



EOG Resources, Inc.

Eddy County
Duggan 12 Fed Com
#3H
OH

Survey: MWD #1

Pathfinder X & Y Survey Report

27 September, 2010

PATHFINDER®
A Schlumberger Company

3D-015-37666

Company:	EOG Resources, Inc.	Local Co-ordinate Reference:	Well #3H
Project:	Eddy County	TVD Reference:	WELL @ 3542.10ft (19'KB Correction)
Site:	Duggan 12 Fed Com	MD Reference:	WELL @ 3542.10ft (19'KB Correction)
Well:	#3H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Midland Database

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	Duggan 12 Fed Com		
Site Position:		Northing:	642,684.400 ft
From:	Map	Easting:	596,337.100 ft
Position Uncertainty:	0.00 ft	Slot Radius:	"
		Latitude:	32° 45' 59.184 N
		Longitude:	104° 1' 11.744 W
		Grid Convergence:	0.17 °

Well	#3H		
Well Position	+N/-S	0.00 ft	Northing: 642,684.400 ft
	+E/-W	0.00 ft	Easting: 596,337.100 ft
Position Uncertainty		0.00 ft	Wellhead Elevation: ft
			Latitude: 32° 45' 59.184 N
			Longitude: 104° 1' 11.744 W
			Ground Level: 3,523.10 ft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	09/13/10	7.93	60.63	48,967

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	273.78	

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Wellbore: OH
Design: OH

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North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Midland Database

Survey Program Date 09/27/10

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
100.00	7,200.00	GYRO (OH)	CT_GYRO_MS	Continuous Gyro Multishot
7,232.00	12,155.00	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)
7,200.00	0.82	314.70	7,198.87	3,656.77	95.80	0.19	6.13	0.00	642,780.20	596,337.29
7,232.00	1.49	305.51	7,230.86	3,688.76	96.21	-0.32	6.66	2.17	642,780.61	596,336.78
7,264.00	5.28	284.23	7,262.80	3,720.70	96.81	-2.08	8.46	12.28	642,781.21	596,335.02
7,295.00	10.02	279.00	7,293.52	3,751.42	97.58	-6.13	12.55	15.44	642,781.98	596,330.97
7,326.00	14.42	278.34	7,323.81	3,781.71	98.57	-12.62	19.09	14.20	642,782.97	596,324.48
7,357.00	18.29	280.61	7,353.55	3,811.45	100.02	-21.22	27.77	12.65	642,784.42	596,315.88
7,388.00	21.81	280.53	7,382.66	3,840.56	101.97	-31.67	38.32	11.36	642,786.37	596,305.43
7,418.00	24.53	281.34	7,410.24	3,868.14	104.21	-43.25	50.03	9.13	642,788.61	596,293.85
7,449.00	27.08	277.56	7,438.15	3,896.05	106.41	-56.56	63.45	9.79	642,790.81	596,280.54
7,480.00	30.60	275.66	7,465.30	3,923.20	108.11	-71.41	78.38	11.73	642,792.51	596,265.69
7,511.00	34.29	274.35	7,491.46	3,949.36	109.56	-87.98	95.01	12.12	642,793.96	596,249.12
7,542.00	38.08	273.69	7,516.47	3,974.37	110.83	-106.23	113.31	12.29	642,795.23	596,230.87
7,573.00	40.89	271.44	7,540.40	3,998.30	111.70	-125.92	133.01	10.17	642,796.10	596,211.18
7,604.00	44.23	271.74	7,563.23	4,021.13	112.29	-146.88	153.96	10.79	642,796.69	596,190.22
7,636.00	47.48	272.63	7,585.51	4,043.41	113.17	-169.82	176.91	10.35	642,797.57	596,167.28
7,667.00	51.00	274.11	7,605.75	4,063.65	114.56	-193.25	200.38	11.92	642,798.96	596,143.85
7,698.00	54.34	274.48	7,624.55	4,082.45	116.40	-217.83	225.03	10.82	642,800.80	596,119.27
7,729.00	57.24	275.21	7,641.97	4,099.87	118.57	-243.37	250.66	9.56	642,802.97	596,093.73
7,760.00	59.97	274.08	7,658.12	4,116.02	120.71	-269.74	277.11	9.34	642,805.11	596,067.36
7,791.00	62.78	272.97	7,672.97	4,130.87	122.38	-296.90	304.32	9.59	642,806.78	596,040.20
7,822.00	65.69	272.85	7,686.45	4,144.35	123.80	-324.78	332.23	9.39	642,808.20	596,012.32

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Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Midland Database

Survey										
MD (ft)	Inc (°)	Azi (°)	TVD (ft)	TVDSS (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (%/100ft)	Northing (ft)	Easting (ft)
7,854.00	68.32	272.59	7,698.95	4,156.85	125.19	-354.20	361.68	8.25	642,809.59	595,982.90
7,886.00	71.22	273.17	7,710.01	4,167.91	126.70	-384.18	391.70	9.22	642,811.10	595,952.92
7,917.00	74.22	272.84	7,719.22	4,177.12	128.25	-413.74	421.30	9.73	642,812.65	595,923.36
7,948.00	78.08	272.61	7,726.64	4,184.54	129.68	-443.80	451.38	12.47	642,814.08	595,893.30
7,986.00	81.95	272.85	7,733.22	4,191.12	131.47	-481.17	488.79	10.20	642,815.87	595,855.93
8,017.00	84.77	272.44	7,736.81	4,194.71	132.89	-511.93	519.58	9.19	642,817.29	595,825.17
8,047.00	85.65	272.28	7,739.31	4,197.21	134.12	-541.80	549.46	2.98	642,818.52	595,795.30
8,141.00	91.01	272.57	7,742.05	4,199.95	138.09	-635.64	643.36	5.71	642,822.49	595,701.46
8,235.00	91.01	273.05	7,740.39	4,198.29	142.70	-729.51	737.33	0.51	642,827.10	595,607.59
8,328.00	90.57	273.30	7,739.11	4,197.01	147.85	-822.36	830.32	0.54	642,832.25	595,514.74
8,423.00	91.10	273.13	7,737.73	4,195.63	153.18	-917.20	925.31	0.59	642,837.58	595,419.90
8,517.00	92.77	272.70	7,734.55	4,192.45	157.96	-1,011.02	1,019.24	1.83	642,842.36	595,326.08
8,611.00	92.42	272.70	7,730.30	4,188.20	162.38	-1,104.82	1,113.12	0.37	642,846.78	595,232.28
8,650.00	92.77	272.92	7,728.53	4,186.43	164.29	-1,143.74	1,152.08	1.06	642,848.69	595,193.36
8,736.00	90.40	273.27	7,726.15	4,184.05	168.93	-1,229.57	1,238.03	2.79	642,853.33	595,107.53
8,829.00	89.16	273.27	7,726.51	4,184.41	174.24	-1,322.42	1,331.03	1.33	642,858.64	595,014.68
8,929.00	90.75	272.52	7,726.59	4,184.49	179.29	-1,422.29	1,431.01	1.76	642,863.69	594,914.81
9,022.00	92.59	272.99	7,723.88	4,181.78	183.75	-1,515.13	1,523.95	2.04	642,868.15	594,821.97
9,116.00	92.77	273.05	7,719.48	4,177.38	188.70	-1,608.90	1,617.84	0.20	642,873.10	594,728.20
9,209.00	92.51	273.03	7,715.20	4,173.10	193.63	-1,701.67	1,710.73	0.28	642,878.03	594,635.43
9,301.00	92.86	272.68	7,710.89	4,168.79	198.20	-1,793.46	1,802.62	0.54	642,882.60	594,543.64
9,395.00	93.47	272.69	7,705.70	4,163.60	202.60	-1,887.21	1,896.46	0.65	642,887.00	594,449.89
9,488.00	92.59	272.08	7,700.79	4,158.69	206.47	-1,980.00	1,989.30	1.15	642,890.87	594,357.10
9,551.00	92.15	271.61	7,698.18	4,156.08	208.49	-2,042.91	2,052.21	1.02	642,892.89	594,294.19
9,614.00	92.68	272.08	7,695.53	4,153.43	210.52	-2,105.82	2,115.12	1.12	642,894.92	594,231.28
9,676.00	93.56	272.12	7,692.15	4,150.05	212.79	-2,167.69	2,177.00	1.42	642,897.19	594,169.41
9,770.00	92.51	271.32	7,687.17	4,145.07	215.60	-2,261.51	2,270.81	1.40	642,900.00	594,075.59

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Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Midland Database

Survey										
MD (ft)	Inc (°)	Azi (°)	TVD (ft)	TVDSS (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)	Northing (ft)	Easting (ft)
9,863.00	89.87	270.16	7,685.24	4,143.14	216.80	-2,354.47	2,363.64	3.10	642,901.20	593,982.63
9,956.00	89.34	269.50	7,685.88	4,143.78	216.53	-2,447.47	2,456.42	0.91	642,900.93	593,889.63
10,018.00	90.57	270.29	7,685.93	4,143.83	216.41	-2,509.47	2,518.28	2.36	642,900.81	593,827.63
10,080.00	91.28	271.24	7,684.93	4,142.83	217.24	-2,571.45	2,580.18	1.91	642,901.64	593,765.65
10,111.00	90.75	271.12	7,684.38	4,142.28	217.88	-2,602.44	2,611.14	1.75	642,902.28	593,734.66
10,143.00	91.19	272.06	7,683.84	4,141.74	218.77	-2,634.43	2,643.12	3.24	642,903.17	593,702.67
10,174.00	92.33	271.65	7,682.89	4,140.79	219.77	-2,665.39	2,674.08	3.91	642,904.17	593,671.71
10,205.00	94.18	271.15	7,681.13	4,139.03	220.53	-2,696.33	2,705.01	6.18	642,904.93	593,640.77
10,237.00	93.91	270.77	7,678.87	4,136.77	221.06	-2,728.25	2,736.89	1.45	642,905.46	593,608.85
10,268.00	93.39	270.00	7,676.90	4,134.80	221.27	-2,759.18	2,767.77	2.99	642,905.67	593,577.92
10,299.00	93.21	269.88	7,675.11	4,133.01	221.24	-2,790.13	2,798.65	0.70	642,905.64	593,546.97
10,362.00	93.56	271.15	7,671.39	4,129.29	221.80	-2,853.02	2,861.44	2.09	642,906.20	593,484.08
10,393.00	93.39	271.40	7,669.51	4,127.41	222.49	-2,883.95	2,892.35	0.97	642,906.89	593,453.15
10,455.00	93.65	271.09	7,665.71	4,123.61	223.84	-2,945.82	2,954.17	0.65	642,908.24	593,391.28
10,518.00	94.62	271.31	7,661.16	4,119.06	225.15	-3,008.64	3,016.94	1.58	642,909.55	593,328.46
10,581.00	91.98	270.71	7,657.54	4,115.44	226.26	-3,071.52	3,079.76	4.30	642,910.66	593,265.58
10,643.00	89.87	270.79	7,656.54	4,114.44	227.07	-3,133.51	3,141.66	3.41	642,911.47	593,203.59
10,674.00	89.78	271.02	7,656.63	4,114.53	227.56	-3,164.50	3,172.62	0.80	642,911.96	593,172.60
10,736.00	91.54	271.57	7,655.92	4,113.82	228.96	-3,226.48	3,234.56	2.97	642,913.36	593,110.62
10,798.00	92.15	272.42	7,653.92	4,111.82	231.12	-3,288.41	3,296.49	1.69	642,915.52	593,048.69
10,860.00	92.51	272.30	7,651.40	4,109.30	233.67	-3,350.31	3,358.42	0.61	642,918.07	592,986.79
10,922.00	93.12	272.73	7,648.36	4,106.26	236.39	-3,412.17	3,420.33	1.20	642,920.79	592,924.93
10,985.00	92.15	273.12	7,645.46	4,103.36	239.60	-3,475.02	3,483.26	1.66	642,924.00	592,862.08
11,047.00	92.15	272.41	7,643.13	4,101.03	242.59	-3,536.91	3,545.20	1.14	642,926.99	592,800.19
11,110.00	91.01	271.59	7,641.40	4,099.30	244.79	-3,599.84	3,608.15	2.23	642,929.19	592,737.26
11,173.00	91.19	270.94	7,640.19	4,098.09	246.18	-3,662.81	3,671.08	1.07	642,930.58	592,674.29
11,235.00	91.80	271.33	7,638.57	4,096.47	247.40	-3,724.78	3,732.99	1.17	642,931.80	592,612.32

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Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Midland Database

Survey											
MD (ft)	Inc (°)	Azi (°)	TVD (ft)	TVDSS (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)	Northing (ft)	Easting (ft)	
11,298.00	92.33	271.44	7,636.30	4,094.20	248.93	-3,787.72	3,795.89	0.86	642,933.33	592,549.38	
11,360.00	92.59	271.57	7,633.64	4,091.54	250.55	-3,849.64	3,857.79	0.47	642,934.95	592,487.46	
11,422.00	91.19	272.35	7,631.59	4,089.49	252.67	-3,911.57	3,919.72	2.58	642,937.07	592,425.53	
11,485.00	91.63	272.57	7,630.04	4,087.94	255.37	-3,974.49	3,982.68	0.78	642,939.77	592,362.61	
11,549.00	92.24	273.10	7,627.88	4,085.78	258.54	-4,038.38	4,046.64	1.26	642,942.94	592,298.72	
11,610.00	93.30	273.26	7,624.94	4,082.84	261.92	-4,099.21	4,107.56	1.76	642,946.32	592,237.89	
11,674.00	91.36	273.47	7,622.33	4,080.23	265.67	-4,163.05	4,171.50	3.05	642,950.07	592,174.05	
11,736.00	91.63	273.53	7,620.72	4,078.62	269.46	-4,224.91	4,233.48	0.45	642,953.86	592,112.19	
11,799.00	91.80	273.35	7,618.83	4,076.73	273.23	-4,287.77	4,296.45	0.39	642,957.63	592,049.33	
11,862.00	92.33	273.20	7,616.56	4,074.46	276.83	-4,350.62	4,359.41	0.87	642,961.23	591,986.48	
11,956.00	91.98	271.54	7,613.03	4,070.93	280.71	-4,444.47	4,453.31	1.80	642,965.11	591,892.63	
12,077.00	92.42	271.04	7,608.38	4,066.28	283.44	-4,565.35	4,574.11	0.55	642,967.84	591,771.75	
12,155.00	92.42	271.04	7,605.09	4,062.99	284.85	-4,643.27	4,651.95	0.00	642,969.25	591,693.83	
BHL-12155.00°MD,92.42°INC,271.04°AZI, 7605.09°TVD, 4651.95°VS, 284.85°N, -4643.27°E - PBHL(#3HDuggan)											

Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
- hit/miss target									
- Shape									
PBHL(#3HDuggan)	0.00	0.00	7,625.00	310.80	-4,707.20	642,995.200	591,629.900	32° 46' 2.394 N	104° 2' 6.862 W
- survey misses target center by 71.81ft at 12155.00ft MD (7605.09 TVD, 284.85 N, -4643.27 E)									
- Point									

Survey Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
12,155.00	7,605.09	284.85	-4,643.27	BHL-12155.00°MD,92.42°INC,271.04°AZI, 7605.09°TVD, 4651.95°VS, 2



Pathfinder
Pathfinder X & Y Survey Report



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Project:	Eddy County	TVD Reference:	WELL @ 3542.10ft (19'KB Correction)
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Well:	#3H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Midland Database

Checked By: _____	Approved By: _____	Date: _____
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