



EOG Resources, Inc.

Eddy County

Sand Tank 18 Fed #2H

#2H

OH

Survey: MWD #1

Pathfinder X & Y Survey Report

24 October, 2008

PATHFINDER
ENERGY SERVICES

30.015.36578

Company: EOG Resources, Inc.
Project: Eddy County
Site: Sand Tank 18 Fed #2H
Well: #2H
Wellbore: OH
Design: OH

Local Co-ordinate Reference: Well #2H
TVD Reference: WELL @ 3510.80ft (Original Well Elev)
MD Reference: WELL @ 3510.80ft (Original Well Elev)
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)
Geo Datum: NAD 1927 (NADCON CONUS)
Map Zone: New Mexico East 3001

System Datum: Mean Sea Level

Site: Sand Tank 18 Fed #2H

Site Position: Northing: 637,981.500 ft Latitude: 32° 45' 12.552 N
From: Map Easting: 599,536.800 ft Longitude: 104° 0' 34.440 W
Position Uncertainty: 0.00 ft Slot Radius: " Grid Convergence: 0.18 "

Well: #2H
Well Position: +N/-S 0.00 ft Northing: 637,981.500 ft Latitude: 32° 45' 12.552 N
+E/-W 0.00 ft Easting: 599,536.800 ft Longitude: 104° 0' 34.440 W
Position Uncertainty: 0.00 ft Wellhead Elevation: ft Ground Level: 3,510.80ft

Wellbore: OH

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	10/10/2008	8.14	60.68	49,179

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	89.99



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Survey Program Date 10/24/2008

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
100.00	7,495.00	Gyro (OH)	CB-GYRO-MS	Camera based gyro multishot
7,510.00	12,291.00	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)
7,495.00	0.75	332.48	7,493.53	3,982.73	-47.79	-17.46	-17.47	0.00	637,933.71	599,519.34
7,510.00	3.43	73.25	7,508.52	3,997.72	-47.57	-17.08	-17.08	24.30	637,933.93	599,519.72
7,541.00	6.24	84.59	7,539.41	4,028.61	-47.14	-14.51	-14.52	9.53	637,934.36	599,522.29
7,572.00	9.15	82.56	7,570.12	4,059.32	-46.66	-10.39	-10.40	9.43	637,934.84	599,526.41
7,603.00	11.08	85.11	7,600.64	4,089.84	-46.09	-4.98	-4.98	6.39	637,935.41	599,531.82
7,634.00	14.33	86.40	7,630.88	4,120.08	-45.60	1.82	1.81	10.52	637,935.90	599,538.62
7,665.00	18.55	86.17	7,660.60	4,149.80	-45.03	10.58	10.57	13.61	637,936.47	599,547.38
7,695.00	23.21	86.14	7,688.63	4,177.83	-44.31	21.24	21.23	15.53	637,937.19	599,558.04
7,726.00	27.26	86.48	7,716.66	4,205.86	-43.46	34.43	34.42	13.07	637,938.04	599,571.23
7,757.00	31.22	86.98	7,743.71	4,232.91	-42.60	49.54	49.53	12.80	637,938.90	599,586.34
7,788.00	34.29	90.21	7,769.78	4,258.98	-42.21	66.30	66.30	11.39	637,939.29	599,603.10
7,819.00	38.25	91.04	7,794.77	4,283.97	-42.42	84.64	84.63	12.87	637,939.08	599,621.44
7,850.00	42.65	90.21	7,818.35	4,307.55	-42.63	104.74	104.74	14.30	637,938.87	599,641.54
7,881.00	47.40	89.75	7,840.25	4,329.45	-42.62	126.67	126.66	15.36	637,938.88	599,663.47
7,912.00	51.53	88.63	7,860.40	4,349.60	-42.28	150.22	150.21	13.60	637,939.22	599,687.02
7,943.00	55.22	87.78	7,878.89	4,368.09	-41.49	175.08	175.07	12.10	637,940.01	599,711.88
7,974.00	57.60	86.81	7,896.04	4,385.24	-40.27	200.87	200.87	8.11	637,941.23	599,737.67
8,005.00	61.29	86.99	7,911.79	4,400.99	-38.83	227.52	227.52	11.91	637,942.67	599,764.32
8,036.00	63.75	87.32	7,926.10	4,415.30	-37.47	254.99	254.98	7.99	637,944.03	599,791.79
8,066.00	66.74	88.33	7,938.66	4,427.86	-36.44	282.21	282.20	10.42	637,945.06	599,819.01
8,097.00	70.43	88.84	7,949.98	4,439.18	-35.72	311.06	311.05	12.00	637,945.78	599,847.86



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Survey											
MD (ft)	Inc (°)	Azi (°)	TVD (ft)	TVDSS (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)	Northing (ft)	Easting (ft)	
8,128.00	73.95	89.83	7,959.46	4,448.66	-35.38	340.56	340.56	11.75	637,946.12	599,877.36	
8,159.00	77.29	90.25	7,967.15	4,456.35	-35.41	370.59	370.58	10.85	637,946.09	599,907.39	
8,190.00	81.60	90.21	7,972.83	4,462.03	-35.53	401.06	401.05	13.90	637,945.97	599,937.86	
8,252.00	89.69	90.45	7,977.54	4,466.74	-35.89	462.83	462.82	13.05	637,945.61	599,999.63	
8,316.00	90.12	89.52	7,977.64	4,466.84	-35.87	526.82	526.82	1.60	637,945.63	600,063.62	
8,379.00	88.99	90.56	7,978.13	4,467.33	-35.91	589.82	589.81	2.44	637,945.59	600,126.62	
8,441.00	88.55	90.14	7,979.46	4,468.66	-36.29	651.80	651.80	0.98	637,945.21	600,188.60	
8,506.00	88.37	90.31	7,981.21	4,470.41	-36.55	716.78	716.77	0.38	637,944.95	600,253.58	
8,570.00	88.81	90.02	7,982.78	4,471.98	-36.73	780.76	780.75	0.82	637,944.77	600,317.56	
8,634.00	88.20	90.21	7,984.45	4,473.65	-36.86	844.74	844.73	1.00	637,944.64	600,381.54	
8,697.00	87.85	89.79	7,986.62	4,475.82	-36.86	907.70	907.69	0.87	637,944.64	600,444.50	
8,761.00	87.93	89.16	7,988.98	4,478.18	-36.27	971.65	971.65	0.99	637,945.23	600,508.45	
8,825.00	88.20	89.50	7,991.14	4,480.34	-35.52	1,035.61	1,035.61	0.68	637,945.98	600,572.41	
8,888.00	88.90	88.77	7,992.74	4,481.94	-34.57	1,098.59	1,098.58	1.61	637,946.93	600,635.39	
8,952.00	89.25	88.76	7,993.77	4,482.97	-33.19	1,162.56	1,162.56	0.55	637,948.31	600,699.36	
9,016.00	88.99	88.32	7,994.75	4,483.95	-31.56	1,226.53	1,226.53	0.80	637,949.94	600,763.33	
9,079.00	88.55	88.19	7,996.11	4,485.31	-29.65	1,289.49	1,289.48	0.73	637,951.85	600,826.29	
9,143.00	88.55	88.41	7,997.72	4,486.92	-27.75	1,353.44	1,353.44	0.34	637,953.75	600,890.24	
9,206.00	88.37	88.70	7,999.42	4,488.62	-26.16	1,416.40	1,416.39	0.54	637,955.34	600,953.20	
9,270.00	88.02	88.47	8,001.43	4,490.63	-24.58	1,480.35	1,480.34	0.65	637,956.92	601,017.15	
9,334.00	88.64	89.15	8,003.30	4,492.50	-23.25	1,544.30	1,544.30	1.44	637,958.25	601,081.10	
9,398.00	88.37	89.31	8,004.97	4,494.17	-22.39	1,608.28	1,608.27	0.49	637,959.11	601,145.08	
9,462.00	88.55	89.37	8,006.69	4,495.89	-21.66	1,672.25	1,672.25	0.30	637,959.84	601,209.05	
9,527.00	88.81	89.93	8,008.19	4,497.39	-21.26	1,737.23	1,737.23	0.95	637,960.24	601,274.03	
9,589.00	88.72	89.87	8,009.52	4,498.72	-21.15	1,799.22	1,799.21	0.17	637,960.35	601,336.02	
9,653.00	88.64	90.20	8,011.00	4,500.20	-21.19	1,863.20	1,863.20	0.53	637,960.31	601,400.00	
9,716.00	88.55	90.18	8,012.54	4,501.74	-21.40	1,926.18	1,926.18	0.15	637,960.10	601,462.98	

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Design: OH

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North Reference:
Survey Calculation Method:
Database:

Well #2H
WELL @ 3510.80ft (Original Well Elev)
WELL @ 3510.80ft (Original Well Elev)
Grid
Minimum Curvature
EDM 2003.16 Single User Db

MD (ft)	Inc (°)	Azi (°)	TVD (ft)	TVDS (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)	Northing (ft)	Easting (ft)
9,780.00	88.46	90.29	8,014.21	4,503.41	-21.66	1,990.16	1,990.15	0.22	637,959.84	601,526.96
9,844.00	88.64	90.66	8,015.83	4,505.03	-22.19	2,054.14	2,054.13	0.64	637,959.31	601,590.94
9,908.00	88.64	90.81	8,017.35	4,506.55	-23.01	2,118.11	2,118.11	0.23	637,958.49	601,654.91
9,972.00	88.72	90.80	8,018.82	4,508.02	-23.91	2,182.09	2,182.08	0.13	637,957.59	601,718.89
10,036.00	89.16	90.76	8,020.01	4,509.21	-24.78	2,246.07	2,246.07	0.69	637,956.72	601,782.87
10,100.00	89.25	90.53	8,020.90	4,510.10	-25.50	2,310.06	2,310.06	0.39	637,956.00	601,846.86
10,163.00	89.16	90.51	8,021.77	4,510.97	-26.07	2,373.05	2,373.05	0.15	637,955.43	601,909.85
10,227.00	88.46	89.91	8,023.10	4,512.30	-26.31	2,437.04	2,437.03	1.44	637,955.19	601,973.84
10,291.00	87.93	91.02	8,025.11	4,514.31	-26.83	2,501.00	2,501.00	1.92	637,954.67	602,037.80
10,355.00	87.85	90.52	8,027.47	4,516.67	-27.69	2,564.95	2,564.95	0.79	637,953.81	602,101.75
10,419.00	86.61	89.05	8,030.56	4,519.76	-27.45	2,628.87	2,628.87	3.00	637,954.05	602,165.67
10,483.00	87.58	88.61	8,033.81	4,523.01	-26.14	2,692.78	2,692.77	1.66	637,955.36	602,229.58
10,547.00	88.72	88.33	8,035.87	4,525.07	-24.43	2,756.72	2,756.72	1.83	637,957.07	602,293.52
10,611.00	89.52	88.00	8,036.86	4,526.06	-22.39	2,820.68	2,820.68	1.35	637,959.11	602,357.48
10,676.00	89.69	87.48	8,037.30	4,526.50	-19.82	2,885.63	2,885.62	0.84	637,961.68	602,422.43
10,740.00	88.99	86.57	8,038.04	4,527.24	-16.50	2,949.54	2,949.53	1.79	637,965.00	602,486.34
10,804.00	88.55	85.78	8,039.42	4,528.62	-12.23	3,013.38	3,013.38	1.41	637,969.27	602,550.18
10,867.00	89.25	87.09	8,040.63	4,529.83	-8.32	3,076.24	3,076.24	2.36	637,973.18	602,613.04
10,931.00	90.04	87.70	8,041.02	4,530.22	-5.41	3,140.17	3,140.17	1.56	637,976.09	602,676.97
10,995.00	90.31	87.40	8,040.83	4,530.03	-2.67	3,204.12	3,204.12	0.63	637,978.83	602,740.92
11,059.00	90.31	88.24	8,040.48	4,529.68	-0.24	3,268.07	3,268.07	1.31	637,981.26	602,804.87
11,123.00	90.66	88.71	8,039.94	4,529.14	1.47	3,332.04	3,332.04	0.92	637,982.97	602,868.84
11,187.00	90.57	88.58	8,039.25	4,528.45	2.98	3,396.02	3,396.02	0.25	637,984.48	602,932.82
11,251.00	89.69	88.70	8,039.11	4,528.31	4.50	3,460.00	3,460.00	1.39	637,986.00	602,996.80
11,315.00	89.69	90.17	8,039.45	4,528.65	5.13	3,524.00	3,524.00	2.30	637,986.63	603,060.80
11,379.00	89.52	90.49	8,039.89	4,529.09	4.76	3,587.99	3,587.99	0.57	637,986.26	603,124.79
11,444.00	89.87	90.23	8,040.24	4,529.44	4.35	3,652.99	3,652.99	0.67	637,985.85	603,189.79

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11,508.00	90.22	90.45	8,040.19	4,529.39	3.97	3,716.99	3,716.99	0.65	637,985.47	603,253.79	
11,572.00	90.04	90.27	8,040.04	4,529.24	3.57	3,780.99	3,780.99	0.40	637,985.07	603,317.79	
11,636.00	89.25	89.66	8,040.44	4,529.64	3.61	3,844.99	3,844.99	1.56	637,985.11	603,381.79	
11,698.00	89.60	89.79	8,041.06	4,530.26	3.91	3,906.98	3,906.98	0.60	637,985.41	603,443.78	
11,763.00	89.69	89.00	8,041.47	4,530.67	4.59	3,971.98	3,971.98	1.22	637,986.09	603,508.78	
11,827.00	90.22	89.14	8,041.52	4,530.72	5.63	4,035.97	4,035.97	0.86	637,987.13	603,572.77	
11,891.00	90.48	88.65	8,041.13	4,530.33	6.87	4,099.96	4,099.96	0.87	637,988.37	603,636.76	
11,955.00	90.13	88.75	8,040.78	4,529.98	8.32	4,163.94	4,163.94	0.57	637,989.82	603,700.74	
12,018.00	88.72	88.48	8,041.42	4,530.62	9.84	4,226.91	4,226.92	2.28	637,991.34	603,763.71	
12,079.00	89.52	88.60	8,042.35	4,531.55	11.40	4,287.89	4,287.89	1.33	637,992.90	603,824.69	
12,141.00	89.96	88.77	8,042.63	4,531.83	12.82	4,349.87	4,349.87	0.76	637,994.32	603,886.67	
12,215.00	90.04	90.42	8,042.63	4,531.83	13.34	4,423.87	4,423.87	2.23	637,994.84	603,960.67	
12,291.00	90.04	90.42	8,042.58	4,531.78	12.78	4,499.86	4,499.87	0.00	637,994.28	604,036.66	
Proj To Bit @ 12291'MD											

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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(ST #18)	0.00	0.00	8,059.98	1 10	4,570 10	637,982.600	604,106.901	32° 45' 12.421 N	103° 59' 40.925 W
- survey misses by 73.30ft at 12291.00ft MD (8042.58 TVD, 12.78 N, 4499.86 E)									
- Point									

Survey Annotations				
Measured Depth	Vertical Depth	Local Coordinates		Comment
(ft)	(ft)	+N/-S (ft)	+E/-W (ft)	
12,291.00	8,042.58	12.78	4,499.86	Proj To Bit @ 12291MD

Checked By: _____ Approved By: _____ Date: _____