Results of Directional Survey

API number:	30-025-40247			
OGRID:		Operator:	EOG RESOURCES INC	
		Property:	CABALLO 23 FEDERAL	# 5H

surface	ULSTR:	D	23	T	25S	R	33E
				40	FNL	1295	FWL

BH Loc	ULSTR:	N	23	T	25S	R	33E
14025	MD	9437.9	TVD	379	FSL	1342	FWL
				4901	FNL		

Top Perf/OH	ULSTR:	D	23	T	25S	R	33E
9771	MD	9445.9	TVD	649	FNL	1299	FWL

Bot Perf/OH	ULSTR:	N	23	T	25S	R	33E
13960	MD	9440.4	TVD	444	FSL	1343	FWL
				4836	FNL		

	MD	N/S	E/W	VD
	9757	-594.87	3.91	9445.51
TOP PERFS/OH	**9771**	-608.87	3.70	9445.85
	9788	-625.86	3.45	9446.27
	13895	-4730.69	49.52	9443.01
BOT PERFS/OH	**13960**	-4795.62	48.05	9440.35
	13966	-4801.61	47.91	9440.10

NEXT TO LAST	13966	-4801.61	47.91	9440.10
LAST READING	14025	-4860.56	46.78	9437.94
TD	**14025**	-4860.56	46.78	9437.94

Surface Location	40	FN	1295	FW
Projected BHL	4901	FN	1342	FW
Location of				
Top Perfs/OH	649	FN	1299	FW
Bottom Perfs/OH	4836	FN	1343	FW

SUMMARY of Subsurface Locations

Surface Location	D-23-25S-33E	40	FN	1295	FW	Vert. Depth
Top Perfs/OH	D-23-25S-33E	649	FN	1299	FW	9445.85
Bottom Perfs/OH	N-23-25S-33E	4836	FN	1343	FW	9440.35
Projected TD	N-23-25S-33E	4901	FN	1342	FW	9437.94

MAR 1 2 2012

EOG Resources

Lea County, NM (Nad27)
Caballo 23 Federal
Caballo 23 Fed. 5H
Wellbore #1

SUR: D-23-25s-33e, 40/N & 1295/W
BHL: N-23-25s-33e, 4901/N & 1342/W
API # 30-025-40247

Survey: Phoenix MWD Surveys

EOG Resources

02 December, 2011

PHOENIX
TECHNOLOGY SERVICES

Phoenix Technology Services

EOG Resources

PHOENIX TECHNOLOGY SERVICES

Company:	EOG Resources	**Local Co-ordinate Reference:**	Well Caballo 23 Fed 5H
Project:	Lea County, NM (Nad27)	**TVD Reference:**	WELL @ 3373.99usft (Original Well Elev + 30' KB Cacti
Site:	Caballo 23 Federal	**MD Reference:**	WELL @ 3373.99usft (Original Well Elev + 30' KB Cacti
Well:	Caballo 23 Fed. 5H	**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	**Latitude:**	32° 7' 23.191 N
From:	Map	**Easting:**	746,110.10 usft	**Longitude:**	103° 32' 18.108 W
Position Uncertainty:	0 00 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	0 42 °

Well Caballo 23 Fed 5H

Well Position	**+N/-S**	0 00 usft	**Northing:**	409,379.30 usft	**Latitude:**	32° 7' 23 010 N
	+E/-W	0.00 usft	**Easting:**	743,433.50 usft	**Longitude:**	103° 32' 49.234 W
Position Uncertainty		0 00 usft	**Wellhead Elevation:**	usft	**Ground Level:**	3,343 99 usft

Wellbore Wellbore #1

Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	IGRF2010_14	09/08/11	7.54	60 09	48,535

Design Wellbore #1

Audit Notes:

Version:	1.0	**Phase:**	ACTUAL	**Tie On Depth:**	0 00

Vertical Section:	**Depth From (TVD) (usft)**	**+N/-S (usft)**	**+E/-W (usft)**	**Direction (°)**
	0.00	0 00	0.00	179 40

Survey Program **Date** 12/02/11

From (usft)	**To (usft)**	**Survey (Wellbore)**	**Tool Name**	**Description**
1,143.00	14,025.00	Phoenix MWD Surveys (Wellbore #1)	MWD	MWD - Standard

Phoenix Technology Services

EOG Resources

PHOENIX TECHNOLOGY SERVICES

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Well:	Caballo 23 Fed 5H	**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)
1,100.00	0.38	240 41	-2,274 02	1,099.98	-4 46	-5.20	4.41	0 00	409,374 84	743,428.30
Tie In From Gyros @ 1100' MD										
1,143 00	0 50	274 52	-2,231.02	1,142.98	-4 52	-5.51	4.46	0.66	409,374 78	743,427.99
First Phoenix MWD Survey @ 1143' MD										
1,245 00	0 60	265.60	-2,129.02	1,244.97	-4.53	-6.49	4 46	0.13	409,374 77	743,427.01
1,429.00	0.60	300.10	-1,945.03	1,428.96	-4.12	-8 28	4 03	0.19	409,375 18	743,425.22
1,613.00	0 50	310.80	-1,761.04	1,612.95	-3.11	-9 72	3.01	0 08	409,376.19	743,423.78
1,804.00	0.90	305.70	-1,570.06	1,803.94	-1.69	-11 57	1.57	0 21	409,377.61	743,421 93
1,995 00	1.30	313 20	-1,379.09	1,994.90	0 67	-14 37	-0.82	0.22	409,379 97	743,419 13
2,186.00	1 80	326.00	-1,188.16	2,185.83	4.64	-17.63	-4.82	0.32	409,383 94	743,415.87
2,377 00	1.40	338.10	-997.23	2,376.76	9.29	-20.17	-9.50	0 27	409,388.59	743,413 33
2,567 00	1 90	3.30	-807.31	2,566 68	14.59	-20 86	-14 81	0 46	409,393 89	743,412 64
2,758.00	1.30	40.30	-616.38	2,757.61	19.40	-19 28	-19.60	0 61	409,398 70	743,414 22
2,949 00	0 70	73.70	-425.41	2,948.58	21.38	-16 75	-21 56	0.43	409,400 68	743,416.75
3,139 00	1.30	84.00	-235.44	3,138.55	21.93	-13 50	-22.07	0.33	409,401.23	743,420.00
3,330.00	1 40	109 90	-44 49	3,329 50	21.37	-9.15	-21.46	0.32	409,400.67	743,424.35
3,520 00	1.10	166 50	145.47	3,519 46	18 80	-6 54	-18 87	0.64	409,398.10	743,426.96
3,711 00	1.30	209 80	336.43	3,710 42	15.14	-7.19	-15 21	0 47	409,394.44	743,426.31
3,902 00	1.20	199.90	527 39	3,901.38	11.38	-8 95	-11 47	0 12	409,390.68	743,424.55
4,092.00	1 00	203.00	717.35	4,091 34	7.98	-10.27	-8.09	0.11	409,387 28	743,423 23
4,282 00	1.10	216 80	907.32	4,281.31	5 00	-12.01	-5 12	0.14	409,384.30	743,421.49
4,473.00	1.90	156 80	1,098.26	4,472.26	0.62	-11.86	-0 74	0.87	409,379.92	743,421 64
4,665 00	1.70	149.90	1,290 17	4,664 16	-4 77	-9.18	4 68	0.15	409,374 53	743,424 32
4,856 00	1 00	125 30	1,481 12	4,855 11	-8 19	-6.40	8 12	0.47	409,371 11	743,427 10
4,944.00	0.90	129.30	1,569.10	4,943.10	-9.07	-5.24	9 01	0.14	409,370 23	743,428.26
5,076.00	0 80	140.70	1,701.09	5,075.08	-10.44	-3.85	10 40	0.15	409,368 86	743,429.65
5,267.00	0.80	142 90	1,892 07	5,266.06	-12.53	-2 20	12.51	0.02	409,366.77	743,431.30

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Site:	Caballo 23 Federal	**MD Reference:**	WELL @ 3373.99usft (Original Well Elev + 30' KB Cacti
Well:	Caballo 23 Fed. 5H	**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)
5,458.00	0.90	144 00	2,083.05	5,457.04	-14.81	-0.52	14.80	0.05	409,364.49	743,432.98
5,649.00	0.90	137.60	2,274 03	5,648 02	-17.13	1 38	17 15	0 05	409,362 17	743,434.88
5,840.00	1 00	127 50	2,465.00	5,838.99	-19 25	3.71	19 29	0.10	409,360 05	743,437.21
6,031.00	0.90	127.10	2,655.97	6,029 97	-21 17	6.23	21.24	0.05	409,358 13	743,439.73
6,222 00	0.70	127.90	2,846.95	6,220.95	-22.79	8.35	22.88	0.10	409,356.51	743,441.85
6,413.00	0.50	132 00	3,037 94	6,411 94	-24.07	9.89	24.17	0 11	409,355 23	743,443.39
6,604.00	0.50	122 20	3,228 94	6,602 93	-25.07	11.21	25.19	0 04	409,354 23	743,444 71
6,795.00	0.50	117.80	3,419.93	6,793.92	-25.90	12.65	26.03	0 02	409,353 40	743,446.15
6,986 00	0.20	108.30	3,610.93	6,984.92	-26.40	13.71	26 54	0.16	409,352 90	743,447.21
7,177.00	0 30	157 60	3,801.92	7,175.92	-26.96	14.21	27 11	0.12	409,352.34	743,447.71
7,369.00	1 00	99.00	3,993 91	7,367.90	-27 69	16 06	27 86	0.46	409,351 61	743,449 56
7,560.00	0.90	94.60	4,184 89	7,558 88	-28.07	19.20	28 27	0.06	409,351.23	743,452.70
7,751.00	0.40	16.30	4,375 88	7,749.87	-27.55	20.88	27.77	0.48	409,351.75	743,454.38
7,942 00	0.30	0 20	4,566 87	7,940.86	-26.41	21.07	26 63	0.07	409,352 89	743,454.57
8,134 00	0 30	109 20	4,758 87	8,132 86	-26.08	21 55	26.30	0 25	409,353.22	743,455 05
8,325.00	0 40	138 80	4,949 87	8,323.86	-26.74	22.46	26.97	0.11	409,352 56	743,455 96
8,516.00	0.60	166.70	5,140.86	8,514 85	-28.22	23.13	28 46	0.16	409,351 08	743,456 63
8,708.00	1.10	157.90	5,332.84	8,706 83	-30 90	24.05	31 15	0.27	409,348.40	743,457.55
8,856.00	1.20	159 70	5,480.81	8,854 80	-33.67	25.13	33.93	0.07	409,345.63	743,458.63
8,927 00	3.90	189.70	5,551.73	8,925 73	-36.75	24.98	37 01	4 12	409,342 55	743,458.48
8,958 00	8.50	189.80	5,582.54	8,956 54	-40.05	24 41	40.30	14.84	409,339 25	743,457.91
8,990 00	13.60	188 10	5,613.94	8,987 93	-46 11	23 48	46.35	15 97	409,333 19	743,456 98
9,022.00	19 30	189 00	5,644 62	9,018 61	-55.06	22 12	55 29	17.83	409,324 24	743,455 62
9,054 00	22.40	186 90	5,674 52	9,048.51	-66 34	20 56	66.55	9 96	409,312 96	743,454 06
9,086.00	24.40	185 90	5,703 89	9,077.88	-78 97	19.15	79 17	6 37	409,300 33	743,452.65
9,118.00	27.40	185.80	5,732.67	9,106.66	-92 87	17.72	93 05	9 38	409,286 43	743,451 22
9,150 00	30 80	186 00	5,760.63	9,134 62	-108 35	16.12	108 51	10 63	409,270 95	743,449 62

Phoenix Technology Services

EOG Resources

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Well:	Caballo 23 Fed. 5H	**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)
9,181.00	32.70	186 70	5,786 98	9,160 98	-124.56	14.31	124 71	6.24	409,254.74	743,447.81
9,213.00	34.90	186.40	5,813.57	9,187.57	-142.25	12 29	142.37	6 89	409,237.05	743,445 79
9,245.00	37.70	185.50	5,839.36	9,213 36	-161.09	10.33	161 19	8 91	409,218 21	743,443.83
9,277.00	39 80	184 10	5,864.32	9,238 31	-181.05	8.66	181 13	7.11	409,198.25	743,442 16
9,309.00	41 50	183.70	5,888.60	9,262 59	-201.84	7.24	201.91	5.37	409,177.46	743,440 74
9,341.00	43 70	182.10	5,912.15	9,286 14	-223.47	6.15	223 52	7.66	409,155.83	743,439 65
9,373 00	46 00	179.50	5,934.84	9,308 83	-246.03	5 85	246.08	9.19	409,133 27	743,439 35
9,405.00	49.50	177 30	5,956 35	9,330 34	-269.70	6.52	269 76	12.06	409,109.60	743,440 02
9,436.00	52.70	177.30	5,975.81	9,349 81	-293.80	7 66	293.86	10.32	409,085.50	743,441 16
9,468.00	56.70	178.20	5,994 30	9,368 30	-319.89	8.68	319 96	12.71	409,059 41	743,442 18
9,500.00	61.40	179.20	6,010.76	9,384.75	-347.32	9.29	347.40	14.93	409,031.98	743,442.79
9,532.00	66 20	180.70	6,024 88	9,398.87	-376.02	9.31	376 10	15.58	409,003.28	743,442.81
9,564.00	70 30	181.80	6,036 74	9,410.73	-405 73	8.66	405.80	13.20	408,973.57	743,442 16
9,595.00	74 90	181.40	6,046.00	9,420.00	-435 29	7.83	435 35	14.89	408,944.01	743,441.33
9,629.00	77.30	181.60	6,054.17	9,428.16	-468.28	6 97	468.33	7.08	408,911.02	743,440.47
9,661.00	79.40	181.40	6,060 63	9,434 63	-499 61	6.15	499.65	6 59	408,879.69	743,439 65
9,693.00	81 80	181.60	6,065 86	9,439 85	-531.17	5 32	531 19	7.53	408,848 13	743,438.82
9,725.00	85.00	181 20	6,069.54	9,443 53	-562.94	4 55	562 96	10 08	408,816.36	743,438 05
9,757.00	87.90	181.10	6,071.52	9,445 51	-594.87	3.91	594 88	9 07	408,784 43	743,437 41
9,788.00	89 30	180.60	6,072 27	9,446 27	-625.86	3 45	625.86	4 80	408,753 44	743,436 95
9,884.00	90 60	180.40	6,072.36	9,446.35	-721.85	2 61	721 84	1 37	408,657.45	743,436 11
9,980.00	90.60	181 50	6,071 35	9,445.35	-817.83	1 02	817.80	1 15	408,561.47	743,434.52
10,075 00	90.90	181.50	6,070 11	9,444 10	-912.79	-1 47	912 72	0.32	408,466 51	743,432.03
10,171.00	90 70	180 70	6,068.77	9,442 76	-1,008.76	-3 31	1,008 67	0 86	408,370.54	743,430 19
10,266.00	90.00	180.20	6,068.19	9,442 18	-1,103.76	-4 06	1,103 65	0.91	408,275.54	743,429.44
10,362.00	90 30	178 30	6,067 94	9,441.93	-1,199.74	-2 80	1,199 65	2 00	408,179 56	743,430.70
10,457.00	89.90	176 70	6,067 77	9,441.76	-1,294 65	1.34	1,294 59	1.74	408,084 65	743,434 84

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10,553.00	90 30	176.50	6,067.60	9,441 60	-1,390 48	7.03	1,390.48	0 47	407,988.82	743,440.53
10,649.00	88 00	176.50	6,069 03	9,443 02	-1,486 28	12 89	1,486 34	2 40	407,893.02	743,446 39
10,744.00	85 90	178.10	6,074.08	9,448.08	-1,581 04	17.36	1,581.13	2.78	407,798 26	743,450 86
10,840.00	88 80	178.00	6,078 52	9,452 51	-1,676.87	20 63	1,676 99	3.02	407,702.43	743,454 13
10,935.00	89 30	179.50	6,080.10	9,454 09	-1,771 83	22 70	1,771 97	1.66	407,607.47	743,456.20
11,031.00	90 70	179.60	6,080.10	9,454 09	-1,867 82	23.45	1,867.97	1.46	407,511.48	743,456 95
11,126 00	91.10	179.60	6,078.60	9,452 60	-1,962.81	24.12	1,962 95	0.42	407,416.49	743,457 62
11,221.00	91 40	180.20	6,076.53	9,450 52	-2,057 79	24 28	2,057.93	0 71	407,321 51	743,457.78
11,317.00	91 30	180.40	6,074.27	9,448.26	-2,153 76	23 78	2,153 89	0 23	407,225 54	743,457 28
11,412.00	90 20	179 90	6,073 03	9,447.02	-2,248 75	23.53	2,248 87	1.27	407,130 55	743,457.03
11,508.00	90.10	180 30	6,072 77	9,446.77	-2,344 75	23 36	2,344.86	0.43	407,034.55	743,456.86
11,603 00	91 10	180.80	6,071 78	9,445.77	-2,439 74	22.45	2,439.84	1.18	406,939 56	743,455.95
11,699 00	90.60	181.10	6,070.36	9,444.35	-2,535.71	20.86	2,535 79	0 61	406,843 59	743,454 36
11,794.00	90 50	180 90	6,069.44	9,443 44	-2,630.69	19 20	2,630 75	0 24	406,748 61	743,452 70
11,890.00	90.20	180 80	6,068 86	9,442.85	-2,726.68	17 78	2,726.72	0.33	406,652.62	743,451 28
11,985.00	90.10	180 20	6,068 61	9,442 60	-2,821 68	16 95	2,821 70	0 64	406,557 62	743,450 45
12,080.00	89 60	179.60	6,068.86	9,442 85	-2,916 67	17.11	2,916 69	0 82	406,462 63	743,450 61
12,176.00	89.60	180 60	6,069 53	9,443.52	-3,012 67	16.95	3,012.68	1 04	406,366 63	743,450 45
12,271.00	90 40	179 10	6,069.53	9,443.52	-3,107 67	17 20	3,107.68	1 79	406,271 63	743,450.70
12,366.00	90 50	179 60	6,068 78	9,442.78	-3,202.66	18.27	3,202.67	0 54	406,176 64	743,451 77
12,462.00	91.70	178.30	6,066.94	9,440.93	-3,298.62	20.03	3,298 65	1.84	406,080 68	743,453 53
12,557.00	91.90	178.90	6,063 95	9,437 95	-3,393.54	22.35	3,393 59	0 67	405,985 76	743,455 85
12,653.00	89.80	177 90	6,062 53	9,436 52	-3,489.49	25.03	3,489.56	2.42	405,889.81	743,458 53
12,749.00	89.20	177 70	6,063 37	9,437.36	-3,585.42	28 72	3,585 52	0 66	405,793.88	743,462.22
12,844.00	88 90	177.50	6,064 94	9,438.94	-3,680 32	32 69	3,680 46	0 38	405,698.98	743,466 19
12,940 00	88 10	177.10	6,067.46	9,441 45	-3,776 18	37.21	3,776 36	0 93	405,603.12	743,470 71
13,035.00	89.60	177.30	6,069 36	9,443 36	-3,871 04	41 85	3,871 27	1 59	405,508 26	743,475 35

Phoenix Technology Services

EOG Resources

Company:	EOG Resources	**Local Co-ordinate Reference:**	Well Caballo 23 Fed. 5H
Project:	Lea County, NM (Nad27)	**TVD Reference:**	WELL @ 3373 99usft (Original Well Elev + 30' KB Cacti
Site:	Caballo 23 Federal	**MD Reference:**	WELL @ 3373.99usft (Original Well Elev + 30' KB Cacti
Well:	Caballo 23 Fed 5H	**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)
13,131 00	89 10	176 20	6,070.45	9,444.45	-3,966 88	47 30	3,967.16	1.26	405,412 42	743,480 80
13,226 00	89.70	178.40	6,071.45	9,445.44	-4,061.76	51.77	4,062.08	2 40	405,317 54	743,485 27
13,322.00	90.00	179 60	6,071.70	9,445.69	-4,157.75	53.45	4,158.08	1.29	405,221 55	743,486 95
13,417.00	90 00	180 40	6,071.70	9,445.69	-4,252.75	53.45	4,253 07	0 84	405,126 55	743,486.95
13,513 00	90.30	180 70	6,071.45	9,445.44	-4,348.74	52.52	4,349.05	0 44	405,030 56	743,486.02
13,608 00	90.20	180 40	6,071.03	9,445.03	-4,443.74	51.61	4,444 03	0 33	404,935.56	743,485.11
13,704 00	89.70	180.10	6,071.12	9,445.11	-4,539.73	51.19	4,540.02	0.61	404,839 57	743,484 69
13,799 00	90.10	180 20	6,071.28	9,445 28	-4,634.73	50 95	4,635.01	0 43	404,744 57	743,484.45
13,895 00	92 60	181.50	6,069.02	9,443 01	-4,730.69	49 52	4,730.95	2.93	404,648 61	743,483.02
13,966 00	92.10	181 10	6,066 11	9,440.10	-4,801.61	47.91	4,801.85	0.90	404,577 69	743,481.41
Last Phoenix MWD Survey										
14,025.00	92.10	181.10	6,063 95	9,437.94	-4,860.56	46.78	4,860 78	0.00	404,518.74	743,480 28
Projection to TD										

Survey Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
1,100.00	1,099.98	-4 46	-5.20	Tie In From Gyros @ 1100' MD
1,143 00	1,142.98	-4 52	-5.51	First Phoenix MWD Survey @ 1143' MD
13,966.00	9,440 10	-4,801 61	47.91	Last Phoenix MWD Survey
14,025.00	9,437 94	-4,860 56	46 78	Projection to TD

Checked By: _____ Approved By: _____ Date: _____

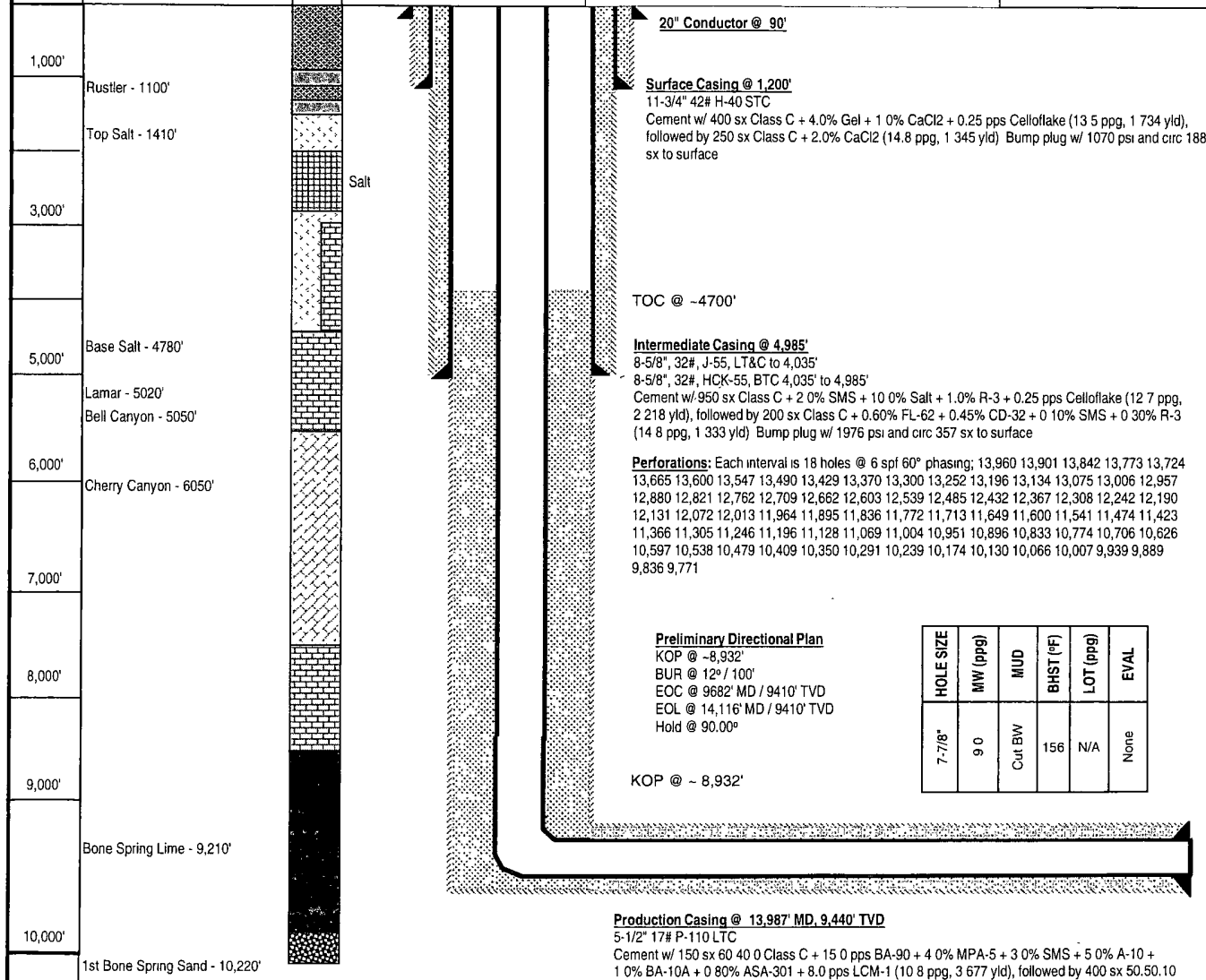
CURRENT WELL SKETCH

eog resources

OGRID: 7377
API: 30-025-40247
AFE: 104810
SPUD: 11/19/11 @ 10 45 hrs
FRR: 12/3/11 @ 23:00 hrs
RIG: Cactus #123

Caballo 23 Federal #5H
Red Hills Field
Lea County, New Mexico

SURF: 40' FNL & 1295' FWL
LOC: Sec 23
SURVEY: T-25-S, R-33-E
GL: 3344 0'
KB: 3374.0'
ZERO: 30.0' AGL



20" Conductor @ 90'

Surface Casing @ 1,200'
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 188 sx to surface

TOC @ ~4700'

Intermediate Casing @ 4,985'
8-5/8", 32#, J-55, LT&C to 4,035'
8-5/8", 32#, HCK-55, BTC 4,035' to 4,985'
Cement w/ 950 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/ 1976 psi and circ 357 sx to surface

Perforations: Each interval is 18 holes @ 6 spf 60° phasing; 13,960 13,901 13,842 13,773 13,724 13,665 13,600 13,547 13,490 13,429 13,370 13,300 13,252 13,196 13,134 13,075 13,006 12,957 12,880 12,821 12,762 12,709 12,662 12,603 12,539 12,485 12,432 12,367 12,308 12,242 12,190 12,131 12,072 12,013 11,964 11,895 11,836 11,772 11,713 11,649 11,600 11,541 11,474 11,423 11,366 11,305 11,246 11,196 11,128 11,069 11,004 10,951 10,896 10,833 10,774 10,706 10,626 10,597 10,538 10,479 10,409 10,350 10,291 10,239 10,174 10,130 10,066 10,007 9,939 9,889 9,836 9,771

Preliminary Directional Plan
KOP @ ~8,932'
BUR @ 12° / 100'
EOC @ 9682' MD / 9410' TVD
EOL @ 14,116' MD / 9410' TVD
Hold @ 90.00°

KOP @ ~ 8,932'

HOLE SIZE	MW (ppg)	MUD	BHST (°F)	LOT (ppg)	EVAL
7-7/8"	9 0	Cut BW	156	N/A	None

Production Casing @ 13,987' MD, 9,440' TVD
5-1/2" 17# P-110 LTC
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 + 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 (11 8 ppg, 2 382 yld), follwed 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

HOLE SIZE	MW (ppg)	MUD	BHST (°F)	LOT (ppg)	EVALUATION
14-3/4"	8 4 9 0	FW	86	N/A	
11"	10.0 10 2	Brine	110		Mud Log
7-7/8"	8 4 8 6	Fresh Water		N/A	BHC Sonic / GR-HRLA-MSFL / HNGS-CNL-LDT w/ Pe Mud Log
	9 3	Cut BW	156		

Drlg Eng:	SLM
Date:	12/5/2011