

HOBBS OCD

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EOG Resources - Midland

Lea County, NM (NAD 83 NME)

Caballo 23 Fed

#709H

OH

Design: OH

Final PVA Report

31 March, 2019



Final PVA Report

Company: EOG Resources - Midland Project: Lea County, NM (NAD 83 NME) Site: Caballo 23 Fed Well: #709H Wellbore: OH Design: OH		Local Co-ordinate Reference: Well #709H TVD Reference: KB = 22' @ 3365.0usft (Nabors M7502) MD Reference: KB = 22' @ 3365.0usft (Nabors M7502) North Reference: Grid Survey Calculation Method: Minimum Curvature Database: EDM 5000.14	
Project Lea County, NM (NAD 83 NME)			
Map System: US State Plane 1983 Geo Datum: North American Datum 1983 Map Zone: New Mexico Eastern Zone		System Datum: Mean Sea Level	
Site Caballo 23 Fed			
Site Position: From: Map Position Uncertainty: 0.0 usft		Northing: 404,499.00 usft Easting: 785,117.00 usft Slot Radius: 13-3/16" Latitude: 32° 6' 34.558 N Longitude: 103° 32' 45.566 W Grid Convergence: 0.42°	
Well #709H			
Well Position +N-S 0.0 usft +E-W 0.0 usft Position Uncertainty 0.0 usft		Northing: 404,509.00 usft Easting: 788,612.00 usft Wellhead Elevation: usft Latitude: 32° 6' 34.548 N Longitude: 103° 32' 28.184 W Ground Level: 3,343.0 usft	
Wellbore OH			
Magnetics			
Model Name	Sample Date	Declination (°)	Dip Angle (°)
IGRF2015	8/15/2018	6.81	59.95
Field Strength (nT) 47,754.59207210			
Design OH			
Audit Notes:			
Version: 1.0	Phase: ACTUAL	Tie On Depth: 0.0	
Vertical Section:	Depth From (TVD) (usft)	+N-S (usft)	+E-W (usft)
	0.0	0.0	2.93
Survey Program			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name
133.0	20,046.0	Learn MWD #1 (OH)	MWD
			Description
			OWSG MWD - Standard



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Site:	Caballo 23 Fed	MD Reference:	KB = 22' @ 3365.0usft (Nabors M7502)
Well:	#709H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.14

Survey											
MD (usft)	Inc (")	Azi (grid_north_azim)	TVD (usft)	N/S (usft)	EW (usft)	DLeg (*/100usft)	Build (*/100usft)	Turn (*/100usft)	High to Plan (usft)	Right to Plan (usft)	
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.0	0.0	0.0
133.0	0.97	231.25	133.0	-0.7	-0.9	0.73	0.73	0.00	-1.1	0.0	
223.0	0.79	198.27	223.0	-1.8	-1.6	0.62	-0.20	-38.87	-2.2	-1.1	
315.0	0.53	212.97	315.0	-2.7	-2.1	0.35	-0.28	18.15	-3.4	-0.2	
408.0	0.53	209.45	406.0	-3.5	-2.5	0.04	0.00	-3.87	-4.2	-0.5	
528.0	0.09	203.65	528.0	-4.0	-2.8	0.36	-0.36	-4.75	-4.8	-0.9	
688.0	0.09	233.18	688.0	-4.2	-3.0	0.03	0.00	18.46	-4.9	1.6	
783.0	0.18	195.39	783.0	-4.4	-3.1	0.13	0.09	-39.78	-5.1	-1.8	
878.0	0.09	176.76	878.0	-4.6	-3.1	0.10	-0.09	-19.61	-4.5	-3.4	
973.0	0.09	3.96	973.0	-4.6	-3.1	0.19	0.00	-181.89	4.8	2.8	
1,068.0	0.09	103.11	1,068.0	-4.6	-3.0	0.14	0.00	104.37	1.9	-5.1	
1,155.0	0.26	19.08	1,155.0	-4.4	-2.9	0.31	0.20	-96.59	5.1	1.3	
1,257.0	0.53	24.18	1,257.0	-3.8	-2.6	0.27	0.26	5.00	4.5	0.8	
1,447.0	0.53	344.80	1,447.0	-2.1	-2.5	0.19	0.00	-20.73	1.4	2.9	
1,637.0	0.70	339.88	1,636.9	-0.2	-3.1	0.09	0.09	-2.59	-0.9	3.0	
1,827.0	0.44	26.99	1,826.9	1.6	-3.2	0.27	-0.14	24.79	0.0	3.5	
2,016.0	0.53	332.68	2,015.9	3.0	-3.2	0.24	0.05	-28.74	-4.1	1.5	
2,206.0	0.53	295.23	2,205.9	4.1	-4.4	0.18	0.00	-19.71	-5.8	-1.9	
2,397.0	0.53	311.23	2,396.9	5.1	-5.9	0.08	0.00	8.38	-7.8	0.1	
2,586.0	3.34	159.88	2,585.8	0.5	-4.7	2.02	1.49	-80.08	2.1	-4.2	
2,776.0	4.31	156.54	2,775.4	-11.2	0.1	0.52	0.51	-1.76	-10.3	-4.4	
2,966.0	5.10	130.53	2,964.8	-23.3	9.3	1.18	0.42	-13.69	-22.2	-11.7	
3,155.0	5.54	124.38	3,153.0	-33.9	23.3	0.36	0.23	-3.25	-38.3	-14.9	
3,345.0	6.42	112.60	3,341.9	-43.1	40.6	0.79	0.46	-6.20	-51.9	-24.0	
3,535.0	6.51	107.50	3,530.7	-50.5	60.7	0.31	0.05	-2.68	-57.5	-26.6	
3,724.0	5.54	112.95	3,718.7	-57.3	79.3	0.60	-0.51	2.88	-56.9	-17.6	
3,914.0	4.84	104.88	3,907.9	-62.9	95.5	0.53	-0.37	-4.28	-48.5	-21.0	



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Site: Cabello 23 Fed		MD Reference: KB = 22' @ 3365.0usft (Nabors M7502)	
Well: #709H		North Reference: Grid	
Wellbore: OH		Survey Calculation Method: Minimum Curvature	
Design: OH		Database: EDM 5000.14	

Survey											
MD (usft)	Inc (°)	Azi (grid_north_azim)	TVD (usft)	N/S (usft)	EW (usft)	DLeg (°/100usft)	Build (°/100usft)	Turn (°/100usft)	High to Plan (usft)	Right to Plan (usft)	
4,103.0	5.28	101.35	4,096.2	-66.6	111.8	0.28	0.23	-1.86	-41.8	-17.4	
4,292.0	3.87	115.06	4,284.6	-71.1	126.1	0.94	-0.75	7.25	-36.6	-3.4	
4,482.0	7.12	121.21	4,473.7	-79.9	141.9	1.74	1.71	3.24	-31.7	0.4	
4,672.0	7.21	117.34	4,662.2	-91.4	162.8	0.26	0.05	-2.04	-32.2	-1.8	
4,861.0	9.50	123.50	4,849.2	-105.5	186.2	1.30	1.21	3.26	-36.7	1.1	
5,051.0	6.77	124.73	5,037.2	-120.5	208.4	1.44	-1.44	0.65	-40.5	-0.1	
5,241.0	5.54	122.62	5,226.1	-131.9	225.4	0.66	-0.65	-1.11	-37.7	-3.4	
5,431.0	5.01	121.91	5,415.3	-141.2	240.1	0.28	-0.28	-0.37	-32.0	-5.1	
5,621.0	4.75	120.33	5,604.7	-149.6	254.0	0.15	-0.14	-0.83	-24.8	-6.7	
5,810.0	4.57	111.02	5,793.0	-156.2	267.7	0.41	-0.10	-4.93	-15.8	-8.6	
6,000.0	6.60	100.64	5,982.1	-160.9	285.5	1.19	1.07	-5.46	-10.4	-5.4	
6,190.0	4.40	93.44	6,171.2	-163.4	303.6	1.21	-1.16	-3.79	-6.9	2.0	
6,380.0	3.96	101.00	6,360.7	-165.1	317.3	0.37	-0.23	3.98	1.7	11.0	
6,569.0	3.17	126.13	6,549.4	-169.4	327.9	0.92	-0.42	13.30	18.0	9.3	
6,758.0	4.31	117.70	6,738.0	-175.8	338.4	0.67	0.60	-4.46	27.2	11.6	
6,948.0	4.13	122.97	6,927.5	-182.8	350.5	0.22	-0.09	2.77	37.4	8.1	
7,138.0	3.08	121.91	7,117.1	-189.3	360.5	0.55	-0.55	-0.56	46.4	7.5	
7,328.0	2.73	124.20	7,306.8	-194.5	368.6	0.19	-0.18	1.21	62.2	3.8	
7,518.0	2.64	120.86	7,496.6	-199.3	376.1	0.09	-0.05	-1.76	73.7	6.4	
7,707.0	2.11	146.88	7,685.5	-204.4	381.8	0.63	-0.28	13.77	89.5	-28.8	
7,897.0	1.58	148.98	7,875.4	-209.6	385.0	0.28	-0.28	1.11	62.4	-31.3	
8,087.0	1.85	162.87	8,065.3	-214.8	387.3	0.26	0.14	7.31	47.5	-44.7	
8,276.0	1.93	156.37	8,254.2	-220.6	389.4	0.12	0.04	-3.44	46.0	-39.4	
8,465.0	1.58	165.33	8,443.1	-226.1	391.4	0.23	-0.19	4.74	33.6	-45.6	
8,654.0	1.67	167.44	8,632.0	-231.3	392.6	0.06	0.05	1.12	26.5	-46.7	
8,843.0	1.85	177.46	8,820.9	-237.0	393.4	0.19	0.10	5.30	12.2	-50.1	
9,033.0	1.85	185.90	9,010.8	-243.1	393.2	0.14	0.00	4.44	-1.4	-50.9	



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Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.14

Survey											
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9,223.0	1.41	218.24	9,200.8	-248.0	391.4	0.53	-0.23	17.02	-33.3	-40.7	
9,413.0	1.85	239.86	9,390.7	-251.4	387.3	0.39	0.23	11.38	-51.2	-24.7	
9,609.0	2.37	233.18	9,586.6	-255.4	381.3	0.29	0.27	-3.41	-55.2	-30.9	
9,799.0	2.02	179.39	9,776.4	-261.1	378.2	1.06	-0.18	-28.31	-13.4	-65.9	
9,988.0	2.37	37.54	9,965.4	-261.3	380.7	2.20	0.19	-75.05	49.9	41.5	
10,178.0	0.79	19.26	10,155.3	-257.0	383.5	0.86	-0.83	-9.62	29.4	53.8	
10,367.0	1.32	327.23	10,344.3	-253.9	382.7	0.55	0.28	-27.53	-27.3	55.3	
10,556.0	1.32	326.70	10,533.2	-250.3	380.4	0.01	0.00	-0.28	-32.2	55.0	
10,746.0	0.44	268.69	10,723.2	-248.5	378.4	0.60	-0.46	-30.53	-65.6	0.0	
10,935.0	0.53	304.73	10,912.2	-248.0	377.0	0.17	0.05	19.07	-54.5	39.0	
11,125.0	2.46	321.60	11,102.1	-244.3	373.7	1.03	1.02	8.88	-45.8	53.4	
11,314.0	1.49	341.46	11,291.0	-238.8	370.4	0.62	-0.51	10.51	-31.2	67.1	
11,504.0	1.23	324.94	11,481.0	-234.8	368.5	0.25	-0.14	-8.69	-53.4	54.8	
11,693.0	1.06	31.04	11,669.9	-231.6	368.2	0.67	-0.09	34.97	25.9	72.9	
11,810.0	0.70	27.17	11,786.9	-230.0	369.1	0.31	-0.31	-3.31	19.1	74.4	
11,805.0	0.88	358.87	11,881.9	-228.8	369.3	0.45	0.19	-29.79	-19.7	74.3	
11,999.0	5.10	9.59	11,975.7	-223.9	370.0	4.51	4.49	11.40	-10.4	76.8	
12,008.2	5.79	9.73	11,984.9	-223.1	370.2	7.50	7.49	1.55	-11.0	76.8	
KOP (Caballo 23 Fed Com #709H)											
12,094.0	12.22	10.29	12,069.6	-209.9	372.5	7.50	7.49	0.65	-16.4	75.4	
12,145.0	16.66	11.45	12,119.0	-197.4	374.9	8.72	8.70	2.27	-16.0	73.2	
HL Crossing, MD:12145.0', TVD:12119.0', N/S:-197.4', EA:374.9', INC:16.66											
12,189.0	20.49	12.05	12,160.7	-183.7	377.8	8.72	8.71	1.37	-14.8	70.1	
12,234.0	26.03	13.81	12,202.0	-166.4	381.8	12.41	12.31	3.91	-12.1	65.8	
12,284.0	32.98	12.58	12,245.5	-142.4	387.4	13.95	13.90	-2.46	-13.0	59.3	
12,379.0	45.73	8.18	12,318.8	-83.2	397.9	13.73	13.42	-4.63	-16.0	48.7	



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12,401.1	46.53	9.38	12,334.2	-87.5	400.4	5.32	3.61	5.42	-14.8	44.3	
FTP (Caballo 23 Fed Com #709H)											
12,474.0	49.24	13.11	12,383.0	-14.5	410.9	5.32	3.72	5.12	-6.6	32.7	
12,527.0	52.67	11.00	12,416.4	25.8	419.5	7.17	6.47	-3.98	1.4	22.4	
12,570.0	57.51	9.41	12,441.0	60.5	425.7	11.66	11.26	-3.70	9.0	15.2	
12,602.0	62.43	8.54	12,457.0	87.8	430.0	15.55	15.37	-2.72	14.8	10.6	
12,665.0	72.19	7.48	12,481.3	145.3	438.1	15.57	15.48	-1.68	24.7	2.3	
12,697.0	77.38	7.48	12,489.7	175.9	442.1	16.22	16.22	0.00	28.7	-1.8	
12,728.0	82.22	7.48	12,495.2	206.1	446.1	15.61	15.61	0.00	31.8	-5.8	
12,797.0	91.01	7.86	12,499.3	274.4	455.2	12.74	12.74	0.26	35.6	-15.0	
12,855.0	90.84	5.72	12,498.3	332.0	461.9	3.36	-0.29	-3.34	35.0	-22.3	
12,950.0	99.36	4.14	12,489.9	426.1	470.1	9.12	8.97	-1.66	27.1	-31.2	
13,045.0	98.31	2.91	12,475.3	519.8	475.8	1.69	-1.11	-1.29	13.1	-37.7	
13,139.0	93.39	0.63	12,465.7	613.3	478.7	5.76	-5.23	-2.43	3.9	-41.3	
13,235.0	90.92	359.57	12,462.1	709.2	478.9	2.80	-2.57	-1.10	0.8	-42.3	
13,329.0	89.25	357.99	12,462.0	803.2	476.9	2.45	-1.78	-1.68	1.2	-41.0	
13,424.0	90.31	358.87	12,462.3	898.1	474.3	1.45	1.12	0.93	2.0	-39.1	
13,475.9	89.59	358.58	12,462.4	950.0	473.1	1.50	-1.39	-0.56	2.4	-38.4	
TGT 1 (Caballo 23 Fed Com #709H)											
13,519.0	88.99	358.34	12,462.9	993.1	472.0	1.50	-1.39	-0.56	3.1	-37.5	
13,614.0	87.58	356.93	12,465.7	1,088.0	468.0	2.10	-1.48	-1.48	6.3	-34.3	
13,709.0	87.83	356.76	12,469.5	1,182.7	462.8	0.41	0.37	-0.18	10.3	-29.8	
13,804.0	88.37	356.58	12,472.5	1,277.5	457.3	0.50	0.46	-0.19	13.7	-25.1	
13,898.0	91.28	358.34	12,472.8	1,371.4	453.1	3.62	3.10	1.87	14.2	-21.6	
13,992.0	90.48	357.64	12,471.4	1,465.4	449.8	1.13	-0.85	-0.74	13.1	-19.1	
14,087.0	90.48	357.81	12,470.6	1,560.3	446.1	0.18	0.00	0.18	12.6	-16.0	
14,182.0	89.16	355.88	12,470.9	1,655.1	440.8	2.46	-1.39	-2.03	13.3	-11.5	



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14,277.0	90.13	357.99	12,471.5	1,750.0	435.8	2.44	1.02	2.22	14.2	-7.2	
14,372.0	90.22	359.22	12,471.2	1,845.0	433.5	1.30	0.09	1.29	14.2	-5.6	
14,468.0	91.63	358.87	12,469.6	1,940.9	431.9	1.51	1.47	-0.36	12.9	-4.7	
14,563.0	95.14	359.39	12,464.0	2,035.7	430.4	3.73	3.69	0.55	7.6	-4.0	
14,658.0	94.79	359.39	12,455.8	2,130.4	429.4	0.37	-0.37	0.00	-0.3	-3.8	
14,753.0	96.55	359.22	12,448.4	2,224.9	428.3	1.88	1.85	-0.18	-9.3	-3.4	
14,848.0	93.21	0.27	12,438.3	2,319.5	427.8	3.68	-3.52	1.11	-17.1	-3.7	
14,943.0	89.16	358.87	12,436.4	2,414.5	427.1	4.51	-4.26	-1.47	-18.7	-3.7	
15,038.0	86.88	358.69	12,439.7	2,509.4	425.1	2.41	-2.40	-0.19	-15.1	-2.4	
15,133.0	87.76	358.16	12,444.1	2,604.3	422.5	1.08	0.93	-0.56	-10.4	-0.5	
15,228.0	88.20	357.81	12,447.4	2,699.1	419.2	0.59	0.46	-0.37	-6.7	2.1	
15,323.0	87.49	357.46	12,451.0	2,794.0	415.2	0.83	-0.75	-0.37	-2.8	5.3	
15,418.0	88.29	357.64	12,454.5	2,888.8	411.2	0.86	0.84	0.19	1.0	8.6	
15,513.0	88.99	358.52	12,456.8	2,983.8	408.0	1.18	0.74	0.93	3.6	11.1	
15,608.0	90.66	359.22	12,457.1	3,078.7	406.1	1.91	1.76	0.74	4.2	12.2	
15,703.0	91.10	359.57	12,455.6	3,173.7	405.1	0.59	0.46	0.37	3.0	12.5	
15,798.0	92.24	0.10	12,452.8	3,268.7	404.8	1.32	1.20	0.56	0.6	12.0	
15,893.0	89.69	359.39	12,451.2	3,363.7	404.4	2.79	-2.68	-0.75	-0.7	11.7	
15,987.0	88.11	357.99	12,453.0	3,457.6	402.3	2.25	-1.68	-1.49	1.4	13.1	
16,082.0	88.20	358.52	12,456.1	3,552.5	399.4	0.57	0.09	0.56	4.8	15.3	
16,177.0	89.25	359.39	12,458.2	3,647.5	397.7	1.44	1.11	0.92	7.2	16.3	
16,272.0	88.29	359.57	12,460.2	3,742.4	396.8	1.03	-1.01	0.19	9.6	16.4	
16,367.0	89.34	0.80	12,462.2	3,837.4	397.1	1.70	1.11	1.29	11.9	15.4	
16,462.0	87.93	2.21	12,464.5	3,932.4	399.6	2.10	-1.48	1.48	14.4	12.1	
16,471.8	88.05	2.21	12,464.8	3,942.2	400.0	1.21	1.21	0.00	14.8	11.7	
TGT 2 (Caballo 23 Fed Com #709H)											
16,557.0	89.08	2.21	12,467.0	4,027.3	403.3	1.21	1.21	0.00	16.9	7.7	



Final PVA Report

Company:	EOG Resources - Midland	Local Co-ordinate Reference:	Well #709H
Project:	Lea County, NM (NAD 83 NME)	TVD Reference:	KB = 22' @ 3365.0usft (Nabors M7502)
Site:	Caballo 23 Fed	MD Reference:	KB = 22' @ 3365.0usft (Nabors M7502)
Well:	#709H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.14

Survey											
MD (usft)	Inc (°)	Azi (grid_north_azim)	TVD (usft)	N/S (usft)	EAW (usft)	DLeg (°/100usft)	Build (°/100usft)	Turn (°/100usft)	High to Plan (usft)	Right to Plan (usft)	
16,652.0	91.19	3.09	12,466.7	4,122.1	407.6	2.41	2.22	0.93	16.5	2.6	
16,747.0	90.22	2.38	12,465.6	4,217.0	412.2	1.27	-1.02	-0.75	15.2	-2.6	
16,842.0	89.34	0.63	12,465.9	4,312.0	414.7	2.06	-0.93	-1.84	15.4	-5.9	
16,937.0	90.31	358.67	12,466.2	4,407.0	414.3	2.12	1.02	-1.85	15.6	-6.2	
17,032.0	89.96	355.88	12,466.0	4,501.9	409.9	3.17	-0.37	-3.15	15.2	-2.6	
17,127.0	87.85	353.07	12,467.8	4,596.4	400.8	3.70	-2.22	-2.96	16.9	5.8	
17,222.0	87.23	352.19	12,471.9	4,690.5	388.6	1.13	-0.65	-0.93	20.9	17.3	
17,317.0	89.25	352.36	12,474.8	4,784.6	375.8	2.13	2.13	0.18	23.7	29.3	
17,412.0	91.19	355.18	12,474.4	4,879.0	365.5	3.60	2.04	2.97	23.2	38.9	
17,506.0	91.54	354.47	12,472.2	4,972.6	357.0	0.84	0.37	-0.76	20.9	46.6	
17,601.0	90.84	359.57	12,470.2	5,067.4	352.1	5.42	-0.74	5.37	18.7	50.9	
17,696.0	91.80	2.73	12,468.0	5,162.4	354.0	3.48	1.01	3.33	16.3	48.2	
17,791.0	91.89	2.38	12,465.0	5,257.2	358.2	0.38	0.09	-0.37	13.1	43.3	
17,886.0	92.77	2.21	12,461.1	5,352.1	362.0	0.94	0.93	-0.18	9.1	38.7	
17,981.0	92.15	3.96	12,457.0	5,446.9	367.2	1.95	-0.65	1.84	4.9	32.9	
18,076.0	88.11	2.91	12,456.8	5,541.7	372.8	4.39	-4.25	-1.11	4.6	26.5	
18,171.0	89.78	2.73	12,456.6	5,636.5	377.5	1.77	1.76	-0.19	6.2	21.1	
18,266.0	87.32	4.67	12,461.0	5,731.3	383.6	3.30	-2.59	2.04	8.5	14.2	
18,361.0	89.08	2.38	12,464.0	5,826.1	389.5	3.04	1.85	-2.41	11.3	7.6	
18,456.0	88.81	1.33	12,465.7	5,921.0	392.6	1.14	-0.28	-1.11	12.9	3.8	
18,551.0	88.55	359.04	12,467.9	6,016.0	392.9	2.43	-0.27	-2.41	15.0	2.8	
18,624.2	93.09	358.23	12,466.9	6,089.1	391.1	6.30	6.20	-1.10	13.8	4.0	
TGT 3 (Caballo 23 Fed Com #709H)											
18,646.0	94.44	357.99	12,465.4	6,110.9	390.4	6.30	6.20	-1.11	12.4	4.5	
18,741.0	93.12	358.67	12,459.2	6,205.6	387.8	1.67	-1.39	0.93	6.4	6.4	
18,836.0	93.56	359.92	12,453.6	6,300.4	386.8	1.20	0.46	1.11	1.0	6.6	
18,930.0	89.60	2.21	12,451.0	6,394.4	388.6	4.87	-4.21	2.44	-1.3	4.2	



Final PVA Report

Company:	EOG Resources - Midland	Local Co-ordinate Reference:	Well #709H
Project:	Lea County, NM (NAD 83 NME)	TVD Reference:	KB = 22' @ 3365.0usft (Nabors M7502)
Site:	Caballo 23 Fed	MD Reference:	KB = 22' @ 3365.0usft (Nabors M7502)
Well:	#709H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.14

Survey											
MD (usft)	Inc (")	Azi (grid_north_azim)	TVD (usft)	N/S (usft)	E/W (usft)	DLeg ("/100usft)	Build ("/100usft)	Turn ("/100usft)	High to Plan (usft)	Right to Plan (usft)	
19,025.0	87.58	1.33	12,453.4	6,489.3	391.5	2.32	-2.13	-0.93	1.2	0.5	
19,120.0	88.81	2.03	12,456.4	6,584.2	394.3	1.49	1.29	0.74	4.4	-3.0	
19,215.0	89.52	2.56	12,457.7	6,679.1	398.1	0.93	0.75	0.56	6.0	-7.5	
19,310.0	91.36	4.32	12,457.0	6,773.9	403.8	2.68	1.94	1.85	5.5	-14.0	
19,405.0	88.90	2.56	12,456.8	6,868.7	409.5	3.18	-2.59	-1.85	5.4	-20.4	
19,500.0	90.40	1.86	12,457.4	6,963.7	413.1	1.74	1.58	-0.74	6.2	-24.8	
19,594.0	92.86	0.45	12,454.7	7,057.6	415.0	3.02	2.62	-1.50	3.8	-27.4	
19,689.0	91.63	1.68	12,451.0	7,152.5	416.8	1.83	-1.29	1.29	0.2	-29.9	
19,784.0	89.60	359.04	12,450.0	7,247.5	417.4	3.51	-2.14	-2.78	-0.6	-31.2	
19,879.0	91.98	0.10	12,448.7	7,342.5	416.7	2.74	2.51	1.12	-1.7	-31.3	
19,991.0	90.66	358.87	12,446.1	7,454.4	415.7	1.61	-1.18	-1.10	-4.1	-31.1	
Final MWD Survey (MD=19991.0')											
20,046.0	90.66	358.87	12,445.4	7,509.4	414.6	0.00	0.00	0.00	-4.6	-30.5	
Final Projection to Bit (MD=20046.0') - PBHL (Caballo 23 Fed Com #709H)											

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
12,145.0	12,119.0	-197.4	374.9	HL Crossing, MD:12145.0', TVD:12119.0', N/S:-197.4', E/W:374.9', INC:16.66
19,991.0	12,446.1	7,454.4	415.7	Final MWD Survey (MD=19991.0')
20,046.0	12,445.4	7,509.4	414.6	Final Projection to Bit (MD=20046.0')

Checked By: _____ Approved By: _____ Date: _____



Lea County, NM (NAD 83 NME)

Caballo 23 Fed #709H

Nabors M7502

Plan # 1

PROJECT DETAILS: Lea County, NM (NAD 83 NME)

Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: New Mexico Eastern Zone
System Datum: Mean Sea Level

WELL DETAILS: #709H

KB = 22' @ 3385.0usft (Nabors M7502) 3343.0
Northing 404509.00 Easting 786612.00 Latitude 32° 6' 34.548 N Longitude 103° 32' 23.164 W

SECTION DETAILS

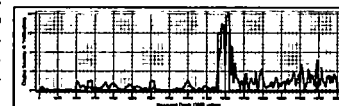
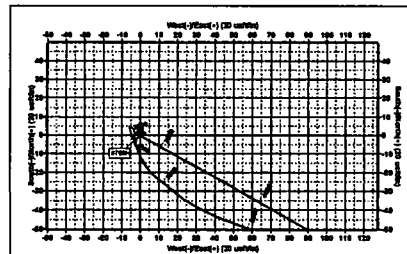
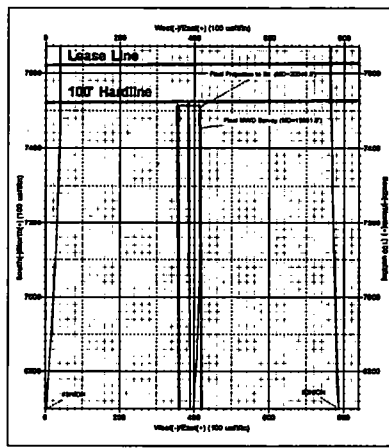
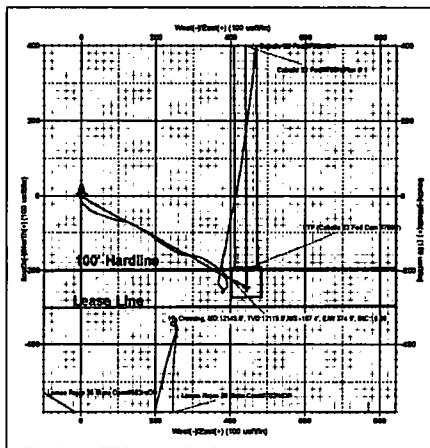
Sec	MD	Inc	Azi	TVD	+N-S	+E-W	Dleg	TFace	Vsect	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	3232.0	0.00	0.00	3232.0	0.0	0.0	0.00	0.00	0.0	
3	3581.9	7.00	119.09	3581.1	-10.4	18.7	2.00	119.09	-9.4	
4	7401.3	7.00	119.09	7371.9	-236.8	425.3	0.00	0.00	-214.6	
5	7751.2	0.00	0.00	7721.0	-247.0	444.0	2.00	180.00	-224.0	
6	12016.7	0.00	0.00	11988.5	-247.0	444.0	0.00	0.00	-224.0	KOP (Caballo 23 Fed Com #709H)
7	12769.3	90.32	359.56	12464.0	233.1	440.3	12.00	359.56	255.3	
8	13485.4	90.32	359.56	12460.0	949.1	434.8	0.00	0.00	970.1	TGT 1 (Caballo 23 Fed Com #709H)
9	13491.6	90.19	359.56	12450.0	955.4	434.7	2.00	180.00	976.3	
10	16478.5	90.19	359.56	12450.0	3942.1	411.7	0.00	0.00	3958.0	TGT 2 (Caballo 23 Fed Com #709H)
11	16492.1	89.92	359.56	12450.0	3955.7	411.6	2.00	-180.00	3971.6	
12	18625.3	89.92	359.56	12453.0	6088.8	395.1	0.00	0.00	6101.0	TGT 3 (Caballo 23 Fed Com #709H)
13	18635.4	90.12	359.56	12453.0	6098.9	395.0	2.00	0.03	6111.1	
14	20051.5	90.12	359.56	12450.0	7515.0	384.1	0.00	0.00	7524.8	PBHL (Caballo 23 Fed Com #709H)

CASINO DETAILS

No casing data is available

WELLBORE TARGET DETAILS (MAP COORDINATES)

Name	TVD	+N-S	+E-W	Northing	Easting
KOP (Caballo 23 Fed Com #709H)	11988.5	-247.0	444.0	404382.00	787058.00
PBHL (Caballo 23 Fed Com #709H)	12450.0	7515.0	384.1	410224.00	788996.08
TGT 3 (Caballo 23 Fed Com #709H)	12453.0	3942.1	411.7	409481.10	787025.86
TGT 2 (Caballo 23 Fed Com #709H)	12450.0	3955.7	395.1	410587.80	787007.09
TGT 1 (Caballo 23 Fed Com #709H)	12450.0	949.1	434.8	405458.10	787046.77
FTP (Caballo 23 Fed Com #709H)	12464.0	-197.0	444.0	404312.00	787056.00



Lea County, NM (NAD 83 NME)
Plan # 1
21-01-2010 10:00 AM