



EOG Resources, Inc.

Lea County
Lomas Rojas "26" State Com
#4H
OH

Survey: MWD #1

Pathfinder X & Y Survey Report

11 May, 2010

RECEIVED

AUG 20 2010
HOBBSOCD

PATHFINDER

SUR @ C-26-25s-33e, 330/S & 1350/E
BHL @ B-26-25s-33e, 4903/S & 1391/E
API # 30-025-39703

Company:	EOG Resources, Inc	Local Co-ordinate Reference:	Well #4H
Project:	Lea County	TVD Reference:	KB TO GL 30' @ 3358.90ft (30' KB Correction)
Site:	Lomas Rojas "26" State Com	MD Reference:	KB TO GL 30' @ 3358.90ft (30' KB Correction)
Well:	#4H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Midland Database

Project		Lea 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						Lomas Rojas "26" State Com					
Site Position:				Northing:		403,802.800 ft		Latitude:		32° 6' 27.886 N	
From:		Map		Easting:		742,610.100 ft		Longitude:		103° 32' 59.279 W	
Position Uncertainty:		0.00 ft		Slot Radius:		"		Grid Convergence:		0.42 °	

Well	#4H					
Well Position	+N/-S	0.00 ft	Northing:	399,204.900 ft	Latitude:	32° 5' 42.131 N
	+E/-W	0.00 ft	Easting:	746,147.400 ft	Longitude:	103° 32' 18.550 W
Position Uncertainty	0.00 ft	Wellhead Elevation:	ft	Ground Level:	3,328.90 ft	

Wellbore	OH
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Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	02/26/2010	7.71	60.12	48,703

Design	OH			
Audit Notes:				
Version:	10	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	359.57

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

Survey Program		Date 05/11/2010		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
100.00	8,900.00	GYRO (OH)	MWD	MWD - Standard
8,939.00	13,850.00	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)
8,900.00	0.69	167.90	8,896.07	5,537.17	-45.60	159.99	-46.80	0.00	399,159.30	746,307.39
8,939.00	1.14	355.38	8,935.07	5,576.17	-45.44	160.00	-46.64	4.68	399,159.46	746,307.40
8,972.00	3.87	356.74	8,968.04	5,609.14	-44.00	159.91	-45.20	8.27	399,160.90	746,307.31
9,003.00	6.95	357.96	8,998.89	5,639.99	-41.08	159.79	-42.28	9.94	399,163.82	746,307.19
9,035.00	10.73	358.20	9,030.51	5,671.61	-36.17	159.62	-37.36	11.81	399,168.73	746,307.02
9,066.00	14.77	358.43	9,060.74	5,701.84	-29.33	159.43	-30.53	13.03	399,175.57	746,306.83
9,097.00	17.85	357.82	9,090.49	5,731.59	-20.63	159.14	-21.82	9.95	399,184.27	746,306.54
9,129.00	21.46	357.47	9,120.62	5,761.72	-9.88	158.69	-11.07	11.29	399,195.02	746,306.09
9,161.00	24.89	356.48	9,150.03	5,791.13	2.70	158.02	1.51	10.79	399,207.60	746,305.42
9,192.00	28.75	356.33	9,177.69	5,818.79	16.65	157.14	15.47	12.45	399,221.55	746,304.54
9,224.00	32.80	356.38	9,205.18	5,846.28	32.99	156.10	31.82	12.66	399,237.89	746,303.50
9,255.00	36.40	356.47	9,230.69	5,871.79	50.55	155.00	49.39	11.61	399,255.45	746,302.40
9,287.00	39.57	357.12	9,255.91	5,897.01	70.22	153.91	69.06	9.98	399,275.12	746,301.31
9,318.00	43.00	357.62	9,279.20	5,920.30	90.65	152.97	89.50	11.12	399,295.55	746,300.37
9,350.00	46.78	357.69	9,301.87	5,942.97	113.21	152.05	112.06	11.81	399,318.11	746,299.45
9,381.00	50.03	357.62	9,322.44	5,963.54	136.37	151.10	135.23	10.49	399,341.27	746,298.50
9,412.00	53.64	357.66	9,341.60	5,982.70	160.72	150.10	159.59	11.65	399,365.62	746,297.50
9,444.00	57.60	357.23	9,359.66	6,000.76	187.09	148.92	185.97	12.42	399,391.99	746,296.32
9,476.00	61.38	357.48	9,375.91	6,017.01	214.63	147.65	213.52	11.83	399,419.53	746,295.05
9,507.00	65.25	357.86	9,389.83	6,030.93	242.30	146.52	241.19	12.53	399,447.20	746,293.92
9,538.00	69.29	358.13	9,401.80	6,042.90	270.87	145.52	269.77	13.06	399,475.77	746,292.92

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Well:	#4H	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)	
9,576.00	74.04	357.68	9,413.75	6,054.85	306.90	144.20	305.81	12.55	399,511.80	746,291.60	
9,607.00	78.08	357.07	9,421.22	6,062.32	336.95	142.82	335.87	13.17	399,541.85	746,290.22	
9,639.00	81.07	356.55	9,427.01	6,068.11	368.37	141.07	367.30	9.48	399,573.27	746,288.47	
9,669.00	81.51	356.79	9,431.55	6,072.65	397.98	139.35	396.92	1.67	399,602.88	746,286.75	
9,701.00	81.87	356.66	9,436.18	6,077.28	429.59	137.54	428.54	1.19	399,634.49	746,284.94	
9,732.00	84.15	356.84	9,439.95	6,081.05	460.31	135.80	459.27	7.38	399,665.21	746,283.20	
9,762.00	86.44	357.62	9,442.41	6,083.51	490.17	134.35	489.15	8.06	399,695.07	746,281.75	
9,795.00	86.88	358.61	9,444.33	6,085.43	523.09	133.27	522.08	3.28	399,727.99	746,280.67	
9,826.00	87.05	358.66	9,445.97	6,087.07	554.04	132.53	553.03	0.57	399,758.94	746,279.93	
9,857.00	88.72	358.10	9,447.12	6,088.22	585.01	131.65	584.00	5.68	399,789.91	746,279.05	
9,951.00	89.69	358.63	9,448.42	6,089.52	678.96	128.97	677.97	1.18	399,883.86	746,276.37	
10,045.00	89.08	358.34	9,449.43	6,090.53	772.92	126.49	771.95	0.72	399,977.82	746,273.89	
10,140.00	88.90	358.23	9,451.10	6,092.20	867.86	123.65	866.91	0.22	400,072.76	746,271.05	
10,235.00	88.90	357.67	9,452.93	6,094.03	962.78	120.25	961.85	0.59	400,167.68	746,267.65	
10,329.00	88.72	357.39	9,454.88	6,095.98	1,056.68	116.20	1,055.77	0.35	400,261.58	746,263.60	
10,423.00	88.11	357.26	9,457.48	6,098.58	1,150.54	111.81	1,149.67	0.66	400,355.44	746,259.21	
10,517.00	89.08	357.46	9,459.78	6,100.88	1,244.41	107.48	1,243.57	1.05	400,449.31	746,254.88	
10,610.00	88.55	357.73	9,461.71	6,102.81	1,337.31	103.58	1,336.49	0.64	400,542.21	746,250.98	
10,704.00	89.78	356.77	9,463.08	6,104.18	1,431.18	99.07	1,430.40	1.66	400,636.08	746,246.47	
10,798.00	89.52	356.70	9,463.65	6,104.75	1,525.03	93.72	1,524.28	0.29	400,729.93	746,241.12	
10,894.00	89.52	356.58	9,464.46	6,105.56	1,620.86	88.09	1,620.16	0.12	400,825.76	746,235.49	
10,990.00	89.87	356.52	9,464.97	6,106.07	1,716.69	82.32	1,716.02	0.37	400,921.59	746,229.72	
11,084.00	90.75	357.24	9,464.46	6,105.56	1,810.54	77.20	1,809.91	1.21	401,015.44	746,224.60	
11,180.00	89.96	357.72	9,463.86	6,104.96	1,906.45	72.98	1,905.85	0.96	401,111.35	746,220.38	
11,275.00	89.34	358.24	9,464.44	6,105.54	2,001.39	69.63	2,000.81	0.85	401,206.29	746,217.03	
11,371.00	88.72	356.35	9,466.07	6,107.17	2,097.26	65.10	2,096.71	2.07	401,302.16	746,212.50	
11,467.00	87.85	356.96	9,468.94	6,110.04	2,193.05	59.50	2,192.55	1.11	401,397.95	746,206.90	

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

MD (ft)	Inc (°)	Azi (°)	TVD (ft)	TVDSS (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)	Northing (ft)	Easting (ft)
11,563.00	88.81	357.92	9,471.74	6,112.84	2,288.91	55.22	2,288.44	1.41	401,493.81	746,202.62
11,659.00	88.99	357.14	9,473.58	6,114.68	2,384.81	51.08	2,384.36	0.83	401,589.71	746,198.48
11,754.00	90.31	357.35	9,474.16	6,115.26	2,479.69	46.51	2,479.27	1.41	401,684.59	746,193.91
11,850.00	91.10	356.67	9,472.98	6,114.08	2,575.55	41.51	2,575.17	1.09	401,780.45	746,188.91
11,946.00	91.10	356.03	9,471.14	6,112.24	2,671.34	35.40	2,671.00	0.67	401,876.24	746,182.80
12,041.00	91.71	355.09	9,468.81	6,109.91	2,766.03	28.04	2,765.74	1.18	401,970.93	746,175.44
12,137.00	91.10	356.21	9,466.46	6,107.56	2,861.72	20.77	2,861.48	1.33	402,066.62	746,168.17
12,233.00	91.80	354.87	9,464.03	6,105.13	2,957.39	13.30	2,957.21	1.57	402,162.29	746,160.70
12,328.00	90.66	356.24	9,461.99	6,103.09	3,052.08	5.94	3,051.95	1.88	402,256.98	746,153.34
12,424.00	90.48	356.89	9,461.03	6,102.13	3,147.91	0.19	3,147.82	0.70	402,352.81	746,147.59
12,519.00	89.34	358.06	9,461.18	6,102.28	3,242.81	-3.99	3,242.75	1.72	402,447.71	746,143.41
12,614.00	90.84	357.97	9,461.03	6,102.13	3,337.75	-7.28	3,337.71	1.58	402,542.65	746,140.12
12,710.00	91.89	358.87	9,458.75	6,099.85	3,433.68	-9.93	3,433.66	1.44	402,638.58	746,137.47
12,806.00	89.60	357.99	9,457.50	6,098.60	3,529.63	-12.56	3,529.63	2.56	402,734.53	746,134.84
12,901.00	89.34	356.84	9,458.38	6,099.48	3,624.53	-16.85	3,624.55	1.24	402,829.43	746,130.55
12,996.00	89.78	356.31	9,459.11	6,100.21	3,719.36	-22.52	3,719.42	0.73	402,924.26	746,124.88
13,092.00	90.31	356.57	9,459.03	6,100.13	3,815.17	-28.48	3,815.28	0.61	403,020.07	746,118.92
13,188.00	89.87	355.95	9,458.88	6,099.98	3,910.97	-34.74	3,911.12	0.79	403,115.87	746,112.66
13,283.00	90.48	358.30	9,458.59	6,099.69	4,005.84	-39.51	4,006.02	2.56	403,210.74	746,107.89
13,379.00	92.51	359.28	9,456.08	6,097.18	4,101.78	-41.54	4,101.97	2.35	403,306.68	746,105.86
13,474.00	91.28	359.47	9,452.94	6,094.04	4,196.72	-42.57	4,196.92	1.31	403,401.62	746,104.83
13,570.00	92.33	359.72	9,449.92	6,091.02	4,292.67	-43.25	4,292.87	1.12	403,497.57	746,104.15
13,665.00	90.92	0.84	9,447.23	6,088.33	4,387.62	-42.78	4,387.82	1.90	403,592.52	746,104.62
13,761.00	91.63	0.40	9,445.09	6,086.19	4,483.59	-41.75	4,483.78	0.87	403,688.49	746,105.65
13,802.00	91.63	0.24	9,443.92	6,085.02	4,524.58	-41.52	4,524.76	0.39	403,729.48	746,105.88
13,850.00	91.63	0.24	9,442.56	6,083.66	4,572.56	-41.32	4,572.74	0.00	403,777.46	746,106.08

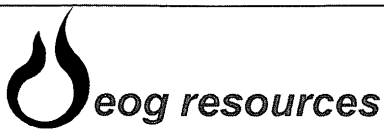
BHL-13850.00°MD,91.63°INC,0.24°AZI, 9442.56°TVD, 4572.74°VS, 4572.56°N, -41.32°E

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Site:	Lomas Rojas "26" State Com	MD Reference:	KB TO GL 30' @ 3358.90ft (30' KB Correction)
Well:	#4H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Midland Database

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
LTGT1(LOMAS#4H) - survey misses target center by 8.56ft at 11674.32ft MD (9473.83 TVD, 2400.11 N, 50.32 E) - Point	0.00	0.00	9,470.00	2,400.50	57.97	401,605.400	746,205.370	32° 6' 5.881 N	103° 32' 17.670 W
Lomas#4H_PBHL - survey misses target center by 70.04ft at 13850.00ft MD (9442.56 TVD, 4572.56 N, -41.32 E) - Point	0.00	0.00	9,492.52	4,621.20	-34.70	403,826.100	746,112.700	32° 6' 27.863 N	103° 32' 18.557 W

Survey Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
13,850.00	9,442.56	4,572.56	-41.32	BHL-13850.00'MD,91.63°INC,0.24°AZI, 9442.56'TVD, 4572.74°VS, 457

Checked By: _____ Approved By: _____ Date: _____



Project: Lea County
Site: Lomas Rojas "26" State Cor
Well: #4H
Wellbore: OH
Plan: Plan #5A (#4H/OH)



Azimuths to Grid North
True North: -0.42°
Magnetic North: 7.28°

Magnetic Field
Strength: 48703.1nT
Dip Angle: 60.12°
Date: 02/26/2010
Model: IGRF200510

PATHFINDER

WELL DETAILS: #4H

Ground Elevation: 3328.90
RKB Elevation: KB TO GL 30' @ 3358.90R (30' KB Correction)
Rig Name: 30' KB Correction

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Spot
0.00	0.00	399204.900	746147.400	32° 5' 42.131 N	103° 32' 18.550 W	

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	8970.00	0.77	174.68	8966.07	-46.47	160.12	0.00	0.00	-47.68	
2	9721.73	89.42	357.60	9430.00	425.84	140.65	12.00	-177.08	424.77	
3	11698.23	89.42	357.60	9470.01	2400.50	57.86	0.00	0.00	2400.00	LTGT1(LOMAS#4H)
4	11698.86	89.42	357.61	9470.01	2401.13	57.86	2.00	91.43	2400.53	
5	13920.97	89.42	357.61	9492.52	4621.20	-34.70	0.00	0.00	4621.33	Lomas#4H_PBHL

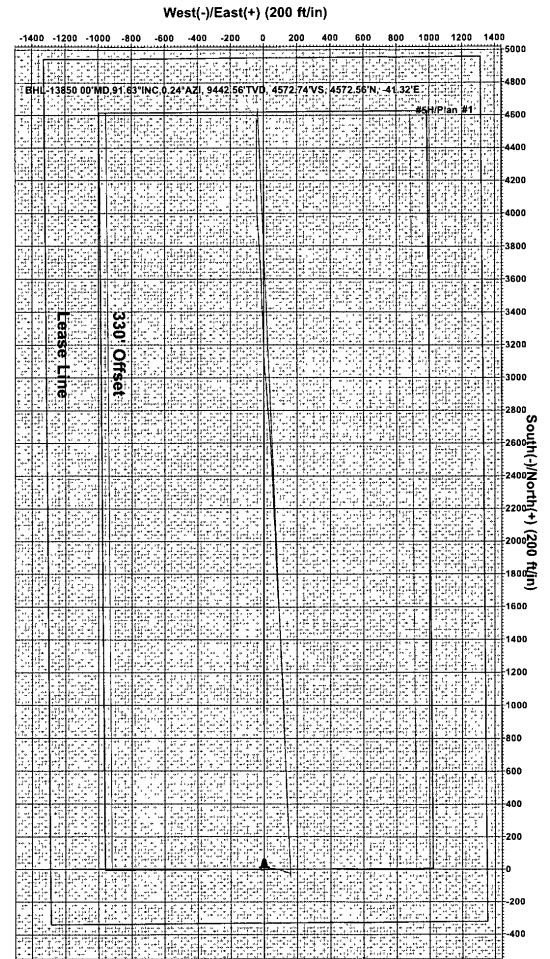
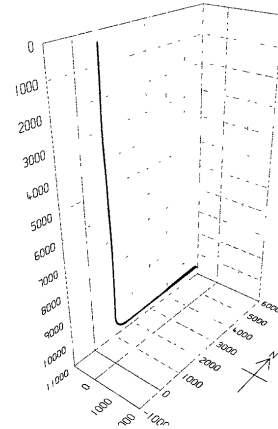
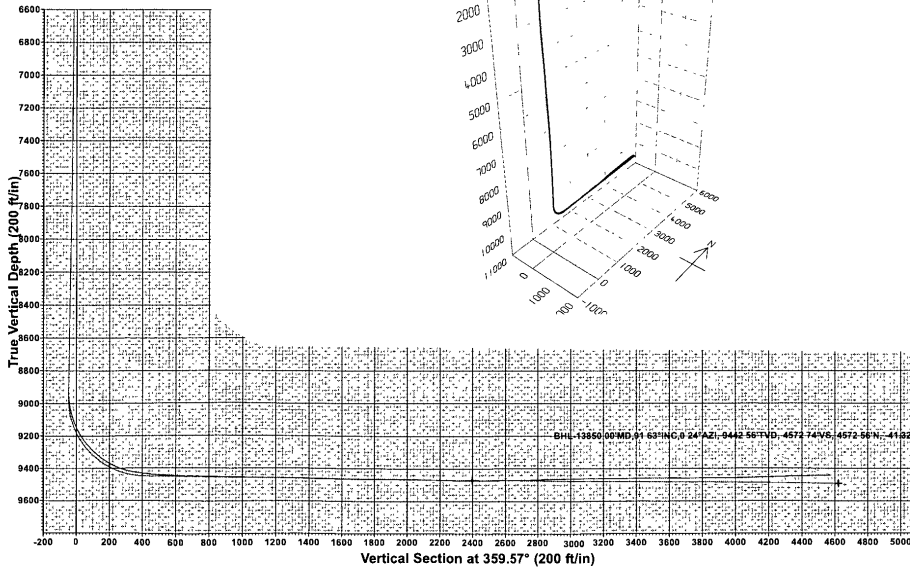
WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N/-S	+E/-W	Northing	Easting	Shape
LTGT1(LOMAS#4H)	9470.00	2400.50	57.97	401605.400	746205.370	Point
Lomas#4H_PBHL	9492.52	4621.20	-34.70	403826.100	746112.700	Point

PROJECT DETAILS: Lea County
Geodetic System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone: New Mexico East 3001
System Datum: Mean Sea Level
Local North: Grid

LEGEND

- #5H, OH, Plan #1 V0
- #3H, OH, Plan #1 V0
- #4H, OH, MWD #1
- Plan #5A



Plan: Plan #5A (#4H/OH)
Created By: Neta Bingham Date: 8/17, May 11 2010
Checked: _____ Date: _____