

Results of Directional Survey

API number:	30-025-39327		
OGRID:		Operator:	EOG RESOURCES INC
		Property:	VACA 14 FEDERAL # 3

surface	ULSTR:	B	14	T	25S	R	33E
			660	FNL	1980	FEL	

BH Loc	ULSTR:	O	14	T	25S	R	33E
			4699	FNL	1937	FEL	

Top Perf/OH	ULSTR:	B	14	T	25S	R	33E
		9740	1241	FNL	1916	FEL	

Bot Perf/OH	ULSTR:	O	14	T	25S	R	33E
		12890	4389	FNL	1943	FEL	

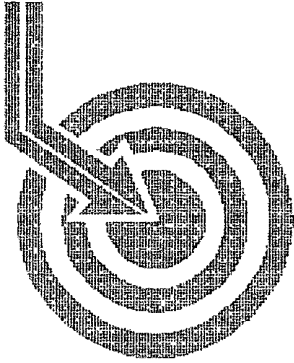
	MD	N/S	E/W	VD
	9730	-570.92	64.44	9462.21
TOP PERFS/OH	9740	-580.78	63.97	9463.80
	9762	-602.47	62.95	9467.29
	12886	-3724.61	36.84	9489.52
BOT PERFS/OH	12890	-3728.61	36.93	9489.55
	12948	-3786.59	38.24	9490.04

NEXT TO LAST	13073	-3911.56	40.95	9489.03
LAST READING	13162	-4000.52	42.68	9487.32
TD	13200	-4038.50	43.42	9486.59

Surface Location	660	FN	1980	FE
Projected BHL	4699	FN	1937	FE
Location of				
Top Perfs/OH	1241	FN	1916	FE
Bottom Perfs/OH	4389	FN	1943	FE

SUMMARY of Subsurface Locations

Surface Location	B-14-25S-33E	660	FN	1980	FE	Vert. Depth
Top Perfs/OH	B-14-25S-33E	1241	FN	1916	FE	9463.80
Bottom Perfs/OH	O-14-25S-33E	4389	FN	1943	FE	9489.55
Projected TD	O-14-25S-33E	4699	FN	1937	FE	9486.59



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Field: Red Hills
Site: Lea County, NM
Well: Vaca 14 Federal #3H
Wellpath: VH - Job #32K0409156
Survey: 04/29/09

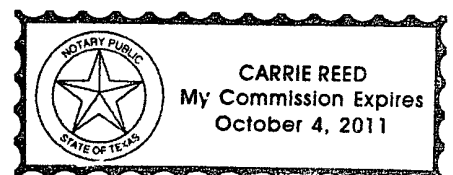
SUR: B-14-s5s-33e, 660/N & 1980/E
BHL: O-14-25s-33e, 4699/N & 1937/E
API # 30-025-39327

This survey is correct to the best of my knowledge
and is supported by actual field data.

.....*R. Wharton*..... Company Representative

Notorized this date 13th of May, 2009.

Carrie Reed
Notary Signature
County of Midland
State of Texas





Scientific
Drilling

Scientific Drilling International Survey Report

Company: EOG	Date: 05/13/2009	Time: 11:05:48	Page: 1
Field: Red Hills	Co-ordinate(NE) Reference:	Site: Lea County, NM, Grid North	
Site: Lea County, NM	Vertical (TVD) Reference:	SITE: 0.0	
Well: Vaca 14 Federal #3H	Section (VS) Reference:	Well: (0.00N,0.00E,179.56Azi)	
Wellpath: VH - Job #32K0409156	Survey Calculation Method:	Minimum Curvature	Db: Sybase

Survey: 04/29/09	Start Date: 04/29/2009
Company: KSRG 0'-10962'	
Tool: Scientific Drilling Internatio	Engineer: Melendez/Williams/Paredes
Tool: Keeper, Keeper Surface Readout Gyro	Tied-to: From Surface

Survey

MD ft	Incl deg	Azim deg	TVD ft	VS ft	N/S ft	E/W ft	DLS deg/100ft	ClsD ft	ClsA deg
0.00	0.00	359.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.55	280.65	100.00	-0.09	0.09	-0.47	0.55	0.48	280.65
200.00	0.37	216.24	200.00	0.07	-0.08	-1.13	0.51	1.14	265.81
300.00	0.40	243.63	299.99	0.49	-0.50	-1.64	0.18	1.71	253.07
400.00	0.40	201.19	399.99	0.96	-0.98	-2.08	0.29	2.30	244.76
500.00	0.44	193.37	499.99	1.66	-1.68	-2.29	0.07	2.84	233.79
600.00	0.55	165.08	599.99	2.50	-2.52	-2.26	0.26	3.38	221.90
700.00	0.82	152.61	699.98	3.60	-3.61	-1.80	0.31	4.04	206.53
800.00	1.02	173.19	799.97	5.12	-5.13	-1.37	0.38	5.31	194.94
900.00	1.25	173.36	899.95	7.09	-7.10	-1.14	0.23	7.19	189.10
1000.00	1.35	182.86	999.92	9.35	-9.36	-1.07	0.24	9.42	186.52
1100.00	1.40	180.78	1099.89	11.75	-11.76	-1.15	0.07	11.81	185.57
1200.00	0.81	180.86	1199.87	13.68	-13.69	-1.17	0.59	13.74	184.90
1300.00	0.65	153.81	1299.86	14.90	-14.90	-0.93	0.38	14.93	183.58
1400.00	0.47	169.66	1399.86	15.81	-15.82	-0.61	0.24	15.83	182.21
1500.00	0.50	162.39	1499.86	16.63	-16.63	-0.40	0.07	16.64	181.39
1600.00	0.49	173.30	1599.85	17.47	-17.48	-0.22	0.09	17.48	180.73
1700.00	0.19	188.16	1699.85	18.06	-18.06	-0.20	0.31	18.07	180.62
1800.00	0.45	265.17	1799.85	18.26	-18.26	-0.61	0.45	18.27	181.91
1900.00	0.47	268.05	1899.85	18.30	-18.31	-1.41	0.03	18.36	184.41
2000.00	0.41	297.04	1999.84	18.14	-18.16	-2.14	0.23	18.29	186.72
2100.00	0.60	337.71	2099.84	17.49	-17.51	-2.66	0.39	17.71	188.63
2200.00	0.64	341.90	2199.83	16.47	-16.50	-3.03	0.06	16.77	190.41
2300.00	0.96	35.54	2299.82	15.26	-15.28	-2.72	0.78	15.52	190.08
2400.00	1.05	37.31	2399.81	13.86	-13.87	-1.67	0.10	13.97	186.88
2500.00	0.88	44.10	2499.80	12.59	-12.59	-0.58	0.20	12.61	182.66
2600.00	0.99	57.63	2599.78	11.58	-11.58	0.68	0.25	11.60	176.64
2700.00	1.81	56.02	2699.75	10.26	-10.23	2.72	0.82	10.59	165.12
2800.00	2.44	58.06	2799.68	8.27	-8.23	5.84	0.63	10.09	144.65
2900.00	2.05	58.48	2899.61	6.23	-6.16	9.17	0.39	11.05	123.92
3000.00	1.94	61.94	2999.54	4.53	-4.43	12.18	0.16	12.97	109.99
3100.00	2.77	48.94	3099.46	2.17	-2.05	15.50	0.98	15.64	97.53
3200.00	3.91	42.68	3199.29	-1.89	2.04	19.63	1.20	19.74	84.06
3300.00	3.98	45.27	3299.05	-6.80	6.99	24.41	0.19	25.39	74.02
3400.00	2.52	63.05	3398.89	-10.21	10.43	28.84	1.76	30.66	70.11
3500.00	2.15	78.30	3498.81	-11.56	11.81	32.63	0.72	34.70	70.11
3600.00	1.05	111.96	3598.77	-11.57	11.85	35.32	1.40	37.25	71.46
3700.00	1.40	110.35	3698.75	-10.79	11.08	37.31	0.35	38.92	73.46
3800.00	1.70	109.91	3798.71	-9.84	10.15	39.85	0.30	41.13	75.71
3900.00	2.30	80.38	3898.65	-9.65	9.98	43.23	1.17	44.36	77.00
4000.00	1.80	81.56	3998.59	-10.19	10.54	46.76	0.50	47.93	77.29
4100.00	1.87	201.12	4098.56	-8.89	9.25	47.73	3.17	48.61	79.03
4200.00	1.92	198.08	4198.51	-5.78	6.14	46.62	0.11	47.02	82.50
4300.00	1.13	139.31	4298.48	-3.44	3.80	46.74	1.65	46.89	85.35
4400.00	2.73	114.58	4398.42	-1.68	2.06	49.55	1.77	49.59	87.62
4500.00	2.82	111.42	4498.30	0.24	0.17	54.01	0.18	54.01	89.82
4600.00	2.44	107.11	4598.19	1.80	-1.35	58.33	0.43	58.35	91.33
4700.00	1.45	148.49	4698.14	3.53	-3.06	61.03	1.66	61.10	92.87
4800.00	3.81	151.41	4798.03	7.54	-7.06	63.28	2.36	63.67	96.36



Scientific Drilling International Survey Report

Company: EOG	Date: 05/13/2009	Time: 11:05:48	Page: 2
Field: Red Hills	Co-ordinate(NE) Reference:	Site: Lea County, NM, Grid North	
Site: Lea County, NM	Vertical (TVD) Reference:	SITE 0.0	
Well: Vaca 14 Federal #3H	Section (VS) Reference:	Well (0.00N,0.00E,179.56Azi)	
Wellpath: VH - Job #32K0409156	Survey Calculation Method:	Minimum Curvature	Db: Sybase

Survey

MD ft	Incl deg	Azim deg	TVD ft	VS ft	N/S ft	E/W ft	DLS deg/100ft	ClsD ft	ClsA deg
4900.00	2.65	148.45	4897.87	12.45	-11.94	66.08	1.17	67.15	100.25
5000.00	1.11	79.63	4997.82	14.26	-13.74	68.24	2.48	69.61	101.38
5100.00	1.37	70.50	5097.80	13.71	-13.17	70.32	0.33	71.54	100.60
5200.00	1.48	77.78	5197.77	13.05	-12.49	72.71	0.21	73.77	99.75
5300.00	1.34	77.99	5297.74	12.55	-11.98	75.11	0.14	76.06	99.06
5400.00	1.19	74.63	5397.71	12.05	-11.46	77.26	0.17	78.10	98.44
5500.00	1.23	75.89	5497.69	11.53	-10.92	79.30	0.05	80.05	97.84
5600.00	0.91	74.63	5597.67	11.07	-10.45	81.11	0.32	81.78	97.34
5700.00	0.58	90.61	5697.66	10.88	-10.24	82.38	0.39	83.01	97.09
5800.00	0.44	57.37	5797.66	10.68	-10.04	83.21	0.32	83.81	96.88
5900.00	0.42	77.58	5897.66	10.40	-9.76	83.89	0.15	84.46	96.63
6000.00	0.36	85.59	5997.65	10.30	-9.65	84.56	0.08	85.11	96.51
6100.00	0.35	51.42	6097.65	10.09	-9.44	85.11	0.21	85.63	96.33
6200.00	0.36	71.83	6197.65	9.81	-9.15	85.65	0.13	86.14	96.10
6300.00	0.30	351.13	6297.65	9.45	-8.79	85.91	0.43	86.36	95.84
6400.00	0.17	309.89	6397.65	9.10	-8.44	85.75	0.21	86.17	95.62
6500.00	0.17	356.14	6497.65	8.85	-8.20	85.63	0.13	86.02	95.47
6600.00	0.27	332.53	6597.65	8.50	-7.84	85.51	0.13	85.87	95.24
6700.00	0.33	338.03	6697.65	8.02	-7.36	85.30	0.07	85.61	94.93
6800.00	0.41	303.51	6797.64	7.55	-6.90	84.89	0.23	85.17	94.65
6900.00	0.49	294.56	6897.64	7.17	-6.52	84.20	0.11	84.45	94.43
7000.00	0.46	294.60	6997.64	6.82	-6.18	83.45	0.03	83.68	94.23
7100.00	0.37	276.51	7097.63	6.61	-5.98	82.76	0.16	82.98	94.13
7200.00	0.32	185.82	7197.63	6.85	-6.22	82.41	0.49	82.65	94.31
7300.00	0.51	209.06	7297.63	7.51	-6.88	82.17	0.25	82.46	94.79
7400.00	0.74	193.59	7397.62	8.53	-7.90	81.80	0.28	82.18	95.52
7500.00	0.89	196.26	7497.61	9.90	-9.27	81.43	0.15	81.96	96.50
7600.00	0.76	203.70	7597.60	11.25	-10.63	80.95	0.17	81.64	97.48
7700.00	0.82	196.58	7697.59	12.54	-11.92	80.48	0.11	81.35	98.42
7800.00	0.86	199.61	7797.58	13.93	-13.31	80.02	0.06	81.12	99.44
7900.00	0.91	199.62	7897.57	15.38	-14.77	79.50	0.05	80.86	100.52
8000.00	1.05	188.78	7997.56	17.03	-16.42	79.10	0.23	80.78	101.73
8100.00	1.06	191.14	8097.54	18.84	-18.23	78.78	0.04	80.86	103.03
8200.00	1.08	189.87	8197.52	20.67	-20.07	78.44	0.03	80.96	104.35
8300.00	0.90	197.37	8297.51	22.35	-21.75	78.04	0.22	81.01	105.57
8400.00	0.83	198.95	8397.50	23.78	-23.18	77.57	0.07	80.96	106.64
8500.00	0.71	199.68	8497.49	25.04	-24.45	77.13	0.12	80.91	107.59
8600.00	0.61	190.34	8597.48	26.15	-25.56	76.82	0.15	80.96	108.40
8700.00	0.58	193.15	8697.48	27.16	-26.57	76.61	0.04	81.09	109.13
8800.00	0.61	201.04	8797.47	28.15	-27.56	76.31	0.09	81.13	109.86
8900.00	0.40	207.81	8897.47	28.95	-28.37	75.95	0.22	81.08	110.48
9000.00	0.41	206.83	8997.46	29.58	-29.00	75.63	0.01	81.00	110.98
9100.00	0.30	254.91	9097.46	29.96	-29.38	75.21	0.31	80.75	111.34
9200.00	0.27	245.81	9197.46	30.12	-29.55	74.75	0.05	80.38	111.57
9300.00	0.38	261.36	9297.46	30.26	-29.70	74.20	0.14	79.92	111.81
9400.00	0.52	272.67	9397.46	30.29	-29.72	73.42	0.17	79.21	112.04
9500.00	0.56	259.63	9497.45	30.35	-29.79	72.49	0.13	78.37	112.34
9600.00	0.61	201.85	9597.45	30.92	-30.37	71.81	0.57	77.97	112.93
9700.00	0.86	186.88	9697.44	32.16	-31.61	71.52	0.31	78.20	113.85
9800.00	1.09	176.58	9797.42	33.85	-33.31	71.49	0.29	78.87	114.98
9900.00	0.97	187.36	9897.41	35.64	-35.10	71.44	0.23	79.59	116.16
10000.00	0.57	254.83	9997.40	36.61	-36.07	70.85	0.92	79.50	116.98



Scientific
Drilling

Scientific Drilling International

Survey Report

Company: EOG	Date: 05/13/2009	Time: 11:05:48	Page: 3
Field: Red Hills	Co-ordinate(NE) Reference:	Site: Lea County, NM, Grid North	
Site: Lea County, NM	Vertical (TVD) Reference:	SITE 0.0	
Well: Vaca 14 Federal #3H	Section (VS) Reference:	Well (0.00N,0.00E,179.56Azi)	
Wellpath: VH - Job #32K0409156	Survey Calculation Method:	Minimum Curvature	Db: Sybase

Survey

MD ft	Incl deg	Azim deg	TVD ft	VS ft	N/S ft	E/W ft	DLS deg/100ft	ClsD ft	ClsA deg
10100.00	0.61	268.37	10097.40	36.75	-36.21	69.84	0.14	78.67	117.41
10200.00	0.68	269.90	10197.39	36.75	-36.23	68.71	0.07	77.68	117.80
10300.00	1.52	304.25	10297.37	36.00	-35.48	67.02	1.03	75.83	117.90
10400.00	2.40	312.35	10397.31	33.82	-33.32	64.38	0.92	72.49	117.37
10500.00	2.56	319.15	10497.22	30.70	-30.22	61.37	0.33	68.41	116.22
10600.00	2.04	309.21	10597.14	27.86	-27.41	58.53	0.65	64.63	115.09
10700.00	3.05	300.80	10697.04	25.34	-24.92	54.86	1.07	60.26	114.43
10800.00	2.31	304.57	10796.93	22.81	-22.42	50.92	0.76	55.64	113.76
10900.00	2.14	302.84	10896.85	20.63	-20.26	47.69	0.18	51.82	113.02
10962.00	2.16	301.56	10958.81	19.37	-19.02	45.72	0.08	49.52	112.59



Scientific
Drilling

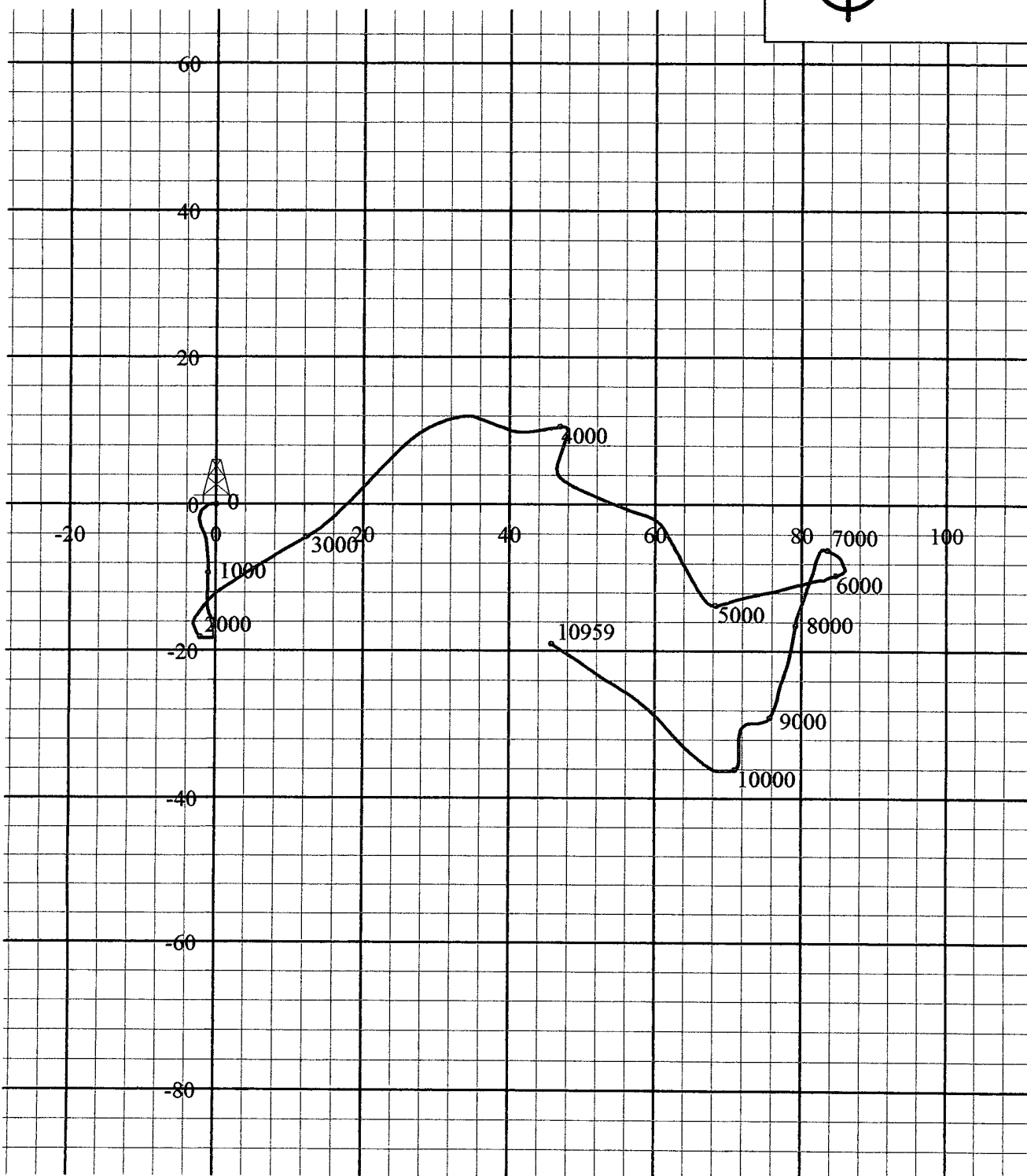
Field: Red Hills
Site: Lea County, NM
Well: Vaca 14 Federal #3H
Wellpath: VH - Job #32K0409156
Survey: 04/29/09



Azimuths to Grid North
True North: 0.00°
Magnetic North: 0.00°

Magnetic Field
Strength: 0nT
Dip Angle: 0.00°
Date: 05/13/2009
Model: igrf2000

South(-)/North(+) [20ft/in]



West(-)/East(+) [20ft/in]



EOG Resources, Inc.

Lea County
Vaca "14" Fed
#3H
OH

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Survey: MWD #1

Pathfinder X & Y Survey Report

14 August, 2009

PATHFINDER



Pathfinder Energy Services
Pathfinder X & Y Survey Report



Company:	EOG Resources, Inc.	Local Co-ordinate Reference:	Well #3H
Project:	Lea County	TVD Reference:	Well1 @ 3375.70ft (McVay #10 - 18' KB Correctio
Site:	Vaca "14" Fed	MD Reference:	Well1 @ 3375.70ft (McVay #10 - 18' KB Correctio
Well:	#3H	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		Vaca "14" Fed									
Site Position:		Northing:		414,051.100 ft		Latitude:		32° 8' 9.097 N			
From:		Map		Easting:		745,404.300 ft		Longitude:		103° 32' 25.918 W	
Position Uncertainty:		0.00 ft		Slot Radius:		"		Grid Convergence:		0.42 °	

Well:	#3H					
Well Position	+N/-S	0.00 ft	Northing:	414,051.100 ft	Latitude:	32° 8' 9.097 N
	+E/-W	0.00 ft	Easting:	745,404.300 ft	Longitude:	103° 32' 25.918 W
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level:	3,357.70 ft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	07/01/2009	7.79	60.17	48,791

Design		OH			
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction	
	(ft)	(ft)	(ft)	(°)	
	0.00	0.00	0.00	179.56	



Pathfinder Energy Services

Pathfinder X & Y Survey Report



Company: EOG Resources, Inc.
Project: Lea County
Site: Vaca "14" Fed
Well: #3H
Wellbore: OH
Design: OH

Local Co-ordinate Reference: Well #3H
TVD Reference: Well1 @ 3375.70ft (McVay #10 - 18' KB Correctio
MD Reference: Well1 @ 3375.70ft (McVay #10 - 18' KB Correctio
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Midland Database

Survey Program		Date 08/14/2009			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
100.00	8,600.00	GYRO (OH)	Gyro	Gyro	
8,700.00	13,200.00	MWD #1 (OH)	MWD	MWD - Standard	

Survey											
MD (ft)	Inc (°)	Azi (°)	TVD (ft)	TVDSS (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)	Northing (ft)	Easting (ft)	
8,600.00	0.61	190.34	8,597.48	5,221.78	-25.56	76.82	26.15	0.00	414,025.54	745,481.12	
8,700.00	0.58	193.15	8,697.48	5,321.78	-26.57	76.61	27.16	0.04	414,024.53	745,480.91	
8,800.00	0.61	201.04	8,797.47	5,421.77	-27.56	76.31	28.15	0.09	414,023.54	745,480.61	
8,818.00	0.53	191.79	8,815.47	5,439.77	-27.73	76.26	28.32	0.68	414,023.37	745,480.56	
8,850.00	2.11	178.34	8,847.46	5,471.76	-28.47	76.24	29.05	5.00	414,022.63	745,480.54	
8,882.00	6.33	182.20	8,879.37	5,503.67	-30.82	76.19	31.41	13.21	414,020.28	745,480.49	
8,914.00	11.26	183.54	8,910.98	5,535.28	-35.71	75.93	36.29	15.42	414,015.39	745,480.23	
8,946.00	13.01	184.56	8,942.26	5,566.56	-42.41	75.45	42.99	5.51	414,008.69	745,479.75	
8,977.00	14.16	181.92	8,972.40	5,596.70	-49.68	75.05	50.26	4.21	414,001.42	745,479.35	
9,009.00	17.41	179.38	9,003.19	5,627.49	-58.38	74.97	58.96	10.38	413,992.72	745,479.27	
9,039.00	21.37	177.24	9,031.48	5,655.78	-68.34	75.28	68.91	13.41	413,982.76	745,479.58	
9,071.00	25.32	176.82	9,060.85	5,685.15	-81.00	75.94	81.58	12.35	413,970.10	745,480.24	
9,103.00	25.94	177.78	9,089.71	5,714.01	-94.82	76.59	95.41	2.33	413,956.28	745,480.89	
9,135.00	27.96	179.87	9,118.23	5,742.53	-109.32	76.88	109.91	6.97	413,941.78	745,481.18	
9,167.00	29.81	180.05	9,146.25	5,770.55	-124.78	76.89	125.36	5.79	413,926.32	745,481.19	
9,198.00	33.50	180.89	9,172.63	5,796.93	-141.04	76.75	141.63	11.99	413,910.06	745,481.05	
9,230.00	36.76	182.68	9,198.80	5,823.10	-159.44	76.16	160.02	10.68	413,891.66	745,480.46	
9,260.00	39.22	181.94	9,222.44	5,846.74	-177.89	75.42	178.46	8.34	413,873.21	745,479.72	
9,291.00	42.03	181.37	9,245.97	5,870.27	-198.06	74.84	198.63	9.14	413,853.04	745,479.14	
9,322.00	44.67	181.28	9,268.51	5,892.81	-219.34	74.35	219.90	8.52	413,831.76	745,478.65	
9,354.00	46.96	180.80	9,290.81	5,915.11	-242.28	73.94	242.84	7.24	413,808.82	745,478.24	



Pathfinder Energy Services
Pathfinder X & Y Survey Report



Company: EOG Resources, Inc.
Project: Lea County
Site: Vaca "14" Fed
Well: #3H
Wellbore: OH
Design: OH

Local Co-ordinate Reference: Well #3H
TVD Reference: Well1 @ 3375.70ft (McVay #10 - 18' KB Correctio
MD Reference: Well1 @ 3375.70ft (McVay #10 - 18' KB Correctio
North Reference: Grid
Survey/Calculation Method: Minimum Curvature
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)
9,385.00	48.72	181.12	9,311.62	5,935.92	-265.25	73.55	265.81	5.73	413,785.85	745,477.85
9,417.00	51.09	181.07	9,332.22	5,956.52	-289.73	73.08	290.28	7.41	413,761.37	745,477.38
9,448.00	53.99	179.91	9,351.08	5,975.38	-314.33	72.88	314.88	9.81	413,736.77	745,477.18
9,478.00	56.98	179.07	9,368.07	5,992.37	-339.05	73 10	339.60	10.23	413,712.05	745,477.40
9,510.00	60.15	180.84	9,384.76	6,009.06	-366.34	73.12	366.89	10.97	413,684.76	745,477.42
9,542.00	62.52	181.91	9,400.11	6,024.41	-394.41	72.44	394.96	7.97	413,656.69	745,476.74
9,574.00	64.90	182 57	9,414.28	6,038.58	-423.08	71.32	423.61	7.66	413,628 02	745,475.62
9,606.00	67.62	182.54	9,427.16	6,051.46	-452.34	70.01	452.86	8.50	413,598.76	745,474.31
9,637.00	70.43	182.39	9,438.26	6,062.56	-481.25	68.77	481.77	9.08	413,569.85	745,473.07
9,668.00	73.78	183 01	9,447.78	6,072.08	-510.72	67.37	511.22	10.97	413,540.38	745,471.67
9,699.00	76.50	182.71	9,455.73	6,080.03	-540.64	65.88	541.13	8 82	413,510.46	745,470.18
9,730 00	79.40	182.75	9,462.21	6,086.51	-570.92	64.44	571.40	9.36	413,480.18	745,468.74
9,762.00	82.31	182.66	9,467.29	6,091.59	-602 47	62.95	602.94	9.10	413,448.63	745,467.25
9,792.00	85.65	182.28	9,470.44	6,094.74	-632.28	61.66	632.73	11.20	413,418.82	745,465.96
9,823 00	87.49	181 71	9,472.29	6,096.59	-663.20	60.58	663 65	6.21	413,387.90	745,464.88
9,854 00	89.25	180 14	9,473.17	6,097 47	-694.18	60.08	694.62	7.61	413,356.92	745,464.38
9,885.00	90.04	179.89	9,473.36	6,097 66	-725 18	60.08	725.62	2.67	413,325.92	745,464.38
9,916.00	90.40	179.64	9,473.25	6,097 55	-756.18	60.20	756.62	1.41	413,294.92	745,464 50
9,947.00	89.52	180 13	9,473.27	6,097.57	-787.18	60 26	787.62	3.25	413,263.92	745,464.56
9,977.00	89.52	180.01	9,473.52	6,097.82	-817.18	60 23	817.62	0.40	413,233.92	745,464 53
10,009.00	89.96	180.56	9,473.66	6,097.96	-849.18	60 07	849.61	2 20	413,201.92	745,464.37
10,051.00	89.22	180 30	9,473.96	6,098.26	-891.17	59 75	891.61	1.87	413,159 93	745,464.05
10,083.00	89.27	180.55	9,474.39	6,098.69	-923.17	59.52	923 60	0.80	413,127 93	745,463.82
10,115.00	89.78	180.50	9,474.65	6,098.95	-955.17	59 22	955.60	1.60	413,095.93	745,463.52
10,145.00	90.17	180 31	9,474.66	6,098.96	-985.17	59 01	985 59	1.45	413,065.93	745,463 31
10,177.00	89.66	180 03	9,474.71	6,099 01	-1,017 17	58 92	1,017.59	1.82	413,033.93	745,463 22
10,209 00	89.61	179.87	9,474.92	6,099.22	-1,049.17	58 94	1,049.59	0.52	413,001 93	745,463 24



Pathfinder Energy Services
Pathfinder X & Y Survey Report



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North Reference: Grid
Survey Calculation Method: Minimum Curvature
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)	
10,239.00	89.83	179.63	9,475.06	6,099.36	-1,079.17	59.07	1,079.59	1.09	412,971.93	745,463.37	
10,270.00	90.00	179.49	9,475.11	6,099.41	-1,110.16	59.31	1,110.59	0.71	412,940.94	745,463.61	
10,302.00	88.94	179.53	9,475.40	6,099.70	-1,142.16	59.59	1,142.59	3.31	412,908.94	745,463.89	
10,334.00	88.32	179.49	9,476.17	6,100.47	-1,174.15	59.86	1,174.58	1.94	412,876.95	745,464.16	
10,363.00	88.32	179.79	9,477.02	6,101.32	-1,203.14	60.04	1,203.56	1.03	412,847.96	745,464.34	
10,395.00	88.43	180.08	9,477.93	6,102.23	-1,235.13	60.08	1,235.55	0.97	412,815.97	745,464.38	
10,427.00	88.71	180.10	9,478.73	6,103.03	-1,267.12	60.03	1,267.54	0.88	412,783.98	745,464.33	
10,458.00	88.71	179.77	9,479.42	6,103.72	-1,298.11	60.06	1,298.53	1.06	412,752.99	745,464.36	
10,490.00	88.55	179.51	9,480.19	6,104.49	-1,330.10	60.26	1,330.52	0.95	412,721.00	745,464.56	
10,521.00	88.66	179.79	9,480.94	6,105.24	-1,361.09	60.45	1,361.51	0.97	412,690.01	745,464.75	
10,570.00	89.60	180.61	9,481.69	6,105.99	-1,410.08	60.28	1,410.50	2.55	412,641.02	745,464.58	
10,601.00	89.25	180.30	9,482.00	6,106.30	-1,441.08	60.04	1,441.50	1.51	412,610.02	745,464.34	
10,631.00	87.93	180.11	9,482.74	6,107.04	-1,471.07	59.93	1,471.49	4.45	412,580.03	745,464.23	
10,663.00	87.58	179.44	9,483.99	6,108.29	-1,503.04	60.05	1,503.46	2.36	412,548.06	745,464.35	
10,695.00	88.72	178.68	9,485.02	6,109.32	-1,535.02	60.58	1,535.44	4.28	412,516.08	745,464.88	
10,726.00	88.72	178.75	9,485.72	6,110.02	-1,566.01	61.27	1,566.43	0.23	412,485.09	745,465.57	
10,758.00	89.25	178.45	9,486.28	6,110.58	-1,597.99	62.06	1,598.42	1.90	412,453.11	745,466.36	
10,790.00	89.87	178.66	9,486.53	6,110.83	-1,629.98	62.86	1,630.41	2.05	412,421.12	745,467.16	
10,822.00	90.31	179.61	9,486.48	6,110.78	-1,661.98	63.35	1,662.41	3.27	412,389.12	745,467.65	
10,852.00	89.96	179.67	9,486.41	6,110.71	-1,691.98	63.53	1,692.41	1.18	412,359.12	745,467.83	
10,884.00	89.60	180.17	9,486.53	6,110.83	-1,723.97	63.58	1,724.41	1.93	412,327.13	745,467.88	
10,916.00	89.87	180.10	9,486.68	6,110.98	-1,755.97	63.50	1,756.41	0.87	412,295.13	745,467.80	
10,946.00	90.13	179.89	9,486.68	6,110.98	-1,785.97	63.51	1,786.41	1.11	412,265.13	745,467.81	
10,976.00	89.96	180.19	9,486.65	6,110.95	-1,815.97	63.49	1,816.41	1.15	412,235.13	745,467.79	
11,007.00	89.55	181.02	9,486.79	6,111.09	-1,846.97	63.16	1,847.40	2.99	412,204.13	745,467.46	
11,039.00	88.29	181.07	9,487.39	6,111.69	-1,878.96	62.57	1,879.39	3.94	412,172.14	745,466.87	
11,069.00	88.20	181.29	9,488.31	6,112.61	-1,908.94	61.96	1,909.36	0.79	412,142.16	745,466.26	



Pathfinder Energy Services
Pathfinder X & Y Survey Report



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Project: Lea County
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Wellbore: OH
Design: OH

Local Co-ordinate Reference: Well #3H
TVD Reference: Well1 @ 3375.70ft (McVay #10 - 18' KB Correctio
MD Reference: Well1 @ 3375.70ft (McVay #10 - 18' KB Correctio
North Reference: Grid
Survey Calculation Method: Minimum Curvature
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)
11,101.00	88.55	181.10	9,489.22	6,113.52	-1,940.92	61.29	1,941.33	1.24	412,110.18	745,465.59
11,132.00	88.72	180.81	9,489.96	6,114.26	-1,971.91	60.77	1,972.32	1.08	412,079.19	745,465.07
11,163.00	88.37	180.02	9,490.74	6,115.04	-2,002.90	60.55	2,003.30	2.79	412,048.20	745,464.85
11,195.00	88.02	179.17	9,491.75	6,116.05	-2,034.88	60.78	2,035.29	2.87	412,016.22	745,465.08
11,227.00	88.55	179.29	9,492.71	6,117.01	-2,066.86	61.21	2,067.27	1.70	411,984.24	745,465.51
11,259.00	89.08	179.87	9,493.37	6,117.67	-2,098.85	61.44	2,099.26	2.45	411,952.25	745,465.74
11,291.00	88.90	180.87	9,493.93	6,118.23	-2,130.85	61.23	2,131.25	3.17	411,920.25	745,465.53
11,321.00	88.90	181.35	9,494.51	6,118.81	-2,160.84	60.65	2,161.24	1.60	411,890.26	745,464.95
11,353.00	89.34	182.10	9,495.00	6,119.30	-2,192.82	59.69	2,193.21	2.72	411,858.28	745,463.99
11,384.00	90.04	182.23	9,495.17	6,119.47	-2,223.79	58.52	2,224.18	2.30	411,827.31	745,462.82
11,415.00	90.57	181.46	9,495.00	6,119.30	-2,254.78	57.52	2,255.15	3.02	411,796.32	745,461.82
11,447.00	90.92	181.21	9,494.59	6,118.89	-2,286.77	56.77	2,287.13	1.34	411,764.33	745,461.07
11,479.00	91.45	181.31	9,493.93	6,118.23	-2,318.75	56.07	2,319.11	1.69	411,732.35	745,460.37
11,511.00	91.89	181.86	9,492.99	6,117.29	-2,350.73	55.19	2,351.08	2.20	411,700.37	745,459.49
11,543.00	92.42	182.24	9,491.79	6,116.09	-2,382.68	54.04	2,383.03	2.04	411,668.42	745,458.34
11,574.00	92.33	181.93	9,490.51	6,114.81	-2,413.64	52.92	2,413.97	1.04	411,637.46	745,457.22
11,606.00	91.54	182.38	9,489.43	6,113.73	-2,445.59	51.71	2,445.92	2.84	411,605.51	745,456.01
11,638.00	91.45	182.79	9,488.59	6,112.89	-2,477.55	50.27	2,477.86	1.31	411,573.55	745,454.57
11,669.00	91.36	182.53	9,487.83	6,112.13	-2,508.51	48.83	2,508.81	0.89	411,542.59	745,453.13
11,701.00	91.10	182.89	9,487.14	6,111.44	-2,540.46	47.32	2,540.75	1.39	411,510.64	745,451.62
11,732.00	91.80	183.14	9,486.36	6,110.66	-2,571.41	45.69	2,571.69	2.40	411,479.69	745,449.99
11,764.00	92.07	183.38	9,485.28	6,109.58	-2,603.34	43.87	2,603.60	1.13	411,447.76	745,448.17
11,795.00	91.10	183.22	9,484.42	6,108.72	-2,634.28	42.09	2,634.52	3.17	411,416.82	745,446.39
11,826.00	90.13	183.48	9,484.09	6,108.39	-2,665.22	40.28	2,665.45	3.24	411,385.88	745,444.58
11,858.00	90.48	183.63	9,483.92	6,108.22	-2,697.16	38.29	2,697.38	1.19	411,353.94	745,442.59
11,921.00	89.43	183.74	9,483.97	6,108.27	-2,760.03	34.24	2,760.21	1.68	411,291.07	745,438.54
11,983.00	90.04	183.57	9,484.25	6,108.55	-2,821.90	30.29	2,822.05	1.02	411,229.20	745,434.59



Pathfinder Energy Services
Pathfinder X & Y Survey Report



Company:	EOG Resources, Inc.	Local Co-ordinate Reference:	Well #3H
Project:	Lea County	TVD Reference:	Well1 @ 3375.70ft (McVay #10 - 18' KB Correctio
Site:	Vaca "14" Fed	MD Reference:	Well1 @ 3375.70ft (McVay #10 - 18' KB Correctio
Well:	#3H	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)
12,013.00	89.43	182.92	9,484.39	6,108.69	-2,851.85	28.59	2,851.99	2.97	411,199.25	745,432.89
12,076.00	88.46	180.71	9,485.55	6,109.85	-2,914.81	26.60	2,914.92	3.83	411,136.29	745,430.90
12,139.00	89.43	180.31	9,486.71	6,111.01	-2,977.79	26.04	2,977.90	1.67	411,073.31	745,430.34
12,201.00	89.87	179.86	9,487.09	6,111.39	-3,039.79	25.94	3,039.90	1.02	411,011.31	745,430.24
12,263.00	90.92	179.59	9,486.66	6,110.96	-3,101.79	26.24	3,101.90	1.75	410,949.31	745,430.54
12,326.00	90.92	178.52	9,485.65	6,109.95	-3,164.77	27.28	3,164.89	1.70	410,886.33	745,431.58
12,390.00	90.22	179.37	9,485.02	6,109.32	-3,228.76	28.46	3,228.88	1.72	410,822.34	745,432.76
12,452.00	91.45	179.60	9,484.11	6,108.41	-3,290.74	29.02	3,290.87	2.02	410,760.36	745,433.32
12,515.00	89.78	179.18	9,483.44	6,107.74	-3,353.74	29.69	3,353.86	2.73	410,697.36	745,433.99
12,575.00	88.81	178.83	9,484.17	6,108.47	-3,413.72	30.73	3,413.86	1.72	410,637.38	745,435.03
12,638.00	89.43	178.53	9,485.14	6,109.44	-3,476.70	32.18	3,476.84	1.09	410,574.40	745,436.48
12,700.00	88.46	178.93	9,486.28	6,110.58	-3,538.67	33.55	3,538.82	1.69	410,512.43	745,437.85
12,762.00	88.81	179.21	9,487.76	6,112.06	-3,600.64	34.56	3,600.80	0.72	410,450.46	745,438.86
12,824.00	89.43	178.92	9,488.71	6,113.01	-3,662.63	35.57	3,662.79	1.10	410,388.47	745,439.87
12,886.00	89.08	178.74	9,489.52	6,113.82	-3,724.61	36.84	3,724.78	0.63	410,326.49	745,441.14
12,948.00	89.96	178.66	9,490.04	6,114.34	-3,786.59	38.24	3,786.77	1.43	410,264.51	745,442.54
13,011.00	90.66	178.88	9,489.70	6,114.00	-3,849.58	39.60	3,849.77	1.16	410,201.52	745,443.90
13,073.00	90.57	178.61	9,489.03	6,113.33	-3,911.56	40.95	3,911.76	0.46	410,139.54	745,445.25
13,162.00	91.63	179.17	9,487.32	6,111.62	-4,000.52	42.68	4,000.73	1.35	410,050.58	745,446.98
13,200.00	91.63	179.17	9,486.24	6,110.54	-4,038.50	43.23	4,038.72	0.00	410,012.60	745,447.53
Proj to Bit @ 13200' 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 (Vaca #3H)	0.00	0.00	9,490.00	-3,958.30	30.60	410,092 800	745,434.900	32° 7' 29.925 N	103° 32' 25 901 W
- survey misses by 11.49ft at 13119.51ft MD (9488.34 TVD, -3958.05 N, 41.96 E)									
- Point									

Survey Annotations

Measured Depth	Vertical Depth	Local Coordinates		Comment
(ft)	(ft)	+N/-S	+E/-W	
(ft)	(ft)	(ft)	(ft)	
13,200.00	9,486.24	-4,038.50	43.23	Proj to Bit @ 13200'MD

Checked By: _____ Approved By: _____ Date: _____