



**Bill Barrett Corporation**

## **Bill Barrett Corp.**

Garfield County, Colorado [NAD83]

Miller 5 Pad

Miller 14A-31-691

Wellbore #1

Survey: Surveys from Surface

## **Standard Survey Report**

23 May, 2011



<b>Company:</b>	Bill Barrett Corp.	<b>Local Co-ordinate Reference:</b>	Well Miller 14A-31-691
<b>Project:</b>	Garfield County, Colorado [NAD83]	<b>TVD Reference:</b>	KB @ 6052.00ft
<b>Site:</b>	Miller 5 Pad	<b>MD Reference:</b>	KB @ 6052.00ft
<b>Well:</b>	Miller 14A-31-691	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Wellbore #1	<b>Database:</b>	Compass VM

<b>Project</b>	Garfield County, Colorado [NAD83]		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	Colorado Central Zone		

<b>Site</b>	Miller 5 Pad				
<b>Site Position:</b>		<b>Northing:</b>	1,607,026.32 usft	<b>Latitude:</b>	39° 28' 52.45 N
<b>From:</b>	Lat/Long	<b>Easting:</b>	2,407,027.57 usft	<b>Longitude:</b>	107° 36' 3.57 W
<b>Position Uncertainty:</b>	0.00 ft	<b>Slot Radius:</b>	1.10 ft	<b>Grid Convergence:</b>	-1.33 °

<b>Well</b>	Miller 14A-31-691					
<b>Well Position</b>	<b>+N/-S</b>	0.00 ft	<b>Northing:</b>	1,607,026.28 usft	<b>Latitude:</b>	39° 28' 52.45 N
	<b>+E/-W</b>	0.00 ft	<b>Easting:</b>	2,407,027.57 usft	<b>Longitude:</b>	107° 36' 3.57 W
<b>Position Uncertainty</b>		0.00 ft	<b>Wellhead Elevation:</b>	ft	<b>Ground Level:</b>	6,029.00 ft

<b>Wellbore</b>	Wellbore #1				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2010	03/28/11	10.20	65.81	52,315

<b>Design</b>	Wellbore #1				
<b>Audit Notes:</b>					
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b>	0.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>	
	0.00	0.00	0.00		206.39

<b>Survey Program</b>	<b>Date</b>	05/23/11			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
50.00	720.00	Gyro Surveys (Wellbore #1)	MWD	MWD - Standard	
782.00	7,315.00	Surveys (Wellbore #1)	MWD	MWD - Standard	

<b>Survey</b>										
<b>Measured Depth (ft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Vertical Section (ft)</b>	<b>Dogleg Rate (°/100ft)</b>	<b>Build Rate (°/100ft)</b>	<b>Turn Rate (°/100ft)</b>	
0.00	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
50.00	0.060	344.06	50.00	0.03	-0.01	-0.02	0.12	0.12	0.00	
100.00	0.270	359.71	100.00	0.17	-0.01	-0.14	0.43	0.42	31.30	
150.00	0.090	355.21	150.00	0.33	-0.02	-0.28	0.36	-0.36	-9.00	
200.00	0.100	27.73	200.00	0.40	0.00	-0.36	0.11	0.02	65.04	
250.00	0.050	50.65	250.00	0.46	0.04	-0.42	0.11	-0.10	45.84	
300.00	0.190	52.74	300.00	0.52	0.12	-0.52	0.28	0.28	4.18	
350.00	0.060	100.46	350.00	0.56	0.21	-0.60	0.31	-0.26	95.44	
400.00	0.240	133.28	400.00	0.49	0.31	-0.58	0.38	0.36	65.64	
450.00	0.280	221.27	450.00	0.32	0.31	-0.43	0.72	0.08	175.98	

<b>Company:</b>	Bill Barrett Corp.	<b>Local Co-ordinate Reference:</b>	Well Miller 14A-31-691
<b>Project:</b>	Garfield County, Colorado [NAD83]	<b>TVD Reference:</b>	KB @ 6052.00ft
<b>Site:</b>	Miller 5 Pad	<b>MD Reference:</b>	KB @ 6052.00ft
<b>Well:</b>	Miller 14A-31-691	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Wellbore #1	<b>Database:</b>	Compass VM

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
500.00	0.210	229.09	500.00	0.17	0.16	-0.22	0.15	-0.14	15.64
550.00	0.080	235.59	550.00	0.09	0.06	-0.11	0.26	-0.26	13.00
600.00	0.130	281.06	600.00	0.08	-0.02	-0.06	0.19	0.10	90.94
650.00	0.250	348.68	650.00	0.20	-0.10	-0.14	0.47	0.24	135.24
700.00	0.010	329.73	700.00	0.31	-0.13	-0.22	0.48	-0.48	-37.90
720.00	0.120	2.34	720.00	0.34	-0.13	-0.24	0.56	0.55	163.05
771.80	0.314	182.62	771.80	0.25	-0.13	-0.16	0.84	0.38	-346.96
<b>9 5/8"</b>									
782.00	0.400	182.60	782.00	0.18	-0.13	-0.11	0.84	0.84	-0.16
873.00	0.300	234.80	873.00	-0.27	-0.34	0.39	0.35	-0.11	57.36
965.00	2.900	201.50	964.95	-2.58	-1.39	2.93	2.89	2.83	-36.20
1,056.00	5.000	172.30	1,055.74	-8.65	-1.70	8.50	3.13	2.31	-32.09
1,152.00	6.400	173.20	1,151.26	-18.11	-0.51	16.45	1.46	1.46	0.94
1,247.00	9.100	175.00	1,245.39	-30.85	0.77	27.29	2.85	2.84	1.89
1,342.00	11.900	179.70	1,338.79	-48.13	1.48	42.46	3.08	2.95	4.95
1,438.00	16.100	185.70	1,431.92	-71.29	0.21	63.77	4.62	4.38	6.25
1,533.00	21.400	190.60	1,521.85	-101.45	-4.29	92.79	5.82	5.58	5.16
1,629.00	26.500	195.10	1,609.57	-139.38	-13.10	130.67	5.64	5.31	4.69
1,724.00	31.600	199.30	1,692.60	-183.36	-26.86	176.19	5.78	5.37	4.42
1,819.00	36.200	204.60	1,771.44	-232.40	-46.78	228.97	5.75	4.84	5.58
1,915.00	39.400	208.90	1,847.30	-284.87	-73.31	287.77	4.32	3.33	4.48
2,009.00	40.300	211.80	1,919.47	-336.83	-103.75	347.84	2.20	0.96	3.09
2,103.00	41.000	212.10	1,990.79	-388.79	-136.16	408.79	0.77	0.74	0.32
2,198.00	41.500	212.30	2,062.21	-441.79	-169.54	471.11	0.54	0.53	0.21
2,294.00	41.800	211.60	2,133.95	-495.92	-203.30	534.60	0.58	0.31	-0.73
2,389.00	40.200	211.80	2,205.64	-548.95	-236.05	596.66	1.69	-1.68	0.21
2,485.00	39.200	210.60	2,279.51	-601.40	-267.82	657.76	1.31	-1.04	-1.25
2,580.00	38.400	207.20	2,353.55	-653.49	-296.59	717.21	2.40	-0.84	-3.58
2,675.00	38.600	206.90	2,427.90	-706.16	-323.48	776.35	0.29	0.21	-0.32
2,772.00	38.700	205.70	2,503.65	-760.46	-350.32	836.93	0.78	0.10	-1.24
2,867.00	38.400	206.90	2,577.95	-813.54	-376.55	896.13	0.85	-0.32	1.26
2,962.00	38.100	204.40	2,652.56	-866.55	-402.01	954.93	1.66	-0.32	-2.63
3,057.00	37.800	204.40	2,727.47	-919.75	-426.14	1,013.31	0.32	-0.32	0.00
3,153.00	37.100	204.10	2,803.69	-972.97	-450.12	1,071.65	0.75	-0.73	-0.31
3,249.00	35.000	206.70	2,881.30	-1,024.01	-474.32	1,128.12	2.71	-2.19	2.71
3,344.00	32.300	209.20	2,960.38	-1,070.51	-498.95	1,180.73	3.19	-2.84	2.63
3,439.00	31.800	209.70	3,040.90	-1,114.41	-523.73	1,231.07	0.60	-0.53	0.53
3,534.00	31.000	209.20	3,121.99	-1,157.51	-548.07	1,280.49	0.89	-0.84	-0.53
3,630.00	30.200	209.20	3,204.62	-1,200.17	-571.91	1,329.30	0.83	-0.83	0.00
3,725.00	30.500	212.50	3,286.60	-1,241.36	-596.52	1,377.14	1.78	0.32	3.47
3,821.00	30.100	212.30	3,369.49	-1,282.26	-622.48	1,425.31	0.43	-0.42	-0.21
3,916.00	27.900	211.50	3,452.57	-1,321.35	-646.82	1,471.15	2.35	-2.32	-0.84
4,011.00	24.800	209.80	3,537.69	-1,357.60	-668.34	1,513.19	3.36	-3.26	-1.79

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<b>Well:</b>	Miller 14A-31-691	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Wellbore #1	<b>Database:</b>	Compass VM

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
4,106.00	21.100	210.40	3,625.16	-1,389.65	-686.90	1,550.15	3.90	-3.89	0.63	
4,201.00	17.800	208.30	3,714.73	-1,417.19	-702.44	1,581.73	3.55	-3.47	-2.21	
4,296.00	14.600	211.70	3,805.95	-1,440.17	-715.62	1,608.17	3.51	-3.37	3.58	
4,392.00	10.700	213.90	3,899.60	-1,457.87	-726.96	1,629.06	4.09	-4.06	2.29	
4,487.00	7.000	202.00	3,993.46	-1,470.56	-734.05	1,643.58	4.33	-3.89	-12.53	
4,582.00	4.100	187.30	4,088.01	-1,479.30	-736.65	1,652.56	3.38	-3.05	-15.47	
4,677.00	3.300	161.70	4,182.81	-1,485.26	-736.22	1,657.72	1.91	-0.84	-26.95	
4,773.00	0.800	83.80	4,278.76	-1,487.81	-734.69	1,659.32	3.36	-2.60	-81.15	
4,881.00	0.400	16.70	4,386.75	-1,487.37	-733.83	1,658.54	0.69	-0.37	-62.13	
4,963.00	0.700	11.30	4,468.75	-1,486.61	-733.65	1,657.78	0.37	0.37	-6.59	
5,059.00	0.000	248.40	4,564.74	-1,486.03	-733.53	1,657.21	0.73	-0.73	0.00	
5,154.00	0.700	192.60	4,659.74	-1,486.60	-733.66	1,657.77	0.74	0.74	0.00	
5,249.00	0.500	168.10	4,754.74	-1,487.57	-733.70	1,658.66	0.34	-0.21	-25.79	
5,344.00	0.800	223.40	4,849.73	-1,488.46	-734.07	1,659.62	0.69	0.32	58.21	
5,440.00	0.800	299.30	4,945.72	-1,488.62	-735.12	1,660.23	1.02	0.00	79.06	
5,535.00	1.100	282.30	5,040.71	-1,488.10	-736.59	1,660.42	0.43	0.32	-17.89	
5,631.00	0.400	279.00	5,136.70	-1,487.85	-737.82	1,660.74	0.73	-0.73	-3.44	
5,726.00	1.100	325.60	5,231.69	-1,487.04	-738.66	1,660.40	0.92	0.74	49.05	
5,822.00	0.800	289.20	5,327.68	-1,486.06	-739.81	1,660.03	0.69	-0.31	-37.92	
5,917.00	0.700	252.00	5,422.67	-1,486.02	-740.99	1,660.52	0.51	-0.11	-39.16	
6,012.00	1.100	228.20	5,517.66	-1,486.81	-742.22	1,661.77	0.57	0.42	-25.05	
6,108.00	0.600	180.90	5,613.65	-1,487.93	-742.92	1,663.08	0.86	-0.52	-49.27	
6,203.00	0.400	250.60	5,708.65	-1,488.54	-743.24	1,663.77	0.63	-0.21	73.37	
6,298.00	0.800	244.50	5,803.64	-1,488.93	-744.15	1,664.53	0.43	0.42	-6.42	
6,393.00	0.300	50.90	5,898.64	-1,489.06	-744.56	1,664.82	1.15	-0.53	175.16	
6,489.00	0.700	28.00	5,994.64	-1,488.38	-744.09	1,664.01	0.46	0.42	-23.85	
6,585.00	1.200	15.80	6,090.63	-1,486.90	-743.54	1,662.43	0.56	0.52	-12.71	
6,680.00	1.400	25.90	6,185.60	-1,484.90	-742.76	1,660.30	0.32	0.21	10.63	
6,775.00	0.800	105.40	6,280.59	-1,484.03	-741.61	1,659.01	1.56	-0.63	83.68	
6,871.00	0.400	93.60	6,376.58	-1,484.23	-740.63	1,658.75	0.43	-0.42	-12.29	
6,966.00	1.000	102.60	6,471.57	-1,484.43	-739.49	1,658.43	0.64	0.63	9.47	
7,068.00	1.800	108.10	6,573.54	-1,485.12	-737.10	1,657.98	0.79	0.78	5.39	
7,164.00	1.400	118.40	6,669.51	-1,486.15	-734.64	1,657.81	0.51	-0.42	10.73	
7,270.00	2.500	136.60	6,775.44	-1,488.44	-731.91	1,658.65	1.18	1.04	17.17	
7,315.00	2.500	136.60	6,820.40	-1,489.87	-730.56	1,659.33	0.00	0.00	0.00	

Casing Points				
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (ft)	Hole Diameter (ft)
771.80	771.80	9 5/8"	0.80	1.02

<b>Company:</b>	Bill Barrett Corp.	<b>Local Co-ordinate Reference:</b>	Well Miller 14A-31-691
<b>Project:</b>	Garfield County, Colorado [NAD83]	<b>TVD Reference:</b>	KB @ 6052.00ft
<b>Site:</b>	Miller 5 Pad	<b>MD Reference:</b>	KB @ 6052.00ft
<b>Well:</b>	Miller 14A-31-691	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Wellbore #1	<b>Database:</b>	Compass VM

Survey Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
720.00	720.00	0.34	-0.13	End of Gyros

Checked By: \_\_\_\_\_ Approved By: \_\_\_\_\_ Date: \_\_\_\_\_