

Results of Directional Survey

API number:	30-025-40051		
OGRID:		Operator:	EOG RESOURCES INC
		Property:	CABALLO 23 FEDERAL # 2H

surface	ULSTR:	C	23	T 25S	R 33E
				50 FNL	2200 FWL

BH Loc	ULSTR:	N	23	T 25S	R 33E
14110	MD	9455.7	TVD	369 FSL	2221 FWL
				4911 FNL	

Top Perf/OH	ULSTR:	C	23	T 25S	R 33E
9729	MD	9441.4	TVD	533 FNL	2199 FWL

Bot Perf/OH	ULSTR:	N	23	T 25S	R 33E
14060	MD	9455.9	TVD	419 FSL	2221 FWL
				4861 FNL	

	MD	N/S	E/W	VD
	9718	-472.23	-1.24	9440.9
TOP PERFS/OH	9729	-483.21	-0.93	9441.37
	9782	-536.14	0.55	9443.63
	14045	-4795.80	20.40	9455.91
BOT PERFS/OH	14060	-4810.80	20.56	9455.86
	14110	-4860.80	21.08	9455.68

NEXT TO LAST	14045	-4795.80	20.40	9455.91
LAST READING	14110	-4860.80	21.08	9455.68
TD	14110	-4860.80	21.08	9455.68

Surface Location	50	FN	2200	FW
Projected BHL	4911	FN	2221	FW
Location of				
Top Perfs/OH	533	FN	2199	FW
Bottom Perfs/OH	4861	FN	2221	FW

SUMMARY of Subsurface Locations

Surface Location	C-23-25S-33E	50	FN	2200	FW	Vert. Depth
Top Perfs/OH	C-23-25S-33E	533	FN	2199	FW	9441.37
Bottom Perfs/OH	N-23-25S-33E	4861	FN	2221	FW	9455.86
Projected TD	N-23-25S-33E	4911	FN	2221	FW	9455.68

MAR 21 2012

SUR: C-23-25s-33e, 50/N & 2200/W
BHL: N-23-25s-33e, 4911/N & 2221/W
API # 30-025-40051

EOG Resources

Lea County, NM (Nad27)
Caballo 23 Federal
Caballo 23 Fed. 2H
Wellbore #1

Survey: Phoenix MWD Surveys

EOG Resources

11 November, 2011

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TECHNOLOGY SERVICES

Phoenix Technology Services
EOG Resources



Company:	EOG Resources	Local Co-ordinate Reference:	Well Caballo 23 Fed 2H
Project:	Lea County, NM (Nad27)	TVD Reference:	WELL @ 3379 99usft (Original Well Elev + 30' KB Cacti
Site:	Caballo 23 Federal	MD Reference:	WELL @ 3379 99usft (Original Well Elev + 30' KB Cacti
Well:	Caballo 23 Fed 2H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	GCR DB v5000

Project:	Lea County, NM (Nad27)		
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:	Caballo 23 Federal		
Site Position:		Northing:	409,417.30 usft
From:	Map	Easting:	746,110.10 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 7' 23 191 N
		Longitude:	103° 32' 18 108 W
		Grid Convergence:	0 42 °

Well:	Caballo 23 Fed 2H		
Well Position	+N/-S	0 00 usft	Northing:
	+E/-W	0 00 usft	Easting:
Position Uncertainty	0 00 usft		Wellhead Elevation:
			usft
			Latitude:
			32° 7' 22 906 N
			Longitude:
			103° 32' 38 711 W
			Ground Level:
			3,349 99 usft

Wellbore	Wellbore #1		
Magnetics	Model Name	Sample Date	Declination
	IGRF2010_14	09/08/11	(°)
			7 54
			Dip Angle
			(°)
			60 09
			Field Strength
			(nT)
			48,536

Design	Wellbore #1		
Audit Notes:			
Version:	1 0	Phase:	ACTUAL
		Tie On Depth:	0 00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(usft)	(usft)	(usft)
	0 00	0.00	0 00
			Direction
			(°)
			179 57

Survey/Program	Date	11/11/11		
From	To	Survey (Wellbore)	Tool Name	Description
(usft)	(usft)			
100.00	14,110.00	Phoenix MWD Surveys (Wellbore #1)	MWD	MWD - Standard

Phoenix Technology Services
EOG Resources



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Project: Lea County, NM (Nad27)
Site: Caballo 23 Federal
Well: Caballo 23 Fed 2H
Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Well Caballo 23 Fed 2H
TVD Reference: WELL @ 3379.99usft (Original Well Elev + 30' KB Cacti
MD Reference: WELL @ 3379.99usft (Original Well Elev + 30' KB Cacti
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: GCR DB v5000

Survey											
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVDSS (usft)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)	
0 00	0 00	0 00	-3,379.99	0 00	0 00	0 00	0 00	0 00	0 00	409,375.40	744,338.50
100.00	0 71	295.50	-3,280.00	100.00	0 27	-0.56	-0.27	0 71	409,375.67	744,337.94	
200.00	0.44	286.48	-3,180.00	199.99	0 64	-1.49	-0.65	0 28	409,376.04	744,337.01	
300.00	0.50	286.67	-3,080.00	299.99	0 88	-2.27	-0.89	0.06	409,376.28	744,336.23	
400.00	0.66	294.60	-2,980.01	399.98	1.24	-3.21	-1.27	0.18	409,376.64	744,335.29	
500.00	0.70	287.89	-2,880.02	499.98	1.67	-4.32	-1.70	0 09	409,377.07	744,334.18	
600.00	0.47	271.97	-2,780.02	599.97	1.87	-5.31	-1.91	0 28	409,377.27	744,333.19	
700.00	0.48	286.16	-2,680.03	699.97	2.00	-6.12	-2.05	0 12	409,377.40	744,332.38	
800.00	0.80	297.47	-2,580.03	799.96	2.44	-7.14	-2.49	0 34	409,377.84	744,331.36	
900.00	0.65	301.34	-2,480.04	899.95	3.06	-8.25	-3.12	0 16	409,378.46	744,330.25	
1,000.00	0.86	287.31	-2,380.05	999.95	3.58	-9.45	-3.65	0 28	409,378.98	744,329.05	
1,100.00	0.86	284.49	-2,280.06	1,099.93	3.99	-10.89	-4.07	0.04	409,379.39	744,327.61	
1,125.00	1 12	272.19	-2,255.06	1,124.93	4.04	-11.32	-4.13	1.34	409,379.44	744,327.18	
Last Gyro Survey											
1,248.00	0.80	313.40	-2,132.08	1,247.91	4.68	-13.14	-4.78	0 60	409,380.08	744,325.36	
First Phoenix MWD Survey											
1,431.00	0.70	324.10	-1,949.09	1,430.90	6.46	-14.73	-6.57	0 09	409,381.86	744,323.77	
1,615.00	0.70	322.00	-1,765.11	1,614.88	8.26	-16.08	-8.38	0 01	409,383.66	744,322.42	
1,806.00	1.30	306.50	-1,574.14	1,805.86	10.47	-18.54	-10.60	0 34	409,385.87	744,319.96	
1,997.00	1.30	272.80	-1,383.18	1,996.81	11.86	-22.44	-12.03	0 39	409,387.26	744,316.06	
2,188.00	0.60	228.90	-1,192.21	2,187.78	11.31	-25.36	-11.50	0 50	409,386.71	744,313.14	
2,379.00	0.70	247.00	-1,001.22	2,378.77	10.20	-27.19	-10.40	0 12	409,385.60	744,311.31	
2,570.00	0.40	311.40	-810.23	2,569.76	10.18	-28.76	-10.40	0 33	409,385.58	744,309.74	
2,760.00	1.10	35.30	-620.24	2,759.75	12.11	-28.21	-12.32	0 59	409,387.51	744,310.29	
2,951.00	0.60	47.10	-429.26	2,950.73	14.29	-26.41	-14.48	0 28	409,389.69	744,312.09	
3,141.00	1.60	66.10	-239.30	3,140.69	16.04	-23.26	-16.21	0 55	409,391.44	744,315.24	
3,332.00	0.90	69.00	-48.35	3,331.65	17.65	-19.42	-17.80	0 37	409,393.05	744,319.08	

Phoenix Technology Services
EOG Resources



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Project:	Léa County, NM (Nad27)	TVD Reference:	WELL @ 3379.99usft (Original Well Elev + 30' KB Cact)
Site:	Caballo 23 Federal	MD Reference:	WELL @ 3379.99usft (Original Well Elev + 30' KB Cact)
Well:	Caballo 23 Fed. 2H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	GCR DB v5000

Survey											
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVDSS (usft)	TVD (usft)	N/S (usft)	E/W (usft)	V: Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)	
3,522.00	0.00	262.40	141.64	3,521.64	18.19	-18.03	-18.32	0.47	409,393.59	744,320.47	
3,712.00	1.10	226.70	331.63	3,711.63	16.94	-19.36	-17.08	0.58	409,392.34	744,319.14	
3,903.00	0.70	192.00	522.61	3,902.60	14.54	-20.93	-14.70	0.34	409,389.94	744,317.57	
4,094.00	0.90	205.20	713.59	4,093.58	12.04	-21.82	-12.21	0.14	409,387.44	744,316.68	
4,284.00	0.40	262.20	903.58	4,283.57	10.60	-23.11	-10.77	0.40	409,386.00	744,315.39	
4,475.00	1.90	117.10	1,094.55	4,474.54	9.07	-20.95	-9.23	1.17	409,384.47	744,317.55	
4,666.00	2.40	128.60	1,285.42	4,665.41	5.13	-15.00	-5.24	0.34	409,380.53	744,323.50	
4,857.00	1.20	106.40	1,476.32	4,856.31	2.07	-9.96	-2.15	0.72	409,377.47	744,328.54	
4,963.00	0.40	66.90	1,582.31	4,962.30	1.90	-8.56	-1.97	0.87	409,377.30	744,329.94	
5,080.00	0.40	119.00	1,699.31	5,079.30	1.87	-7.82	-1.92	0.30	409,377.27	744,330.68	
5,272.00	0.40	113.30	1,891.30	5,271.30	1.28	-6.62	-1.32	0.02	409,376.68	744,331.88	
5,463.00	0.40	85.30	2,082.30	5,462.29	1.07	-5.34	-1.11	0.10	409,376.47	744,333.16	
5,652.00	0.20	46.80	2,271.29	5,651.29	1.35	-4.45	-1.38	0.14	409,376.75	744,334.05	
5,844.00	0.40	33.70	2,463.29	5,843.29	2.13	-3.83	-2.16	0.11	409,377.53	744,334.67	
6,035.00	0.30	5.00	2,654.29	6,034.28	3.19	-3.42	-3.21	0.10	409,378.59	744,335.08	
6,226.00	0.40	355.20	2,845.29	6,225.28	4.35	-3.43	-4.37	0.06	409,379.75	744,335.07	
6,417.00	0.50	343.10	3,036.28	6,416.27	5.81	-3.73	-5.84	0.07	409,381.21	744,334.77	
6,607.00	0.50	4.60	3,226.27	6,606.27	7.43	-3.90	-7.46	0.10	409,382.83	744,334.60	
6,798.00	0.50	6.10	3,417.26	6,797.26	9.09	-3.75	-9.12	0.01	409,384.49	744,334.75	
6,989.00	0.30	9.10	3,608.26	6,988.25	10.41	-3.58	-10.44	0.11	409,385.81	744,334.92	
7,180.00	0.40	302.10	3,799.26	7,179.25	11.26	-4.06	-11.29	0.21	409,386.66	744,334.44	
7,370.00	0.50	282.80	3,989.25	7,369.24	11.80	-5.43	-11.84	0.09	409,387.20	744,333.07	
7,561.00	0.50	272.10	4,180.24	7,560.24	12.01	-7.08	-12.06	0.05	409,387.41	744,331.42	
7,752.00	0.60	233.60	4,371.24	7,751.23	11.45	-8.72	-11.51	0.20	409,386.85	744,329.78	
7,942.00	0.30	0.30	4,561.23	7,941.23	11.35	-9.52	-11.43	0.43	409,386.75	744,328.98	
8,133.00	0.60	6.50	4,752.23	8,132.22	12.85	-9.40	-12.92	0.16	409,388.25	744,329.10	
8,323.00	0.30	335.20	4,942.22	8,322.21	14.29	-9.50	-14.36	0.20	409,389.69	744,329.00	

Phoenix Technology Services
EOG Resources



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Project: Lea County, NM (Nad27)
Site: Caballo 23 Federal
Well: Caballo 23 Fed 2H
Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Well Caballo 23 Fed 2H
TVD Reference: WELL @ 3379.99usft (Original Well Elev + 30' KB Cacti
MD Reference: WELL @ 3379.99usft (Original Well Elev + 30' KB Cacti
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: GCR DB v5000

Survey											
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVDSS (usft)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)	
8,514.00	0.40	237.10	5,133.22	8,513.21	14.38	-10.27	-14.46	0.28	409,389.78	744,328.23	
8,705.00	0.50	239.90	5,324.21	8,704.21	13.60	-11.55	-13.69	0.05	409,389.00	744,326.95	
8,869.00	0.60	211.50	5,488.21	8,868.20	12.51	-12.61	-12.60	0.17	409,387.91	744,325.89	
8,921.00	0.70	209.20	5,540.20	8,920.20	12.00	-12.91	-12.10	0.20	409,387.40	744,325.59	
8,953.00	2.30	183.50	5,572.19	8,952.18	11.19	-13.05	-11.29	5.30	409,386.59	744,325.45	
8,985.00	5.50	179.20	5,604.11	8,984.11	9.01	-13.06	-9.11	10.03	409,384.41	744,325.44	
9,016.00	8.70	179.60	5,634.87	9,014.86	5.18	-13.03	-5.28	10.32	409,380.58	744,325.47	
9,048.00	12.00	181.50	5,666.35	9,046.34	-0.56	-13.10	0.47	10.37	409,374.84	744,325.40	
9,080.00	15.30	182.60	5,697.44	9,077.43	-8.11	-13.38	8.01	10.34	409,367.29	744,325.12	
9,112.00	18.90	181.70	5,728.02	9,108.01	-17.51	-13.72	17.41	11.28	409,357.89	744,324.78	
9,144.00	22.40	180.10	5,757.96	9,137.95	-28.79	-13.88	28.69	11.08	409,346.61	744,324.62	
9,176.00	25.80	179.60	5,787.16	9,167.16	-41.86	-13.85	41.75	10.64	409,333.54	744,324.65	
9,207.00	29.50	179.30	5,814.62	9,194.61	-56.24	-13.71	56.14	11.94	409,319.16	744,324.79	
9,239.00	32.70	178.70	5,842.02	9,222.01	-72.76	-13.41	72.66	10.05	409,302.64	744,325.09	
9,271.00	35.70	178.20	5,868.48	9,248.47	-90.74	-12.92	90.64	9.42	409,284.66	744,325.58	
9,303.00	38.80	178.20	5,893.95	9,273.94	-110.10	-12.32	110.00	9.69	409,265.30	744,326.18	
9,335.00	41.60	177.90	5,918.39	9,298.38	-130.74	-11.61	130.65	8.77	409,244.66	744,326.89	
9,367.00	44.40	177.70	5,941.79	9,321.78	-152.55	-10.77	152.46	8.76	409,222.85	744,327.73	
9,399.00	48.30	177.70	5,963.87	9,343.87	-175.68	-9.84	175.60	12.19	409,199.72	744,328.66	
9,430.00	53.10	178.10	5,983.50	9,363.49	-199.64	-8.97	199.57	15.52	409,175.76	744,329.53	
9,462.00	58.20	178.00	6,001.55	9,381.54	-226.04	-8.07	225.97	15.94	409,149.36	744,330.43	
9,493.00	63.90	178.20	6,016.55	9,396.54	-253.14	-7.17	253.08	18.40	409,122.26	744,331.33	
9,529.00	70.30	178.00	6,030.55	9,410.55	-286.27	-6.07	286.21	17.79	409,089.13	744,332.43	
9,560.00	76.10	178.50	6,039.51	9,419.50	-315.92	-5.17	315.87	18.77	409,059.48	744,333.33	
9,591.00	79.40	178.50	6,046.08	9,426.08	-346.20	-4.37	346.15	10.65	409,029.20	744,334.13	
9,623.00	82.50	178.60	6,051.12	9,431.11	-377.78	-3.57	377.75	9.69	408,997.62	744,334.93	
9,655.00	83.10	178.30	6,055.13	9,435.12	-409.52	-2.72	409.49	2.09	408,965.88	744,335.78	

Phoenix Technology Services

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 Wellbore: Wellbore #1
 Design: Wellbore #1

Local Co-ordinate Reference: Well Caballo 23 Fed 2H
 TVD Reference: WELL @ 3379 99usft (Original Well Elev + 30' KB Cact
 MD Reference: WELL @ 3379 99usft (Original Well Elev + 30' KB Cact
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Survey											
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVDSS (usft)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)	
9,687 00	84 80	179 00	6,058 50	9,438 49	-441 33	-1 97	441 30	5 74	408,934 07	744,336 53	
9,718 00	86 30	178 30	6,060 91	9,440 90	-472 23	-1 24	472 20	5 34	408,903 17	744,337 26	
9,782 00	88 80	178 50	6,063 64	9,443 63	-536 14	0 55	536 13	3 92	408,839 26	744,339 05	
9,877 00	89 90	178 70	6,064 72	9,444 71	-631 10	2 87	631 11	1 18	408,744 30	744,341 37	
9,972 00	90 20	178 30	6,064 64	9,444 63	-726 07	5 35	726 09	0 53	408,649 33	744,343 85	
10,067 00	90 50	178 10	6,064 06	9,444 05	-821 02	8 34	821 06	0 38	408,554 38	744,346 84	
10,163 00	91 00	178 30	6,062 80	9,442 79	-916 96	11 35	917 02	0 56	408,458 44	744,349 85	
10,258 00	91 50	178 90	6,060 73	9,440 72	-1,011 91	13 67	1,011 99	0 82	408,363 49	744,352 17	
10,354 00	90 30	178 60	6,059 22	9,439 21	-1,107 88	15 77	1,107 96	1 29	408,267 52	744,354 27	
10,450 00	89 10	177 00	6,059 72	9,439 72	-1,203 80	19 45	1,203 91	2 08	408,171 60	744,357 95	
10,545 00	88 80	175 90	6,061 46	9,441 46	-1,298 60	25 33	1,298 75	1 20	408,076 80	744,363 83	
10,641 00	90 80	175 50	6,061 80	9,441 79	-1,394 32	32 53	1,394 53	2 12	407,981 08	744,371 03	
10,736 00	91 60	178 20	6,059 81	9,439 80	-1,489 15	37 75	1,489 39	2 96	407,886 25	744,376 25	
10,832 00	92 90	178 40	6,056 04	9,436 03	-1,585 03	40 60	1,585 29	1 37	407,790 37	744,379 10	
10,927 00	92 40	181 20	6,051 65	9,431 64	-1,679 92	40 93	1,680 18	2 99	407,695 48	744,379 43	
11,022 00	90 90	182 70	6,048 91	9,428 90	-1,774 82	37 70	1,775 05	2 23	407,600 58	744,376 20	
11,118 00	90 30	179 60	6,047 90	9,427 90	-1,870 78	35 77	1,871 00	3 29	407,504 62	744,374 27	
11,214 00	89 70	179 10	6,047 90	9,427 90	-1,966 78	36 86	1,967 00	0 81	407,408 62	744,375 36	
11,309 00	90 70	181 00	6,047 57	9,427 57	-2,061 77	36 78	2,061 99	2 26	407,313 63	744,375 28	
11,405 00	90 30	180 40	6,046 74	9,426 73	-2,157 76	35 60	2,157 97	0 75	407,217 64	744,374 10	
11,501 00	89 40	183 20	6,046 99	9,426 98	-2,253 70	32 59	2,253 88	3 06	407,121 70	744,371 09	
11,597 00	90 60	185 80	6,046 99	9,426 98	-2,349 39	25 06	2,349 52	2 98	407,026 01	744,363 56	
11,693 00	90 10	183 40	6,046 40	9,426 39	-2,445 08	17 36	2,445 14	2 55	406,930 32	744,355 86	
11,788 00	90 70	180 20	6,045 74	9,425 73	-2,540 01	14 37	2,540 05	3 43	406,835 39	744,352 87	
11,884 00	89 50	178 20	6,045 57	9,425 56	-2,636 00	15 72	2,636 04	2 43	406,739 40	744,354 22	
11,980 00	93 50	179 60	6,043 06	9,423 05	-2,731 93	17 56	2,731 98	4 41	406,643 47	744,356 06	
12,075 00	91 40	179 30	6,039 00	9,418 99	-2,826 83	18 47	2,826 89	2 23	406,548 57	744,356 97	

Phoenix Technology Services
EOG Resources



Company: EOG Resources
Project: Lea County, NM (Nad27)
Site: Caballo 23 Federal
Well: Caballo 23 Fed 2H
Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Well Caballo 23 Fed 2H
TVD Reference: WELL @ 3379 99usft (Original Well Elev + 30' KB Cacti
MD Reference: WELL @ 3379 99usft (Original Well Elev + 30' KB Cacti
North Reference: Grd
Survey Calculation Method: Minimum Curvature
Database: GCR DB v5000

Survey											
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVDSS (usft)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)	
12,171.00	88.50	177.90	6,039.08	9,419.07	-2,922.79	20.81	2,922.86	3.35	406,452.61	744,359.31	
12,267.00	90.10	178.00	6,040.25	9,420.25	-3,018.72	24.25	3,018.81	1.67	406,356.68	744,362.75	
12,363.00	86.40	178.60	6,043.18	9,423.18	-3,114.61	27.09	3,114.73	3.90	406,260.79	744,365.59	
12,458.00	87.80	180.10	6,047.99	9,427.98	-3,209.48	28.17	3,209.60	2.16	406,165.92	744,366.67	
12,533.00	87.00	180.50	6,051.39	9,431.39	-3,284.40	27.78	3,284.52	1.19	406,091.00	744,366.28	
12,649.00	87.70	180.60	6,056.76	9,436.75	-3,400.27	26.67	3,400.37	0.61	405,975.13	744,365.17	
12,745.00	89.20	181.10	6,059.35	9,439.35	-3,496.22	25.24	3,496.31	1.65	405,879.18	744,363.74	
12,840.00	89.00	181.10	6,060.84	9,440.84	-3,591.19	23.42	3,591.27	0.21	405,784.21	744,361.92	
12,936.00	88.70	180.90	6,062.77	9,442.76	-3,687.16	21.74	3,687.22	0.38	405,688.24	744,360.24	
13,031.00	88.80	182.20	6,064.84	9,444.84	-3,782.10	19.17	3,782.14	1.37	405,593.30	744,357.67	
13,127.00	86.40	179.70	6,068.86	9,448.86	-3,877.99	17.58	3,878.01	3.61	405,497.41	744,356.08	
13,222.00	88.10	178.90	6,073.42	9,453.42	-3,972.87	18.74	3,972.89	1.98	405,402.53	744,357.24	
13,318.00	89.90	179.90	6,075.10	9,455.09	-4,068.84	19.75	4,068.87	2.14	405,306.56	744,358.25	
13,413.00	89.80	179.80	6,075.35	9,455.34	-4,163.84	20.00	4,163.87	0.15	405,211.56	744,358.50	
13,509.00	90.30	180.00	6,075.26	9,455.26	-4,259.84	20.16	4,259.87	0.56	405,115.56	744,358.66	
13,604.00	90.40	180.80	6,074.68	9,454.68	-4,354.83	19.50	4,354.86	0.85	405,020.57	744,358.00	
13,700.00	89.60	180.40	6,074.68	9,454.68	-4,450.83	18.49	4,450.84	0.93	404,924.57	744,356.99	
13,796.00	88.90	179.00	6,075.94	9,455.93	-4,546.82	19.00	4,546.83	1.63	404,828.58	744,357.50	
13,891.00	90.50	180.00	6,076.44	9,456.43	-4,641.81	19.83	4,641.82	1.99	404,733.59	744,358.33	
13,987.00	90.00	179.80	6,076.02	9,456.01	-4,737.81	19.99	4,737.82	0.56	404,637.59	744,358.49	
14,045.00	90.20	179.40	6,075.92	9,455.91	-4,795.80	20.40	4,795.82	0.77	404,579.60	744,358.90	
Last Phoenix MWD Survey											
14,110.00	90.20	179.40	6,075.69	9,455.68	-4,860.80	21.08	4,860.82	0.00	404,514.60	744,359.58	
Projection To TD											

Phoenix Technology Services
EOG Resources



Company:	EOG Resources	Local Co-ordinate Reference:	Well Caballo 23 Fed 2H
Project:	Lea County, NM (Nad27)	TVD Reference:	WELL @ 3379.99usft (Original Well Elev + 30' KB Cacti
Site:	Caballo 23 Federal	MD Reference:	WELL @ 3379.99usft (Original Well Elev + 30' KB Cacti
Well:	Caballo 23 Fed. 2H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	GCR DB v5000

Survey Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,125.00	1,124.93	4.04	-11.32	Last Gyro Survey
1,248.00	1,247.91	4.68	-13.14	First Phoenix MWD Survey
14,045.00	9,455.91	-4,795.80	20.40	Last Phoenix MWD Survey
14,110.00	9,455.68	-4,860.80	21.08	Projection To TD

Checked By. _____	Approved By. _____	Date: _____
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CURRENT WELL SKETCH

DEPTH (ft)	MARKERS (KB)	LITHOLOGY	OGRID: 7377 API: 30-025-40051 AFE: 104617 SPUD: 10/27/2011 @ 13 00 hrs FRR: 11/13/11 @ 01 30 hrs RIG: Cactus #123	Caballo 23 Federal #2H Red Hills Field Lea County, New Mexico	SURF: 50' FNL & 2200' FWL LOC: Sec 23 SURVEY: T-25-S, R-33-E GL: 3350 0' KB: 3380 0' ZERO: 30 0' AGL	HOLE SIZE	MW (ppg)	MUD	BHST (°F)	LOT (ppg)	EVALUATION
1,000'	Rustler - 1090'			20" Conductor @ 130'		14-3/4"	8.4	FW	86	N/A	
	Top Salt - 1410'			Surface Casing @ 1,190' 11-3/4" 42# H-40 STC Cement w/ 400 sx Class C + 4.0% Gel + 1.0% CaCl2 + 0.25 pps Celloflake (13.5 ppg, 1.734 yld), followed by 250 sx Class C + 2.0% CaCl2 (14.8 ppg, 1.345 yld) Bump plug w/ 1070 psi and circ 249 sx to pit		10 0		Brine			Mud Log
3,000'		Salt		TOC @ ~4700'		11"					
	Base Salt - 4810'			Intermediate Casing @ 5,005' 8-5/8", 32#, J-55, LT&C to 3,849' 8-5/8", 32#, HCK-55, LTC 3,849' to 5,005' Cement w/ 1000 sx Class C + 2.0% SMS + 10.0% Salt + 1.0% R-3 + 0.25 pps Celloflake (12.7 ppg, 2.218 yld), followed by 200 sx Class C + 0.60% FL-62 + 0.45% CD-32 + 0.10% SMS + 0.30% R-3 (14.8 ppg, 1.333 yld) Bump plug w/ 1950 psi and circ 318 sx to surface		10		110			
5,000'	Lamar - 5050'			Perforations: Each interval is 18 holes @ 6 spf 60° phasing, 14,060 13,999 13,938 13,877 13,826 13,765 13,696 13,633 13,568 13,505 13,450 13,389 13,328 13,267 13,206 13,145 13,084 13,030 12,962 12,910 12,840 12,782 12,718 12,652 12,590 12,535 12,474 12,413 12,352 12,291 12,230 12,169 12,115 12,047 11,994 11,925 11,854 11,803 11,736 11,681 11,614 11,559 11,490 11,429 11,368 11,315 11,254 11,200 11,132 11,060 11,010 10,940 10,879 10,827 10,766 10,700 10,644 10,584 10,522 10,461 10,400 10,339 10,278 10,217 10,164 10,103 10,028 9,973 9,908 9,844 9,790 9,729		8 4		Fresh Water		N/A	
6,000'	Cherry Canyon - 6060'										
7,000'				Preliminary Directional Plan KOP @ ~9,120' BUR @ 12° / 100' EOC @ 9638' MD / 9450' TVD EOL @ 14,209' MD / 9450' TVD Hold @ 90 00°		7-7/8"	8 6				
8,000'								Cut BW			BHC Sonic / GR-HRLA-MSFL / HNGS-CNLT-LDT w/ Pe Mud Log
9,000'	Bone Spring Lime - 9,220'			KOP @ ~ 9,120'							
10,000'				Production Casing @ 14,097' MD, 9,456' TVD 5-1/2" 20# HCP-110 NSCC Cement w/ 150 sx 60 40-0 Class C + 15.0 pps BA-90 + 4.0% MPA-5 + 3.0% SMS + 5.0% A-10 + 1.0% BA-10A + 0.80% ASA-301 + 2.55% R-21 + 8.0 pps LCM-1 (10.8 ppg, 3.677 yld), followed by 400 sx 50.50.10 Class H + 0.80% FL-52 + 0.30% ASA-301 + 0.50% SMS + 2.0% Salt + 0.25% R-21 + 3.0 pps LCM-1 + 0.25 pps Celloflake + 0.005 pps Static Free (11.8 ppg, 2.382 yld), followed by 900 sx 50.50.2 Class H + 0.65% FL-52 + 0.45% CD-32 + 0.10% SMS + 2.0% Salt (14.2 ppg, 1.277 yld) Bump plug w/ 3000 psi - did not circ cement		9 3		156			
11,000'	1st Bone Spring Sand - 10,220'										

Drig Eng	SLM
Date	11/14/2011