603,573.84
9,011.00	90.13	91.97	7,817.49	4,238.49	-68.02	1,447.59	1,449.14	0.50	645,775.08	603,667.79
9,104.00	90.48	92.19	7,817.00	4,238.00	-71.40	1,540.53	1,542.14	0.44	645,771.70	603,760.73
9,197.00	90.66	92.15	7,816.07	4,237.07	-74.92	1,633.46	1,635.14	0.20	645,768.18	603,853.66
9,290.00	89.34	92.56	7,816.07	4,237.07	-78.74	1,726.38	1,728.13	1.49	645,764.36	603,946.58
9,383.00	89.25	92.42	7,817.22	4,238.22	-82.78	1,819.28	1,821.13	0.18	645,760.32	604,039.48
9,476.00	89.60	92.32	7,818.15	4,239.15	-86.63	1,912.20	1,914.12	0.39	645,756.47	604,132.40
9,569.00	88.46	92.56	7,819.72	4,240.72	-90.59	2,005.10	2,007.11	1.25	645,752.51	604,225.30
9,663.00	88.20	92.59	7,822.46	4,243.46	-94.81	2,098.96	2,101.06	0.28	645,748.29	604,319.16

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9,757.00	88.55	92.69	7,825.13	4,246.13	-99.13	2,192.82	2,195.02	0.39	645,743.97	604,413.02	
9,851.00	91.36	95.63	7,825.20	4,246.20	-105.95	2,286.56	2,288.95	4.33	645,737.15	604,506.76	
9,944.00	91.71	92.81	7,822.71	4,243.71	-112.79	2,379.26	2,381.85	3.05	645,730.31	604,599.46	
10,037.00	90.84	91.86	7,820.64	4,241.64	-116.58	2,472.16	2,474.83	1.38	645,726.52	604,692.36	
10,131.00	88.99	91.41	7,820.78	4,241.78	-119.26	2,566.12	2,568.82	2.03	645,723.84	604,786.32	
10,224.00	88.99	91.17	7,822.42	4,243.42	-121.36	2,659.08	2,661.79	0.26	645,721.74	604,879.28	
10,316.00	88.81	90.54	7,824.19	4,245.19	-122.73	2,751.05	2,753.75	0.71	645,720.37	604,971.25	
10,410.00	89.16	90.76	7,825.85	4,246.85	-123.79	2,845.03	2,847.70	0.44	645,719.31	605,065.23	
10,504.00	89.78	90.11	7,826.72	4,247.72	-124.51	2,939.02	2,941.64	0.96	645,718.59	605,159.22	
10,598.00	88.72	90.28	7,827.95	4,248.95	-124.83	3,033.01	3,035.57	1.14	645,718.27	605,253.21	
10,690.00	87.49	90.46	7,830.99	4,251.99	-125.42	3,124.96	3,127.47	1.35	645,717.68	605,345.16	
10,783.00	87.49	89.90	7,835.07	4,256.07	-125.71	3,217.87	3,220.32	0.60	645,717.39	605,438.07	
10,877.00	87.32	89.84	7,839.32	4,260.32	-125.50	3,311.77	3,314.15	0.19	645,717.60	605,531.97	
10,971.00	88.02	89.69	7,843.15	4,264.15	-125.12	3,405.69	3,407.98	0.76	645,717.98	605,625.89	
11,066.00	86.61	90.01	7,847.60	4,268.60	-124.87	3,500.59	3,502.79	1.52	645,718.23	605,720.79	
11,161.00	87.05	89.78	7,852.85	4,273.85	-124.69	3,595.44	3,597.57	0.52	645,718.41	605,815.64	
11,255.00	88.29	89.57	7,856.67	4,277.67	-124.16	3,689.36	3,691.39	1.34	645,718.94	605,909.56	
11,350.00	88.29	90.50	7,859.51	4,280.51	-124.22	3,784.32	3,786.28	0.98	645,718.88	606,004.52	
11,445.00	86.53	91.12	7,863.80	4,284.80	-125.56	3,879.20	3,881.15	1.96	645,717.54	606,099.40	
11,540.00	87.05	91.29	7,869.12	4,290.12	-127.55	3,974.03	3,975.98	0.58	645,715.55	606,194.23	
11,635.00	87.93	90.63	7,873.28	4,294.28	-129.14	4,068.93	4,070.87	1.16	645,713.96	606,289.13	
11,761.00	87.32	91.49	7,878.50	4,299.50	-131.47	4,194.80	4,196.73	0.84	645,711.63	606,415.00	
11,937.00	89.69	91.36	7,883.09	4,304.09	-135.85	4,370.67	4,372.64	1.35	645,707.25	606,590.87	
12,014.00	89.69	91.36	7,883.51	4,304.51	-137.68	4,447.65	4,449.63	0.00	645,705.42	606,667.85	
Straight Line Proj to Bit @12015.00'MD, 7883.51'TVD, 89.69'INC, 91.36'AZI, 4450.63'VS											
12,015.00	89.69	91.36	7,883.51	4,304.51	-137.70	4,448.65	4,450.63	0.00	645,705.40	606,668.85	

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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 OH(H5#3)	0.00	0.00	7,905.00	-176.10	4,500.30	645,667.000	606,720.500	32° 46' 28.377 N	103° 59' 10.026 W
- survey misses by 67.86ft at 12015.00ft MD (7883.51 TVD, -137.70 N, 4448.65 E)									
- Point									

Survey Annotations				
Measured Depth	Vertical Depth	Local Coordinates		Comment
(ft)	(ft)	+N/-S (ft)	+E/-W (ft)	
12,014.00	7,883.51	-137.68	4,447.65	Straight Line Proj to Bit @12015.00'MD, 7883.51'TVD, 89.69°INC, 91.3

Checked By: _____ Approved By: _____ Date: _____