eog resources

30-015-36871

EOG Resources, Inc.

Eddy County
Sand Tank 7 Fed
#5H
OH

Survey: MWD #1

Pathfinder X & Y Survey Report

21 September, 2009

PATHFINDER

Company:	EOG Resources, Inc.
Project:	Eddy County
Site:	Sand Tank 7 Fed
Well:	#5H
Wellbore:	OH
Design:	OH

Local Co-ordinate Reference:	Well #5H
TVD Reference:	WELL @ 3556.10ft (19' KB Correction)
MD Reference:	WELL @ 3556.10ft (19' KB Correction)
North Reference:	Grid
Survey Calculation Method:	Minimum Curvature
Database:	Midland Database

Project Eddy County

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

Site Sand Tank 7 Fed

Site Position:					
From:	Map	**Northing:**	643,352.600 ft	**Latitude:**	32° 46' 5.726 N
Position Uncertainty:	0.00 ft	**Easting:**	598,700.700 ft	**Longitude:**	104° 0' 44.039 W
		Slot Radius:	"	**Grid Convergence:**	0.17 °

Well #5H

Well Position	**+N/-S**	0.00 ft	**Northing:**	643,237.600 ft	**Latitude:**	32° 46' 4.631 N
	+E/-W	0.00 ft	**Easting:**	597,261.000 ft	**Longitude:**	104° 1' 0.905 W
Position Uncertainty		0.00 ft	**Wellhead Elevation:**	ft	**Ground Level:**	3,537.10 ft

Wellbore OH

Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	IGRF200510	07/31/2009	8.05	60.67	49,109

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	180.26

Survey Program **Date** 09/21/2009

From (ft)	**To (ft)**	**Survey (Wellbore)**	**Tool Name**	**Description**
172.00	10,850.00	MWD #1 (OH)	MWD	MWD - Standard

Company:	EOG Resources, Inc.	**Local Co-ordinate Reference:**	Well #5H
Project:	Eddy County	**TVD Reference:**	WELL @ 3556.10ft (19' KB Correction)
Site:	Sand Tank 7 Fed	**MD Reference:**	WELL @ 3556.10ft (19' KB Correction)
Well:	#5H	**North Reference:**	Grid
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)
0.00	0.00	0.00	0.00	-3,556.10	0.00	0.00	0.00	0.00	643,237.60	597,261.00
172.00	0.40	276.40	172.00	-3,384.10	0.07	-0.60	-0.06	0.23	643,237.67	597,260.40
355.00	0.75	299.20	354.99	-3,201.11	0.72	-2.28	-0.71	0.22	643,238.32	597,258.72
465.00	0.70	251.58	464.98	-3,091.12	0.86	-3.54	-0.85	0.53	643,238.46	597,257.46
645.00	0.62	262.22	644.97	-2,911.13	0.38	-5.55	-0.36	0.08	643,237.98	597,255.45
832.00	0.70	269.95	831.96	-2,724.14	0.24	-7.70	-0.21	0.06	643,237.84	597,253.30
1,019.00	0.18	259.49	1,018.95	-2,537.15	0.19	-9.13	-0.15	0.28	643,237.79	597,251.87
1,207.00	0.35	98.57	1,206.95	-2,349.15	0.05	-8.85	-0.01	0.28	643,237.65	597,252.15
1,393.00	0.18	32.12	1,392.95	-2,163.15	0.21	-8.13	-0.18	0.17	643,237.81	597,252.87
1,581.00	0.26	332.53	1,580.95	-1,975.15	0.84	-8.17	-0.80	0.12	643,238.44	597,252.83
1,768.00	0.26	280.50	1,767.95	-1,788.15	1.30	-8.78	-1.26	0.12	643,238.90	597,252.22
1,955.00	0.62	263.54	1,954.94	-1,601.16	1.26	-10.21	-1.21	0.20	643,238.86	597,250.79
2,142.00	0.79	264.85	2,141.93	-1,414.17	1.03	-12.50	-0.97	0.09	643,238.63	597,248.50
2,329.00	1.32	263.01	2,328.89	-1,227.21	0.65	-15.92	-0.58	0.28	643,238.25	597,245.08
2,516.00	1.67	261.08	2,515.83	-1,040.27	-0.03	-20.75	0.13	0.19	643,237.57	597,240.25
2,702.00	1.58	265.03	2,701.75	-854.35	-0.68	-25.98	0.79	0.08	643,236.92	597,235.02
2,890.00	0.97	219.24	2,889.71	-666.39	-2.13	-29.57	2.27	0.61	643,235.47	597,231.43
3,077.00	0.70	239.01	3,076.69	-479.41	-3.95	-31.55	4.09	0.21	643,233.65	597,229.45
3,167.00	0.97	225.83	3,166.68	-389.42	-4.76	-32.57	4.91	0.37	643,232.84	597,228.43
3,363.00	0.88	241.74	3,362.66	-193.44	-6.63	-35.08	6.79	0.14	643,230.97	597,225.92
3,550.00	0.97	242.62	3,549.63	-6.47	-8.04	-37.75	8.21	0.05	643,229.56	597,223.25
3,736.00	0.97	233.13	3,735.61	179.51	-9.71	-40.41	9.89	0.09	643,227.89	597,220.59
3,924.00	0.79	237.43	3,923.58	367.48	-11.36	-42.78	11.55	0.10	643,226.24	597,218.22
4,111.00	0.79	255.10	4,110.57	554.47	-12.38	-45.11	12.59	0.13	643,225.22	597,215.89
4,299.00	0.62	291.13	4,298.55	742.45	-12.35	-47.31	12.56	0.25	643,225.25	597,213.69
4,486.00	0.88	295.53	4,485.54	929.44	-11.37	-49.55	11.59	0.14	643,226.23	597,211.45
4,674.00	1.32	308.54	4,673.50	1,117.40	-9.40	-52.55	9.63	0.27	643,228.20	597,208.45

Company:	EOG Resources, Inc.	**Local Co-ordinate Reference:**	Well #5H
Project:	Eddy County	**TVD Reference:**	WELL @ 3556.10ft (19' KB Correction)
Site:	Sand Tank 7 Fed	**MD Reference:**	WELL @ 3556.10ft (19' KB Correction)
Well:	#5H	**North Reference:**	Grid
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)
4,861.00	1.76	318.73	4,860.43	1,304.33	-5.89	-56.12	6.15	0.28	643,231.71	597,204.88
5,049.00	2.02	314.69	5,048.33	1,492.23	-1.39	-60.38	1.67	0.16	643,236.21	597,200.62
5,236.00	0.44	52.77	5,235.29	1,679.19	1.36	-62.16	-1.08	1.14	643,238.96	597,198.84
5,422.00	0.70	45.30	5,421.28	1,865.18	2.59	-60.78	-2.31	0.15	643,240.19	597,200.22
5,609.00	2.11	46.80	5,608.22	2,052.12	5.75	-57.46	-5.49	0.75	643,243.35	597,203.54
5,796.00	0.70	39.59	5,795.16	2,239.06	8.99	-54.22	-8.74	0.76	643,246.59	597,206.78
5,921.00	1.06	47.68	5,920.15	2,364.05	10.35	-52.88	-10.11	0.30	643,247.95	597,208.12
5,970.00	0.88	45.46	5,969.14	2,413.04	10.92	-52.28	-10.68	0.38	643,248.52	597,208.72
6,001.00	0.97	183.54	6,000.14	2,444.04	10.83	-52.12	-10.59	5.57	643,248.43	597,208.88
6,033.00	3.87	191.32	6,032.11	2,476.01	9.50	-52.35	-9.26	9.10	643,247.10	597,208.65
6,064.00	6.68	190.43	6,062.97	2,506.87	6.70	-52.88	-6.46	9.07	643,244.30	597,208.12
6,095.00	9.32	189.18	6,093.67	2,537.57	2.45	-53.61	-2.20	8.53	643,240.05	597,207.39
6,126.00	11.87	188.33	6,124.14	2,568.04	-3.19	-54.47	3.43	8.24	643,234.41	597,206.53
6,157.00	13.98	184.96	6,154.35	2,598.25	-10.07	-55.26	10.32	7.22	643,227.53	597,205.74
6,189.00	16.27	183.42	6,185.24	2,629.14	-18.40	-55.86	18.65	7.26	643,219.20	597,205.14
6,220.00	18.29	183.21	6,214.84	2,658.74	-27.59	-56.39	27.85	6.52	643,210.01	597,204.61
6,251.00	20.58	184.35	6,244.07	2,687.97	-37.88	-57.08	38.14	7.49	643,199.72	597,203.92
6,282.00	23.48	185.11	6,272.80	2,716.70	-49.47	-58.04	49.73	9.40	643,188.13	597,202.96
6,313.00	26.20	185.71	6,300.93	2,744.83	-62.43	-59.27	62.70	8.81	643,175.17	597,201.73
6,344.00	28.49	184.48	6,328.47	2,772.37	-76.62	-60.53	76.89	7.61	643,160.98	597,200.47
6,375.00	30.86	183.46	6,355.40	2,799.30	-91.92	-61.59	92.20	7.82	643,145.68	597,199.41
6,406.00	32.80	184.49	6,381.74	2,825.64	-108.23	-62.73	108.52	6.50	643,129.37	597,198.27
6,437.00	35.70	186.09	6,407.36	2,851.26	-125.60	-64.34	125.89	9.79	643,112.00	597,196.66
6,469.00	39.48	186.33	6,432.71	2,876.61	-145.00	-66.46	145.30	11.82	643,092.60	597,194.54
6,500.00	43.88	185.27	6,455.86	2,899.76	-165.51	-68.53	165.82	14.37	643,072.09	597,192.47
6,531.00	47.31	183.27	6,477.55	2,921.45	-187.59	-70.17	187.90	11.99	643,050.01	597,190.83
6,562.00	49.15	181.88	6,498.20	2,942.10	-210.68	-71.20	211.00	6.81	643,026.92	597,189.80

Company:	EOG Resources, Inc.	**Local Co-ordinate Reference:**	Well #5H
Project:	Eddy County	**TVD Reference:**	WELL @ 3556.10ft (19' KB Correction)
Site:	Sand Tank 7 Fed	**MD Reference:**	WELL @ 3556.10ft (19' KB Correction)
Well:	#5H	**North Reference:**	Grid
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)
6,594.00	51.35	181.11	6,518.66	2,962.56	-235.28	-71.84	235.60	7.12	643,002.32	597,189.16
6,625.00	53.82	180.63	6,537.49	2,981.39	-259.89	-72.21	260.22	8.06	642,977.71	597,188.79
6,655.00	56.81	179.49	6,554.56	2,998.46	-284.56	-72.23	284.88	10.44	642,953.04	597,188.77
6,686.00	59.88	178.99	6,570.83	3,014.73	-310.94	-71.88	311.26	10.00	642,926.66	597,189.12
6,718.00	63.22	178.76	6,586.07	3,029.97	-339.07	-71.33	339.39	10.46	642,898.53	597,189.67
6,749.00	65.60	179.66	6,599.46	3,043.36	-367.02	-70.95	367.34	8.11	642,870.58	597,190.05
6,780.00	68.06	180.99	6,611.66	3,055.56	-395.52	-71.11	395.84	8.86	642,842.08	597,189.89
6,811.00	71.31	181.33	6,622.42	3,066.32	-424.58	-71.70	424.90	10.53	642,813.02	597,189.30
6,843.00	74.39	181.07	6,631.85	3,075.75	-455.15	-72.34	455.47	9.66	642,782.45	597,188.66
6,874.00	76.77	181.08	6,639.57	3,083.47	-485.16	-72.90	485.49	7.68	642,752.44	597,188.10
6,905.00	79.40	180.76	6,645.97	3,089.87	-515.49	-73.39	515.81	8.54	642,722.11	597,187.61
6,936.00	82.83	179.90	6,650.76	3,094.66	-546.11	-73.56	546.44	11.40	642,691.49	597,187.44
6,967.00	83.71	179.56	6,654.39	3,098.29	-576.90	-73.42	577.22	3.04	642,660.70	597,187.58
7,062.00	84.24	177.94	6,664.37	3,108.27	-671.34	-71.36	671.66	1.79	642,566.26	597,189.64
7,155.00	85.74	177.76	6,672.49	3,116.39	-763.92	-67.88	764.22	1.62	642,473.68	597,193.12
7,250.00	83.80	177.01	6,681.15	3,125.05	-858.42	-63.57	858.70	2.19	642,379.18	597,197.43
7,344.00	87.85	177.71	6,687.99	3,131.89	-952.05	-59.25	952.31	4.37	642,285.55	597,201.75
7,436.00	87.32	177.53	6,691.87	3,135.77	-1,043.89	-55.43	1,044.13	0.61	642,193.71	597,205.57
7,530.00	87.85	177.84	6,695.83	3,139.73	-1,137.73	-51.64	1,137.95	0.65	642,099.87	597,209.36
7,623.00	87.76	177.77	6,699.39	3,143.29	-1,230.59	-48.08	1,230.80	0.12	642,007.01	597,212.92
7,716.00	86.88	178.53	6,703.74	3,147.64	-1,323.44	-45.08	1,323.63	1.25	641,914.16	597,215.92
7,810.00	86.35	177.94	6,709.29	3,153.19	-1,417.23	-42.19	1,417.41	0.84	641,820.37	597,218.81
7,904.00	87.67	178.95	6,714.19	3,158.09	-1,511.07	-39.65	1,511.23	1.77	641,726.53	597,221.35
7,997.00	84.50	177.94	6,720.54	3,164.44	-1,603.80	-37.13	1,603.96	3.58	641,633.80	597,223.87
8,092.00	87.32	179.11	6,727.31	3,171.21	-1,698.52	-34.69	1,698.66	3.21	641,539.08	597,226.31
8,185.00	89.25	179.36	6,730.10	3,174.00	-1,791.46	-33.45	1,791.60	2.09	641,446.14	597,227.55
8,278.00	86.17	177.70	6,733.81	3,177.71	-1,884.35	-31.07	1,884.47	3.76	641,353.25	597,229.93

Company:	EOG Resources, Inc.	**Local Co-ordinate Reference:**	Well #5H
Project:	Eddy County	**TVD Reference:**	WELL @ 3556.10ft (19' KB Correction)
Site:	Sand Tank 7 Fed	**MD Reference:**	WELL @ 3556.10ft (19' KB Correction)
Well:	#5H	**North Reference:**	Grid
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)
8,372.00	86.70	176.64	6,739.66	3,183.56	-1,978.05	-26.44	1,978.15	1.26	641,259.55	597,234.56
8,434.00	85.21	176.47	6,744.03	3,187.93	-2,039.78	-22.72	2,039.86	2.42	641,197.82	597,238.28
8,497.00	85.30	176.99	6,749.24	3,193.14	-2,102.46	-19.14	2,102.53	0.83	641,135.14	597,241.86
8,559.00	84.77	177.34	6,754.61	3,198.51	-2,164.15	-16.08	2,164.20	1.02	641,073.45	597,244.92
8,621.00	81.07	178.45	6,762.25	3,206.15	-2,225.63	-13.82	2,225.67	6.23	641,011.97	597,247.18
8,652.00	80.20	178.17	6,767.29	3,211.19	-2,256.20	-12.92	2,256.24	2.94	640,981.40	597,248.08
8,683.00	80.02	178.06	6,772.62	3,216.52	-2,286.72	-11.92	2,286.75	0.68	640,950.88	597,249.08
8,714.00	80.37	177.92	6,777.90	3,221.80	-2,317.25	-10.85	2,317.28	1.21	640,920.35	597,250.15
8,745.00	81.43	177.62	6,782.80	3,226.70	-2,347.84	-9.65	2,347.86	3.55	640,889.76	597,251.35
8,776.00	82.83	178.23	6,787.05	3,230.95	-2,378.52	-8.54	2,378.54	4.92	640,859.08	597,252.46
8,807.00	84.33	178.93	6,790.51	3,234.41	-2,409.32	-7.78	2,409.33	5.33	640,828.28	597,253.22
8,838.00	86.09	180.37	6,793.10	3,237.00	-2,440.21	-7.59	2,440.22	7.33	640,797.39	597,253.41
8,869.00	86.53	180.72	6,795.10	3,239.00	-2,471.14	-7.89	2,471.15	1.81	640,766.46	597,253.11
8,900.00	86.79	180.87	6,796.90	3,240.80	-2,502.09	-8.31	2,502.10	0.97	640,735.51	597,252.69
8,932.00	86.88	180.83	6,798.67	3,242.57	-2,534.03	-8.79	2,534.05	0.31	640,703.57	597,252.21
8,994.00	84.77	179.81	6,803.18	3,247.08	-2,595.86	-9.13	2,595.88	3.78	640,641.74	597,251.87
9,088.00	84.94	179.48	6,811.61	3,255.51	-2,689.48	-8.55	2,689.50	0.39	640,548.12	597,252.45
9,181.00	87.85	181.62	6,817.46	3,261.36	-2,782.28	-9.45	2,782.29	3.88	640,455.32	597,251.55
9,275.00	84.15	179.78	6,824.02	3,267.92	-2,876.02	-10.60	2,876.04	4.39	640,361.58	597,250.40
9,338.00	85.82	180.32	6,829.52	3,273.42	-2,938.78	-10.65	2,938.80	2.78	640,298.82	597,250.35
9,439.00	85.74	179.48	6,836.96	3,280.86	-3,039.51	-10.48	3,039.52	0.83	640,198.09	597,250.52
9,533.00	86.53	179.07	6,843.29	3,287.19	-3,133.28	-9.29	3,133.29	0.95	640,104.32	597,251.71
9,627.00	86.88	178.14	6,848.69	3,292.59	-3,227.10	-7.00	3,227.10	1.06	640,010.50	597,254.00
9,720.00	87.67	178.00	6,853.12	3,297.02	-3,319.94	-3.88	3,319.92	0.86	639,917.66	597,257.12
9,814.00	85.03	177.94	6,859.10	3,303.00	-3,413.68	-0.55	3,413.65	2.81	639,823.92	597,260.45
9,877.00	85.03	177.71	6,864.56	3,308.46	-3,476.40	1.83	3,476.36	0.36	639,761.20	597,262.83
9,971.00	85.12	177.27	6,872.63	3,316.53	-3,569.96	5.93	3,569.90	0.48	639,667.64	597,266.93

Company:	EOG Resources, Inc.	**Local Co-ordinate Reference:**	Well #5H
Project:	Eddy County	**TVD Reference:**	WELL @ 3556.10ft (19' KB Correction)
Site:	Sand Tank 7 Fed	**MD Reference:**	WELL @ 3556.10ft (19' KB Correction)
Well:	#5H	**North Reference:**	Grid
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)
10,064.00	85.65	177.06	6,880.11	3,324.01	-3,662.55	10.51	3,662.46	0.61	639,575.05	597,271.51
10,157.00	85.82	176.90	6,887.03	3,330.93	-3,755.16	15.40	3,755.05	0.25	639,482.44	597,276.40
10,250.00	86.17	176.86	6,893.52	3,337.42	-3,847.80	20.45	3,847.66	0.38	639,389.80	597,281.45
10,344.00	86.70	176.90	6,899.37	3,343.27	-3,941.48	25.56	3,941.32	0.57	639,296.12	597,286.56
10,438.00	87.58	178.14	6,904.06	3,347.96	-4,035.27	29.62	4,035.09	1.62	639,202.33	597,290.62
10,531.00	87.05	180.11	6,908.41	3,352.31	-4,128.15	31.04	4,127.97	2.19	639,109.45	597,292.04
10,625.00	87.41	180.16	6,912.96	3,356.86	-4,222.04	30.82	4,221.86	0.39	639,015.56	597,291.82
10,718.00	88.20	179.69	6,916.52	3,360.42	-4,314.97	30.94	4,314.79	0.99	638,922.63	597,291.94
10,801.00	88.72	179.88	6,918.75	3,362.65	-4,397.94	31.25	4,397.75	0.67	638,839.66	597,292.25
10,850.00	88.72	179.88	6,919.84	3,363.74	-4,446.93	31.35	4,446.74	0.00	638,790.67	597,292.35

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
Sand Tank "7" Fed #1	0.00	0.00	6,633.00	-557.60	302.00	642,680.000	597,563.000	32° 45' 59.104 N	104° 0' 57.387 W
- survey misses by 376.02ft at 6947.09ft MD (6652.11 TVD, -557.11 N, -73.53 E)									
- Circle (radius 125.00)									
PBHL(#5)	0.00	0.00	6,939.79	-4,498.20	-20.50	638,739.400	597,240.500	32° 45' 20.120 N	104° 1' 1.302 W
- survey misses by 75.60ft at 10850.00ft MD (6919.84 TVD, -4446.93 N, 31.35 E)									
- Point									

Checked By: _____ Approved By: _____ Date: _____