



**Bill Barrett Corporation**

## **Bill Barrett Corp.**

**Garfield County, Colorado [NAD83]**

**Miller 5 Pad**

**Miller 14C-31-691**

**Wellbore #1**

**Survey: Surveys from Surface**

## **Standard Survey Report**

**20 April, 2011**



<b>Company:</b>	Bill Barrett Corp.	<b>Local Co-ordinate Reference:</b>	Well Miller 14C-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 14C-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		

Site	Miller 5 Pad				
Site Position:		Northing:	1,606,993.99 usft	Latitude:	39° 28' 52.12 N
From:	Lat/Long	Easting:	2,406,992.09 usft	Longitude:	107° 36' 4.01 W
Position Uncertainty:	0.00 ft	Slot Radius:	1.10 ft	Grid Convergence:	-1.33 °

Well	Miller 14C-31-691					
Well Position	+N/-S	0.00 ft	Northing:	1,607,004.62 usft	Latitude:	39° 28' 52.23 N
	+E/-W	0.00 ft	Easting:	2,407,003.91 usft	Longitude:	107° 36' 3.87 W
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level:	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	221.97	

<b>Survey Program</b>	<b>Date</b>	04/11/11			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
50.00	658.00	Gyro Surveys (Wellbore #1)	MWD	MWD - Standard	
782.00	7,120.00	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	
50.00	0.180	310.44	50.00	0.05	-0.06	0.00	0.36	0.36	0.00	
100.00	0.130	329.41	100.00	0.15	-0.15	-0.01	0.14	-0.10	37.94	
150.00	0.310	335.16	150.00	0.32	-0.23	-0.08	0.36	0.36	11.50	
200.00	0.220	342.28	200.00	0.54	-0.32	-0.18	0.19	-0.18	14.24	
250.00	0.170	346.54	250.00	0.70	-0.37	-0.28	0.10	-0.10	8.52	
300.00	0.200	352.03	300.00	0.86	-0.40	-0.37	0.07	0.06	10.98	
350.00	0.060	24.16	350.00	0.97	-0.40	-0.45	0.31	-0.28	64.26	
400.00	0.290	25.33	400.00	1.11	-0.33	-0.60	0.46	0.46	2.34	
450.00	0.290	41.13	450.00	1.32	-0.20	-0.85	0.16	0.00	31.60	

<b>Company:</b>	Bill Barrett Corp.	<b>Local Co-ordinate Reference:</b>	Well Miller 14C-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 14C-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	0.170	106.41	500.00	1.39	-0.04	-1.01	0.54	-0.24	130.56
550.00	0.180	152.80	550.00	1.30	0.07	-1.01	0.28	0.02	92.78
600.00	0.250	219.02	600.00	1.15	0.03	-0.87	0.48	0.14	132.44
650.00	0.180	220.96	650.00	1.00	-0.09	-0.69	0.14	-0.14	3.88
658.00	0.230	219.07	658.00	0.98	-0.11	-0.66	0.63	0.63	-23.63
730.30	0.096	219.07	730.30	0.82	-0.23	-0.45	0.19	-0.19	0.00
<b>9 5/8"</b>									
782.00	0.000	333.40	782.00	0.79	-0.26	-0.41	0.19	-0.19	0.00
871.00	0.000	252.80	871.00	0.79	-0.26	-0.41	0.00	0.00	0.00
963.00	0.200	211.30	963.00	0.65	-0.35	-0.25	0.22	0.22	0.00
1,053.00	1.800	212.20	1,052.98	-0.68	-1.18	1.30	1.78	1.78	1.00
1,148.00	4.100	197.50	1,147.85	-5.18	-3.00	5.86	2.53	2.42	-15.47
1,243.00	6.400	197.00	1,242.44	-13.49	-5.57	13.75	2.42	2.42	-0.53
1,339.00	8.200	193.70	1,337.66	-25.26	-8.75	24.63	1.92	1.88	-3.44
1,433.00	8.700	190.30	1,430.64	-38.76	-11.61	36.59	0.75	0.53	-3.62
1,529.00	10.300	196.60	1,525.32	-54.13	-15.36	50.52	1.99	1.67	6.56
1,624.00	12.100	201.10	1,618.51	-71.56	-21.37	67.50	2.10	1.89	4.74
1,719.00	13.400	208.50	1,711.17	-90.53	-30.21	87.51	2.19	1.37	7.79
1,815.00	15.000	215.00	1,804.24	-110.48	-42.65	110.66	2.35	1.67	6.77
1,910.00	16.400	219.00	1,895.70	-130.98	-58.14	136.26	1.86	1.47	4.21
2,004.00	18.300	223.00	1,985.42	-152.09	-76.56	164.27	2.39	2.02	4.26
2,100.00	21.200	224.80	2,075.77	-175.43	-99.07	196.69	3.09	3.02	1.88
2,196.00	23.900	225.80	2,164.42	-201.31	-125.25	233.43	2.84	2.81	1.04
2,291.00	27.000	226.80	2,250.19	-229.50	-154.77	274.13	3.29	3.26	1.05
2,386.00	30.100	227.80	2,333.63	-260.27	-188.15	319.33	3.30	3.26	1.05
2,481.00	31.100	226.80	2,415.40	-293.07	-223.68	367.48	1.18	1.05	-1.05
2,576.00	32.300	227.80	2,496.22	-326.91	-260.37	417.18	1.38	1.26	1.05
2,671.00	32.400	226.90	2,576.48	-361.35	-297.76	467.79	0.52	0.11	-0.95
2,766.00	32.100	227.10	2,656.82	-395.93	-334.83	518.29	0.34	-0.32	0.21
2,860.00	31.800	224.50	2,736.59	-430.59	-370.49	567.91	1.50	-0.32	-2.77
2,956.00	31.100	223.30	2,818.49	-466.68	-405.22	617.96	0.98	-0.73	-1.25
3,051.00	29.400	221.00	2,900.55	-502.14	-437.35	665.81	2.17	-1.79	-2.42
3,146.00	27.900	219.80	2,983.92	-536.81	-466.88	711.34	1.69	-1.58	-1.26
3,241.00	26.000	220.90	3,068.60	-569.63	-494.74	754.37	2.07	-2.00	1.16
3,337.00	24.300	225.20	3,155.50	-599.46	-522.54	795.14	2.60	-1.77	4.48
3,432.00	22.700	225.60	3,242.62	-626.06	-549.51	832.95	1.69	-1.68	0.42
3,527.00	21.500	225.20	3,330.64	-651.15	-574.96	868.63	1.27	-1.26	-0.42
3,622.00	20.100	223.80	3,419.44	-675.20	-598.61	902.33	1.56	-1.47	-1.47
3,718.00	18.900	223.90	3,509.94	-698.31	-620.81	934.36	1.25	-1.25	0.10
3,813.00	16.700	227.30	3,600.38	-718.66	-641.51	963.33	2.56	-2.32	3.58
3,909.00	14.200	227.90	3,692.91	-735.91	-660.39	988.78	2.61	-2.60	0.63
4,004.00	12.300	222.30	3,785.38	-751.21	-675.85	1,010.49	2.41	-2.00	-5.89
4,099.00	10.400	219.20	3,878.52	-765.34	-688.08	1,029.17	2.10	-2.00	-3.26

<b>Company:</b>	Bill Barrett Corp.	<b>Local Co-ordinate Reference:</b>	Well Miller 14C-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 14C-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)	
4,195.00	7.500	224.20	3,973.34	-776.55	-697.93	1,044.09	3.12	-3.02	5.21	
4,290.00	3.200	235.50	4,067.91	-782.50	-704.44	1,052.87	4.64	-4.53	11.89	
4,385.00	0.900	236.60	4,162.84	-784.41	-707.25	1,056.17	2.42	-2.42	1.16	
4,481.00	1.000	146.50	4,258.83	-785.53	-707.41	1,057.11	1.40	0.10	-93.85	
4,576.00	0.600	166.40	4,353.82	-786.70	-706.84	1,057.60	0.51	-0.42	20.95	
4,672.00	0.400	70.30	4,449.82	-787.08	-706.40	1,057.59	0.79	-0.21	-100.10	
4,767.00	0.400	153.90	4,544.82	-787.26	-705.95	1,057.42	0.56	0.00	88.00	
4,863.00	1.000	211.60	4,640.81	-788.28	-706.24	1,058.37	0.89	0.63	60.10	
4,958.00	0.600	129.00	4,735.80	-789.29	-706.29	1,059.16	1.16	-0.42	-86.95	
5,053.00	1.300	63.30	4,830.79	-789.12	-704.94	1,058.13	1.25	0.74	-69.16	
5,149.00	0.500	40.20	4,926.78	-788.31	-703.69	1,056.70	0.90	-0.83	-24.06	
5,244.00	1.000	291.50	5,021.77	-787.69	-704.20	1,056.57	1.32	0.53	-114.42	
5,339.00	0.700	9.80	5,116.77	-786.82	-704.87	1,056.37	1.16	-0.32	82.42	
5,434.00	1.800	92.00	5,211.75	-786.30	-703.28	1,054.92	1.94	1.16	86.53	
5,530.00	1.600	102.60	5,307.71	-786.64	-700.46	1,053.30	0.39	-0.21	11.04	
5,626.00	1.300	118.10	5,403.68	-787.45	-698.20	1,052.38	0.51	-0.31	16.15	
5,721.00	2.300	78.10	5,498.63	-787.56	-695.38	1,050.58	1.63	1.05	-42.11	
5,817.00	2.100	89.90	5,594.56	-787.16	-691.74	1,047.84	0.51	-0.21	12.29	
5,912.00	1.200	101.20	5,689.52	-787.35	-689.02	1,046.17	1.00	-0.95	11.89	
6,007.00	1.400	139.70	5,784.50	-788.43	-687.29	1,045.82	0.92	0.21	40.53	
6,103.00	2.000	87.50	5,880.46	-789.25	-684.86	1,044.80	1.66	0.63	-54.38	
6,198.00	2.200	60.20	5,975.40	-788.27	-681.62	1,041.91	1.06	0.21	-28.74	
6,294.00	2.200	62.40	6,071.33	-786.51	-678.39	1,038.43	0.09	0.00	2.29	
6,389.00	1.300	8.80	6,166.29	-784.60	-676.61	1,035.82	1.86	-0.95	-56.42	
6,484.00	1.100	41.50	6,261.27	-782.85	-675.84	1,034.01	0.74	-0.21	34.42	
6,579.00	1.000	42.90	6,356.25	-781.56	-674.67	1,032.26	0.11	-0.11	1.47	
6,674.00	1.700	346.90	6,451.23	-779.58	-674.43	1,030.63	1.48	0.74	-58.95	
6,770.00	1.300	322.80	6,547.20	-777.32	-675.41	1,029.61	0.77	-0.42	-25.10	
6,865.00	2.600	314.00	6,642.14	-774.97	-677.61	1,029.33	1.40	1.37	-9.26	
6,961.00	2.200	310.70	6,738.06	-772.25	-680.57	1,029.29	0.44	-0.42	-3.44	
7,070.00	1.600	259.80	6,847.00	-771.16	-683.66	1,030.54	1.58	-0.55	-46.70	
7,120.00	1.600	259.80	6,896.98	-771.41	-685.03	1,031.65	0.00	0.00	0.00	

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (ft)	Hole Diameter (ft)	
730.30	730.30	9 5/8"	0.80	1.02	

<b>Company:</b>	Bill Barrett Corp.	<b>Local Co-ordinate Reference:</b>	Well Miller 14C-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 14C-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)	
658.00	658.00	0.98	-0.11	End of Gyros

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