

# **Bill Barrett Corp.**

**Garfield County, Colorado [NAD83]**

**Miller 5 Pad**

**Miller 14B-31-691**

**Wellbore #1**

**Design: Wellbore #1**

## **Standard Survey Report**

**31 May, 2011**

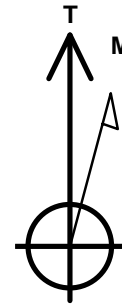
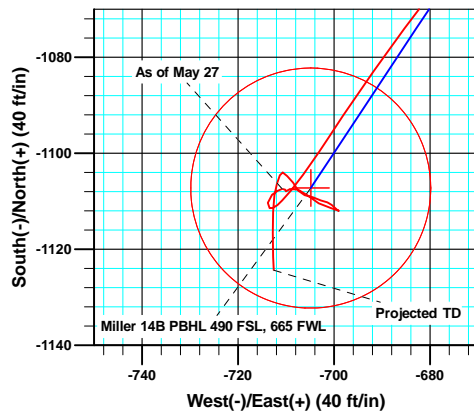
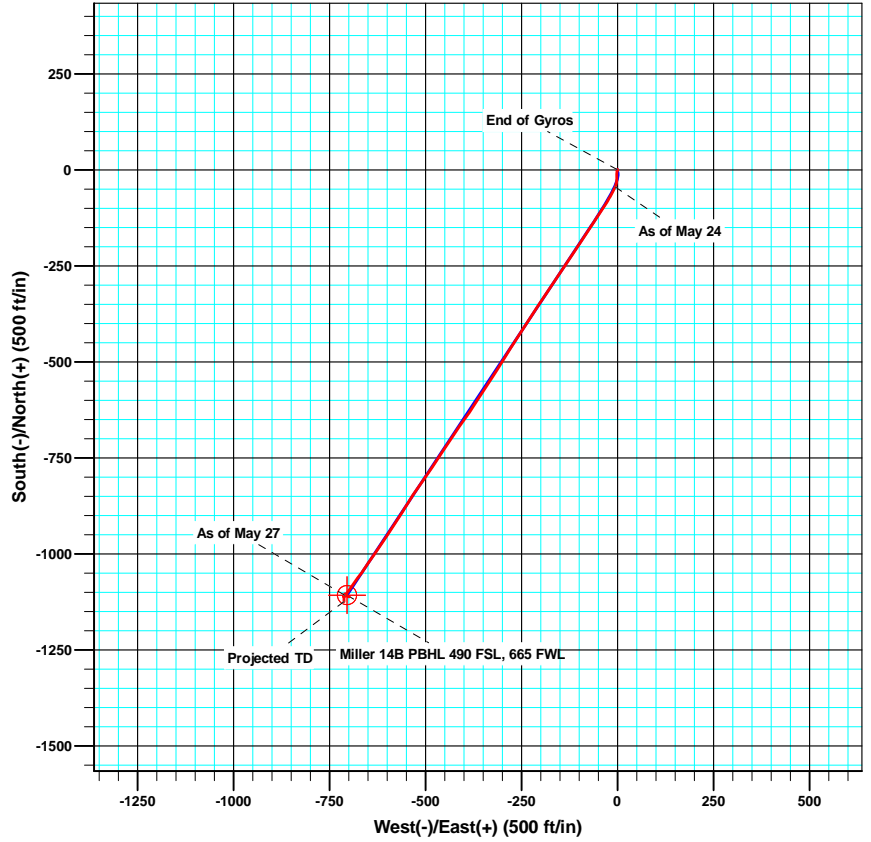
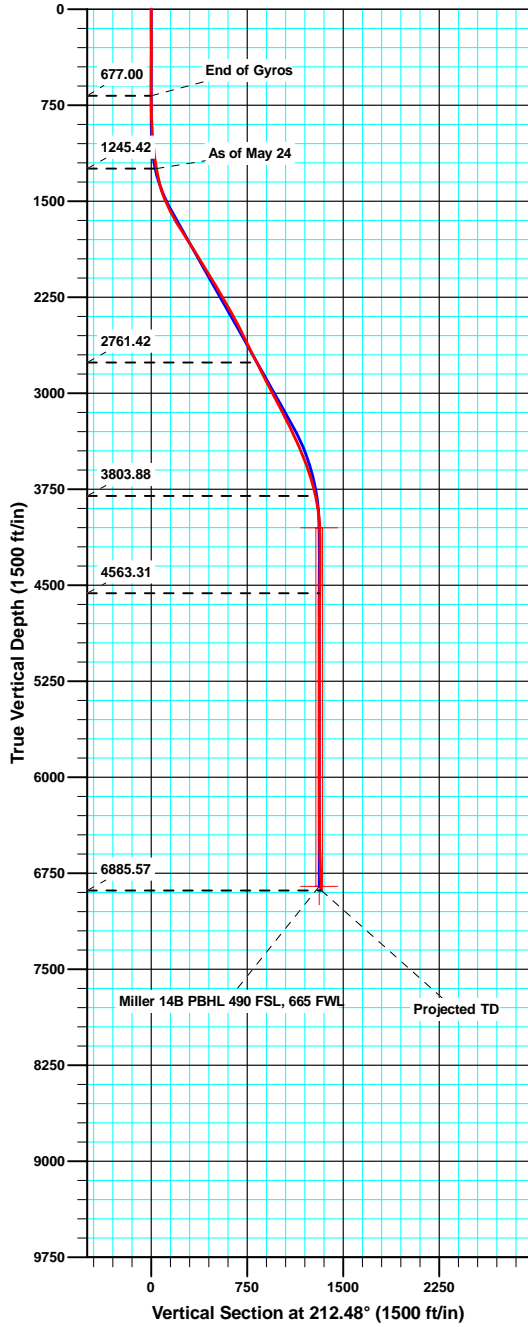
# Miller 14B-31-691

North American Datum 1983 , US State Plane 1983 , Colorado Central Zone

Ground Level: 6029.00



+N/-S   +E/-W   Northing   Easting   Latitude   Longitude  
 0.00   0.00   1607015.27   2407015.73   39.481205   -107.601033



Azimuths to True North  
 Magnetic North: 10.20°

Magnetic Field  
 Strength: 52315.0snT  
 Dip Angle: 65.81°  
 Date: 3/28/2011  
 Model: IGRF2010

## ANNOTATIONS

TVD	MD	Inc	Azi	+N/-S	+E/-W	Vsect	Departure	Annotation
677.00	677.00	0.18	97.72	0.28	-1.32	0.47	2.16	End of Gyros
1245.42	1248.00	9.60	203.10	-44.26	-6.70	40.93	47.66	As of May 24
2761.42	2963.00	26.90	215.30	-700.81	-434.62	824.58	831.68	As of May 25
3803.88	4106.00	11.90	215.20	-1082.55	-691.48	1284.55	1291.95	As of May 26
4563.31	4868.00	0.70	61.80	-1107.44	-710.76	1315.89	1334.80	As of May 27
6885.57	7191.00	3.60	177.90	-1124.35	-712.54	1331.12	1386.21	Projected TD

## Survey Report

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

<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>	1,607,015.30 usft	<b>Latitude:</b>	39.481205
<b>From:</b> Lat/Long		<b>Easting:</b>	2,407,015.74 usft	<b>Longitude:</b>	-107.601033
<b>Position Uncertainty:</b>	0.00 ft	<b>Slot Radius:</b>	1.10 ft	<b>Grid Convergence:</b>	-1.33 °

<b>Well</b> Miller 14B-31-691						
<b>Well Position</b>	<b>+N/-S</b>	0.00 ft	<b>Northing:</b>	1,607,015.26 usft	<b>Latitude:</b>	39.481205
	<b>+E/-W</b>	0.00 ft	<b>Easting:</b>	2,407,015.73 usft	<b>Longitude:</b>	-107.601033
<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					
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	3/28/2011	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
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)	
	0.00	0.00	0.00	212.48	

<b>Survey Program</b>		<b>Date</b> 5/31/2011		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
50.00	677.00	Gyro Surveys (Wellbore #1)	MWD	MWD - Standard
782.00	7,191.00	Surveys (Wellbore #1)	MWD	MWD - Standard

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)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
50.00	0.35	264.37	50.00	-0.01	-0.15	0.09	0.70	0.70	0.00
100.00	0.26	251.62	100.00	-0.07	-0.41	0.28	0.22	-0.18	-25.50
150.00	0.31	255.94	150.00	-0.13	-0.65	0.46	0.11	0.10	8.64
200.00	0.21	245.00	200.00	-0.21	-0.86	0.64	0.22	-0.20	-21.88
250.00	0.07	235.04	250.00	-0.26	-0.97	0.74	0.28	-0.28	-19.92
300.00	0.13	266.27	300.00	-0.28	-1.05	0.81	0.16	0.12	62.46
350.00	0.17	280.33	350.00	-0.27	-1.18	0.87	0.11	0.08	28.12
400.00	0.23	313.49	400.00	-0.19	-1.33	0.88	0.26	0.12	66.32
450.00	0.18	302.31	450.00	-0.08	-1.47	0.86	0.13	-0.10	-22.36

## Survey Report

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

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	0.08	341.55	500.00	-0.01	-1.55	0.83	0.26	-0.20	78.48
550.00	0.18	3.51	550.00	0.11	-1.55	0.74	0.22	0.20	43.92
600.00	0.16	47.41	600.00	0.23	-1.50	0.61	0.26	-0.04	87.80
650.00	0.12	82.20	650.00	0.29	-1.39	0.51	0.18	-0.08	69.58
677.00	0.18	97.72	677.00	0.28	-1.32	0.47	0.27	0.22	57.48
782.00	0.30	198.20	782.00	0.00	-1.25	0.67	0.36	0.11	95.70
873.00	3.40	184.10	872.94	-2.92	-1.51	3.27	3.42	3.41	-15.49
965.00	5.30	183.80	964.67	-9.88	-1.99	9.40	2.07	2.07	-0.33
1,057.00	6.20	177.60	1,056.21	-19.08	-2.06	17.21	1.19	0.98	-6.74
1,152.00	7.70	187.70	1,150.51	-30.52	-2.70	27.19	2.03	1.58	10.63
1,248.00	9.60	203.10	1,245.42	-44.26	-6.70	40.93	3.10	1.98	16.04
1,343.00	13.70	208.50	1,338.45	-61.44	-15.18	59.98	4.46	4.32	5.68
1,439.00	18.10	210.30	1,430.76	-84.31	-28.14	86.24	4.61	4.58	1.88
1,534.00	24.40	213.50	1,519.25	-113.45	-46.43	120.64	6.74	6.63	3.37
1,629.00	28.70	214.00	1,604.22	-148.74	-70.03	163.08	4.53	4.53	0.53
1,724.00	31.60	214.50	1,686.36	-188.17	-96.89	210.77	3.06	3.05	0.53
1,819.00	31.80	213.50	1,767.18	-229.55	-124.80	260.67	0.59	0.21	-1.05
1,913.00	32.70	212.80	1,846.68	-271.55	-152.23	310.82	1.04	0.96	-0.74
2,008.00	31.60	213.80	1,927.11	-313.81	-179.98	361.37	1.29	-1.16	1.05
2,104.00	32.30	214.30	2,008.57	-355.90	-208.42	412.15	0.78	0.73	0.52
2,199.00	31.40	212.30	2,089.27	-397.78	-235.95	462.27	1.46	-0.95	-2.11
2,295.00	30.70	212.90	2,171.51	-439.50	-262.62	511.78	0.80	-0.73	0.63
2,390.00	29.00	212.50	2,253.90	-479.29	-288.17	559.06	1.80	-1.79	-0.42
2,486.00	30.10	211.80	2,337.42	-519.37	-313.36	606.41	1.20	1.15	-0.73
2,581.00	28.70	213.50	2,420.18	-558.64	-338.51	653.04	1.72	-1.47	1.79
2,677.00	27.00	212.70	2,505.06	-596.20	-363.00	697.88	1.81	-1.77	-0.83
2,772.00	25.60	214.50	2,590.22	-631.27	-386.28	739.96	1.70	-1.47	1.89
2,868.00	26.40	214.70	2,676.51	-665.91	-410.18	782.01	0.84	0.83	0.21
2,963.00	26.90	215.30	2,761.42	-700.81	-434.62	824.58	0.60	0.53	0.63
3,059.00	27.30	211.30	2,846.88	-737.35	-458.61	868.29	1.94	0.42	-4.17
3,154.00	27.50	215.30	2,931.23	-773.87	-482.60	911.98	1.95	0.21	4.21
3,249.00	27.60	214.60	3,015.46	-809.88	-507.77	955.88	0.36	0.11	-0.74
3,344.00	27.40	213.80	3,099.73	-846.16	-532.43	999.72	0.44	-0.21	-0.84
3,439.00	27.20	211.90	3,184.15	-882.76	-556.06	1,043.29	0.94	-0.21	-2.00
3,534.00	26.00	212.30	3,269.09	-918.80	-578.67	1,085.82	1.28	-1.26	0.42
3,629.00	25.00	214.50	3,354.84	-952.94	-601.16	1,126.71	1.45	-1.05	2.32
3,725.00	22.80	214.40	3,442.60	-985.01	-623.16	1,165.58	2.29	-2.29	-0.10
3,821.00	21.20	213.50	3,531.61	-1,014.84	-643.26	1,201.53	1.70	-1.67	-0.94
3,916.00	18.70	215.00	3,620.90	-1,041.64	-661.47	1,233.92	2.69	-2.63	1.58
4,011.00	15.70	217.40	3,711.64	-1,064.33	-678.02	1,261.95	3.24	-3.16	2.53
4,106.00	11.90	215.20	3,803.88	-1,082.55	-691.48	1,284.55	4.04	-4.00	-2.32
4,202.00	8.80	213.00	3,898.31	-1,096.80	-701.19	1,301.78	3.25	-3.23	-2.29
4,297.00	5.40	218.20	3,992.57	-1,106.41	-707.91	1,313.50	3.64	-3.58	5.47

## Survey Report

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<b>Design:</b>	Wellbore #1	<b>Database:</b>	CompassVM

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)	
4,392.00	1.70	232.20	4,087.37	-1,110.79	-711.79	1,319.27	3.97	-3.89	14.74	
4,487.00	0.70	292.80	4,182.35	-1,111.43	-713.44	1,320.70	1.57	-1.05	63.79	
4,583.00	1.10	13.20	4,278.34	-1,110.30	-713.77	1,319.93	1.25	0.42	83.75	
4,678.00	1.20	41.40	4,373.32	-1,108.67	-712.90	1,318.08	0.60	0.11	29.68	
4,773.00	0.60	77.70	4,468.31	-1,107.82	-711.76	1,316.75	0.84	-0.63	38.21	
4,868.00	0.70	61.80	4,563.31	-1,107.44	-710.76	1,315.89	0.22	0.11	-16.74	
4,963.00	0.50	164.10	4,658.30	-1,107.56	-710.14	1,315.66	0.99	-0.21	107.68	
5,059.00	0.10	358.80	4,754.30	-1,107.88	-710.02	1,315.87	0.62	-0.42	-172.19	
5,154.00	1.10	67.70	4,849.30	-1,107.45	-709.18	1,315.06	1.12	1.05	72.53	
5,250.00	1.10	117.10	4,945.28	-1,107.52	-707.51	1,314.22	0.96	0.00	51.46	
5,345.00	1.70	125.20	5,040.25	-1,108.75	-705.54	1,314.20	0.66	0.63	8.53	
5,440.00	1.80	125.20	5,135.21	-1,110.42	-703.17	1,314.34	0.11	0.11	0.00	
5,536.00	1.60	95.70	5,231.17	-1,111.43	-700.61	1,313.81	0.92	-0.21	-30.73	
5,632.00	0.60	146.70	5,327.15	-1,111.98	-699.00	1,313.41	1.36	-1.04	53.13	
5,727.00	1.10	315.50	5,422.15	-1,111.74	-699.36	1,313.41	1.78	0.53	177.68	
5,822.00	0.70	306.00	5,517.13	-1,110.75	-700.47	1,313.17	0.45	-0.42	-10.00	
5,917.00	0.60	294.00	5,612.13	-1,110.21	-701.40	1,313.20	0.18	-0.11	-12.63	
6,013.00	1.10	281.80	5,708.12	-1,109.82	-702.76	1,313.60	0.55	0.52	-12.71	
6,108.00	1.10	302.40	5,803.10	-1,109.14	-704.42	1,313.93	0.41	0.00	21.68	
6,203.00	1.10	267.40	5,898.08	-1,108.69	-706.10	1,314.45	0.70	0.00	-36.84	
6,299.00	1.30	337.00	5,994.07	-1,107.73	-707.45	1,314.36	1.44	0.21	72.50	
6,394.00	1.10	315.30	6,089.05	-1,106.09	-708.51	1,313.55	0.52	-0.21	-22.84	
6,489.00	1.10	320.50	6,184.03	-1,104.74	-709.73	1,313.07	0.11	0.00	5.47	
6,585.00	0.40	281.80	6,280.02	-1,103.96	-710.65	1,312.90	0.86	-0.73	-40.31	
6,680.00	0.90	201.40	6,375.02	-1,104.59	-711.24	1,313.75	0.97	0.53	-84.63	
6,775.00	1.30	199.30	6,470.00	-1,106.30	-711.87	1,315.53	0.42	0.42	-2.21	
6,870.00	1.80	186.90	6,564.96	-1,108.80	-712.41	1,317.93	0.63	0.53	-13.05	
6,965.00	2.30	182.30	6,659.90	-1,112.18	-712.66	1,320.92	0.55	0.53	-4.84	
7,060.00	3.00	180.10	6,754.80	-1,116.58	-712.74	1,324.67	0.74	0.74	-2.32	
7,146.00	3.60	177.90	6,840.66	-1,121.52	-712.65	1,328.79	0.71	0.70	-2.56	
7,191.00	3.60	177.90	6,885.57	-1,124.35	-712.54	1,331.12	0.00	0.00	0.00	

Design Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment	
		+N/-S (ft)	+E/-W (ft)		
677.00	677.00	0.28	-1.32	End of Gyros	
1,248.00	1,245.42	-44.26	-6.70	As of May 24	
2,963.00	2,761.42	-700.81	-434.62	As of May 25	
4,106.00	3,803.88	-1,082.55	-691.48	As of May 26	
4,868.00	4,563.31	-1,107.44	-710.76	As of May 27	
7,191.00	6,885.57	-1,124.35	-712.54	Projected TD	