



Bill Barrett Corp.
Project: Weld Co., CO
Site: Sec.27-T5N-R63W
Well: Helton 05-63-27-4956CDH
Wellbore: Wellbore #1
Design: Design #6
Lat: 40° 22' 11.640 N
Long: 104° 25' 36.984 W
Pad GL: 4542.00
KB: WELL @ 4558.00usft (Original Well Elev)

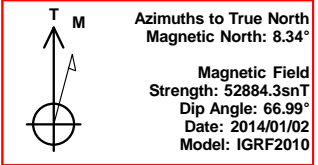
Archer

SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec	Annotation
9731.00	89.80	91.50	6497.21	-1202.72	1959.60	0.00	0.00	2244.24	Start Drop -2.00
9821.00	88.00	91.50	6498.94	-1205.08	2049.55	2.00	180.00	2330.07	Start 49.70 hold at 9821.00 MD
9870.70	88.00	91.50	6500.67	-1206.38	2099.20	0.00	0.00	2377.44	Start DLS 2.00 TFO -41.50
10004.17	90.00	89.73	6503.00	-1207.81	2232.63	2.00	-41.50	2504.09	Start 1261.62 hold at 10004.17 MD
11265.79	90.00	89.73	6503.00	-1201.90	3494.24	0.00	0.00	3695.17	TD at 11265.79

PROJECT DETAILS: Weld Co., CO

Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: Colorado Northern Zone
System Datum: Mean Sea Level



WELL DETAILS: Helton 05-63-27-4956CDH

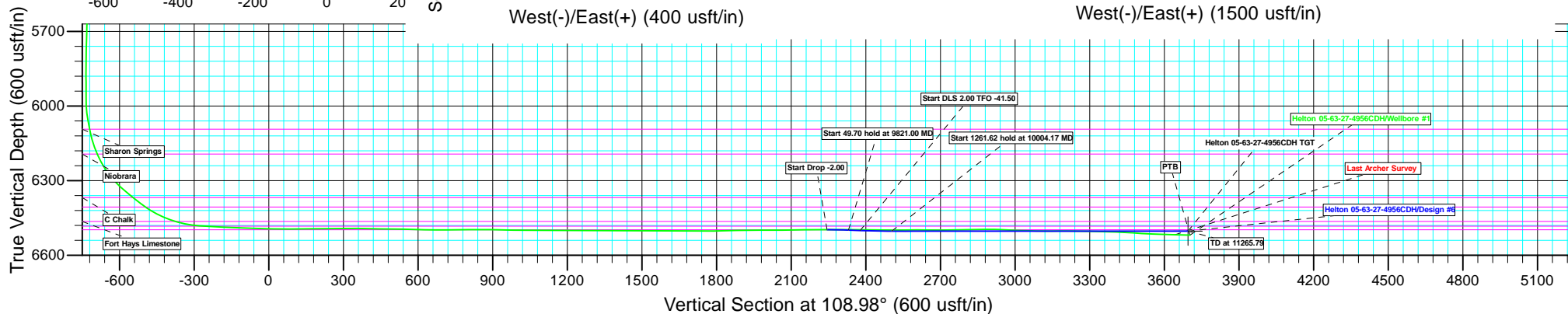
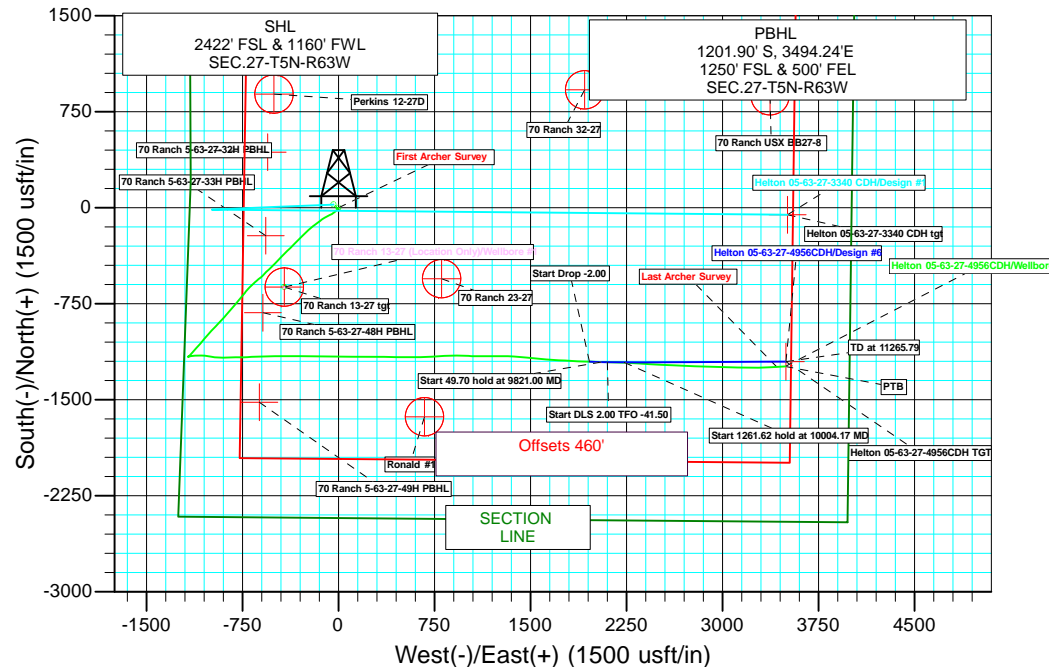
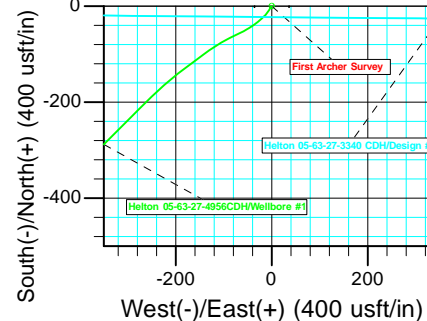
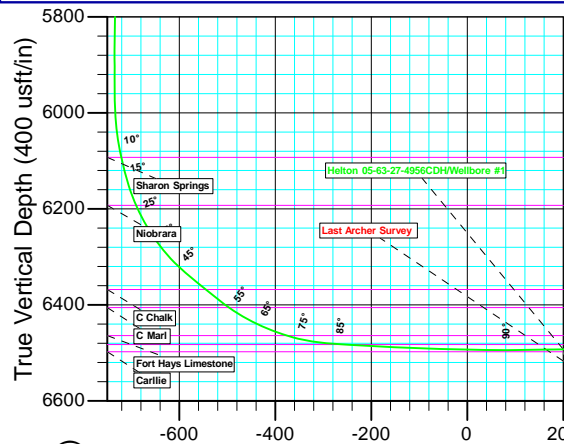
+N/-S	+E/-W	Northing	Ground Level: Easting	4542.00 Latitude	Longitude	Slot
0.00	0.00	1379404.103	3298983.718	40° 22' 11.640 N	104° 25' 36.984 W	

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape Point
Helton 05-63-27-4956CDH TGT	6503.00	-1201.90	3494.24	40° 21' 59.760 N	104° 24' 51.840 W	

CASING DETAILS

TVD	MD	Name
	830.00	9 5/8" Csg.
	7094.79	7" Csg.



Plan: Design #6 (Helton 05-63-27-4956CDH/Wellbore #1)

Created By: Ricky Osburn

Date: 7:27, January 15 2014



Bill Barrett Corporation

Bill Barrett Corp.

Weld Co., CO

Sec.27-T5N-R63W

Helton 05-63-27-4956CDH

Wellbore #1

Survey: Survey #1

Standard Survey Report

15 January, 2014

Archer

Company:	Bill Barrett Corp.	Local Co-ordinate Reference:	Well Helton 05-63-27-4956CDH
Project:	Weld Co., CO	TVD Reference:	WELL @ 4558.00usft (Original Well Elev)
Site:	Sec.27-T5N-R63W	MD Reference:	WELL @ 4558.00usft (Original Well Elev)
Well:	Helton 05-63-27-4956CDH	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDMDBBW

Project	Weld Co., CO		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Northern Zone		

Site		Sec.27-T5N-R63W			
Site Position:		Northing:	1,378,940.876 usft	Latitude:	40° 22' 6.600 N
From:	Lat/Long	Easting:	3,302,826.474 usft	Longitude:	104° 24' 47.412 W
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.70 °

Well	Helton 05-63-27-4956CDH					
Well Position	+N/-S	0.00 usft	Northing:	1,379,404.103 usft	Latitude:	40° 22' 11.640 N
	+E/-W	0.00 usft	Easting:	3,298,983.718 usft	Longitude:	104° 25' 36.984 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	4,542.00 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	2014/01/02	8.34	66.99	52,884

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	218.41

Survey Program	Date	2014/01/15			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
814.00	11,263.00	Survey #1 (Wellbore #1)	MWD	MWD - Standard	

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
First Archer Survey										
814.00	0.00	0.00	814.00	0.00	0.00	0.00	0.00	0.00	0.00	
835.00	0.20	338.90	835.00	0.03	-0.01	-0.02	0.95	0.95	0.00	
927.00	2.40	216.60	926.97	-1.36	-1.22	1.83	2.73	2.39	-132.93	
1,018.00	5.10	211.50	1,017.77	-6.34	-4.47	7.75	2.99	2.97	-5.60	
1,111.00	7.60	217.30	1,110.19	-14.76	-10.36	18.00	2.77	2.69	6.24	
1,203.00	9.40	227.40	1,201.18	-24.69	-19.58	31.51	2.53	1.96	10.98	
1,295.00	10.70	233.10	1,291.77	-34.90	-31.94	47.19	1.78	1.41	6.20	
1,387.00	12.20	237.10	1,381.94	-45.31	-46.93	64.66	1.84	1.63	4.35	
1,479.00	13.70	243.40	1,471.60	-55.47	-64.83	83.75	2.24	1.63	6.85	
1,571.00	15.00	244.10	1,560.73	-65.55	-85.29	104.35	1.43	1.41	0.76	
1,663.00	16.70	239.90	1,649.23	-77.38	-107.43	127.38	2.23	1.85	-4.57	

Company:	Bill Barrett Corp.	Local Co-ordinate Reference:	Well Helton 05-63-27-4956CDH
Project:	Weld Co., CO	TVD Reference:	WELL @ 4558.00usft (Original Well Elev)
Site:	Sec.27-T5N-R63W	MD Reference:	WELL @ 4558.00usft (Original Well Elev)
Well:	Helton 05-63-27-4956CDH	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDMDBBW

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
1,755.00	18.30	234.70	1,736.98	-92.36	-130.66	153.55	2.43	1.74	-5.65	
1,846.00	19.70	233.10	1,823.02	-109.82	-154.59	182.10	1.64	1.54	-1.76	
1,938.00	21.80	232.90	1,909.05	-129.44	-180.62	213.64	2.28	2.28	-0.22	
2,030.00	22.80	231.30	1,994.16	-150.89	-208.15	247.56	1.27	1.09	-1.74	
2,122.00	23.30	226.70	2,078.83	-174.52	-235.31	282.95	2.03	0.54	-5.00	
2,214.00	24.40	225.30	2,162.97	-200.36	-262.06	319.82	1.34	1.20	-1.52	
2,306.00	25.70	225.40	2,246.31	-227.74	-289.77	358.49	1.41	1.41	0.11	
2,398.00	25.10	224.60	2,329.42	-255.64	-317.68	397.69	0.75	-0.65	-0.87	
2,494.00	25.30	225.90	2,416.29	-284.41	-346.71	438.27	0.61	0.21	1.35	
2,589.00	24.90	226.50	2,502.31	-312.30	-375.79	478.20	0.50	-0.42	0.63	
2,684.00	27.30	224.20	2,587.62	-341.69	-405.49	519.68	2.74	2.53	-2.42	
2,779.00	28.20	223.90	2,671.70	-373.49	-436.24	563.70	0.96	0.95	-0.32	
2,874.00	28.00	223.80	2,755.50	-405.76	-467.24	608.24	0.22	-0.21	-0.11	
2,970.00	28.80	226.20	2,839.95	-438.03	-499.53	653.59	1.45	0.83	2.50	
3,066.00	28.00	226.10	2,924.39	-469.66	-532.46	698.83	0.83	-0.83	-0.10	
3,161.00	26.40	225.20	3,008.88	-500.01	-563.52	741.91	1.74	-1.68	-0.95	
3,256.00	26.10	225.50	3,094.09	-529.53	-593.41	783.62	0.35	-0.32	0.32	
3,351.00	25.40	228.80	3,179.66	-557.60	-623.65	824.40	1.68	-0.74	3.47	
3,446.00	24.00	230.40	3,265.96	-583.34	-653.86	863.34	1.63	-1.47	1.68	
3,541.00	23.50	225.50	3,352.93	-608.93	-682.26	901.04	2.14	-0.53	-5.16	
3,636.00	26.50	221.30	3,439.02	-638.14	-709.77	941.02	3.67	3.16	-4.42	
3,732.00	29.50	219.30	3,523.78	-672.53	-738.88	986.05	3.27	3.12	-2.08	
3,827.00	30.30	218.30	3,606.13	-709.44	-768.55	1,033.40	0.99	0.84	-1.05	
3,922.00	28.20	221.50	3,689.02	-745.06	-798.28	1,079.79	2.76	-2.21	3.37	
4,017.00	26.00	221.80	3,773.59	-777.40	-827.04	1,123.00	2.32	-2.32	0.32	
4,112.00	24.70	220.30	3,859.44	-808.06	-853.76	1,163.62	1.53	-1.37	-1.58	
4,207.00	25.30	219.00	3,945.54	-838.98	-879.37	1,203.76	0.86	0.63	-1.37	
4,302.00	25.20	223.10	4,031.47	-869.52	-905.97	1,244.22	1.84	-0.11	4.32	
4,396.00	24.30	224.00	4,116.83	-898.05	-933.07	1,283.41	1.04	-0.96	0.96	
4,491.00	23.40	223.40	4,203.72	-925.82	-959.62	1,321.66	0.98	-0.95	-0.63	
4,586.00	22.00	222.74	4,291.36	-952.59	-984.65	1,358.20	1.50	-1.47	-0.69	
4,681.00	19.70	222.20	4,380.13	-977.53	-1,007.49	1,391.92	2.43	-2.42	-0.57	
4,776.00	17.60	220.40	4,470.14	-1,000.33	-1,027.56	1,422.26	2.29	-2.21	-1.89	
4,871.00	16.00	219.40	4,561.08	-1,021.39	-1,045.18	1,449.71	1.71	-1.68	-1.05	
4,967.00	16.40	220.90	4,653.27	-1,041.85	-1,062.45	1,476.47	0.60	0.42	1.56	
5,062.00	16.40	222.10	4,744.40	-1,061.94	-1,080.22	1,503.26	0.36	0.00	1.26	
5,157.00	14.40	222.20	4,835.99	-1,080.64	-1,097.15	1,528.43	2.11	-2.11	0.11	
5,251.00	12.30	221.80	4,927.44	-1,096.77	-1,111.67	1,550.09	2.24	-2.23	-0.43	
5,346.00	10.10	221.60	5,020.63	-1,110.54	-1,123.95	1,568.51	2.32	-2.32	-0.21	
5,441.00	9.00	220.20	5,114.31	-1,122.45	-1,134.28	1,584.25	1.18	-1.16	-1.47	
5,536.00	8.20	222.90	5,208.24	-1,133.09	-1,143.69	1,598.44	0.94	-0.84	2.84	
5,630.00	6.90	223.80	5,301.43	-1,142.07	-1,152.16	1,610.74	1.39	-1.38	0.96	
5,725.00	5.40	222.40	5,395.88	-1,149.49	-1,159.12	1,620.88	1.59	-1.58	-1.47	
5,820.00	4.50	222.70	5,490.52	-1,155.53	-1,164.66	1,629.06	0.95	-0.95	0.32	
5,914.00	4.20	221.60	5,584.25	-1,160.82	-1,169.45	1,636.17	0.33	-0.32	-1.17	
6,009.00	2.60	239.40	5,679.08	-1,164.52	-1,173.61	1,641.66	2.00	-1.68	18.74	
6,105.00	1.50	300.00	5,775.03	-1,165.00	-1,176.58	1,643.87	2.37	-1.15	63.12	
6,200.00	0.90	46.10	5,870.02	-1,163.86	-1,177.12	1,643.32	2.05	-0.63	111.68	
6,218.00	1.00	35.60	5,888.01	-1,163.63	-1,176.92	1,643.02	1.11	0.56	-58.33	
6,233.00	0.80	34.10	5,903.01	-1,163.44	-1,176.79	1,642.79	1.34	-1.33	-10.00	
6,264.00	0.70	39.50	5,934.01	-1,163.11	-1,176.55	1,642.38	0.39	-0.32	17.42	
6,296.00	0.60	35.80	5,966.01	-1,162.83	-1,176.32	1,642.02	0.34	-0.31	-11.56	
6,328.00	3.30	66.00	5,997.99	-1,162.32	-1,175.38	1,641.03	8.74	8.44	94.37	
6,359.00	7.30	82.80	6,028.85	-1,161.71	-1,172.61	1,638.83	13.71	12.90	54.19	

Company:	Bill Barrett Corp.	Local Co-ordinate Reference:	Well Helton 05-63-27-4956CDH
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Site:	Sec.27-T5N-R63W	MD Reference:	WELL @ 4558.00usft (Original Well Elev)
Well:	Helton 05-63-27-4956CDH	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDMDBBW

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
6,391.00	11.00	83.90	6,060.44	-1,161.13	-1,167.56	1,635.24	11.57	11.56	3.44
6,423.00	12.80	80.40	6,091.75	-1,160.21	-1,161.03	1,630.46	6.06	5.62	-10.94
6,454.00	16.20	77.90	6,121.76	-1,158.73	-1,153.41	1,624.57	11.15	10.97	-8.06
6,486.00	20.00	82.50	6,152.17	-1,157.08	-1,143.62	1,617.19	12.68	11.87	14.37
6,518.00	23.90	87.00	6,181.84	-1,156.03	-1,131.71	1,608.97	13.26	12.19	14.06
6,550.00	27.80	87.40	6,210.64	-1,155.35	-1,117.78	1,599.78	12.20	12.19	1.25
6,581.00	32.20	86.90	6,237.48	-1,154.57	-1,102.30	1,589.56	14.22	14.19	-1.61
6,613.00	36.80	88.40	6,263.84	-1,153.84	-1,084.20	1,577.74	14.62	14.37	4.69
6,645.00	41.10	92.50	6,288.73	-1,154.04	-1,064.10	1,565.40	15.66	13.44	12.81
6,677.00	45.00	97.50	6,312.11	-1,155.97	-1,042.36	1,553.41	16.19	12.19	15.62
6,708.00	49.50	99.60	6,333.15	-1,159.37	-1,019.86	1,542.09	15.34	14.52	6.77
6,740.00	51.30	99.10	6,353.55	-1,163.37	-995.53	1,530.11	5.75	5.62	-1.56
6,771.00	52.00	98.40	6,372.78	-1,167.07	-971.50	1,518.08	2.87	2.26	-2.26
6,803.00	52.90	94.50	6,392.29	-1,169.92	-946.30	1,504.65	10.06	2.81	-12.19
6,835.00	57.20	90.20	6,410.62	-1,170.96	-920.11	1,489.20	17.37	13.44	-13.44
6,866.00	61.90	88.00	6,426.33	-1,170.53	-893.40	1,472.26	16.35	15.16	-7.10
6,898.00	66.20	88.30	6,440.33	-1,169.61	-864.65	1,453.67	13.46	13.44	0.94
6,930.00	70.30	89.10	6,452.19	-1,168.93	-834.94	1,434.69	13.02	12.81	2.50
6,962.00	72.10	89.10	6,462.50	-1,168.46	-804.65	1,415.50	5.62	5.62	0.00
6,994.00	77.50	88.80	6,470.89	-1,167.89	-773.79	1,395.88	16.90	16.87	-0.94
7,026.00	82.30	88.50	6,476.50	-1,167.15	-742.30	1,375.73	15.03	15.00	-0.94
7,058.00	84.20	88.20	6,480.26	-1,166.23	-710.54	1,355.28	6.01	5.94	-0.94
7,089.00	87.40	88.30	6,482.53	-1,165.29	-679.64	1,335.34	10.33	10.32	0.32
7,176.00	86.50	86.50	6,487.16	-1,161.35	-592.86	1,278.33	2.31	-1.03	-2.07
7,270.00	89.10	90.70	6,490.77	-1,159.06	-498.98	1,218.21	5.25	2.77	4.47
7,364.00	87.90	89.50	6,493.23	-1,159.22	-405.02	1,159.96	1.81	-1.28	-1.28
7,459.00	90.60	89.60	6,494.47	-1,158.48	-310.04	1,100.36	2.84	2.84	0.11
7,554.00	90.50	91.50	6,493.56	-1,159.39	-215.05	1,042.05	2.00	-0.11	2.00
7,560.00	91.60	90.80	6,493.45	-1,159.51	-209.05	1,038.42	21.73	18.33	-11.67
7,745.00	89.10	91.00	6,492.32	-1,162.41	-24.09	925.78	1.36	-1.35	0.11
7,840.00	89.10	90.50	6,493.81	-1,163.66	70.89	867.74	0.53	0.00	-0.53
7,936.00	88.80	90.10	6,495.57	-1,164.16	166.87	808.49	0.52	-0.31	-0.42
8,031.00	88.80	89.80	6,497.56	-1,164.08	261.85	749.41	0.32	0.00	-0.32
8,124.00	90.20	90.80	6,498.37	-1,164.56	354.84	692.02	1.85	1.51	1.08
8,220.00	91.20	90.70	6,497.20	-1,165.82	450.82	633.36	1.05	1.04	-0.10
8,314.00	88.80	90.50	6,497.20	-1,166.81	544.81	575.74	2.56	-2.55	-0.21
8,409.00	89.40	88.90	6,498.69	-1,166.31	639.79	516.33	1.80	0.63	-1.68
8,503.00	89.60	87.10	6,499.51	-1,163.03	733.73	455.40	1.93	0.21	-1.91
8,597.00	89.20	85.20	6,500.50	-1,156.72	827.51	392.18	2.07	-0.43	-2.02
8,692.00	90.00	91.50	6,501.16	-1,153.98	922.42	331.07	6.68	0.84	6.63
8,787.00	90.30	92.80	6,500.91	-1,157.55	1,017.35	274.88	1.40	0.32	1.37
8,881.00	89.80	89.30	6,500.83	-1,159.27	1,111.32	217.84	3.76	-0.53	-3.72
8,976.00	89.50	89.40	6,501.41	-1,158.19	1,206.31	157.98	0.33	-0.32	0.11
9,070.00	89.80	90.90	6,501.98	-1,158.44	1,300.30	99.77	1.63	0.32	1.60
9,165.00	89.30	94.60	6,502.73	-1,162.99	1,395.17	44.39	3.93	-0.53	3.89
9,259.00	91.20	96.20	6,502.32	-1,171.84	1,488.75	-6.82	2.64	2.02	1.70
9,354.00	91.30	95.00	6,500.25	-1,181.11	1,583.27	-58.29	1.27	0.11	-1.26
9,448.00	90.20	93.70	6,499.02	-1,188.24	1,676.99	-110.93	1.81	-1.17	-1.38
9,543.00	90.20	92.90	6,498.68	-1,193.71	1,771.83	-165.57	0.84	0.00	-0.84
9,637.00	90.90	93.30	6,497.78	-1,198.79	1,865.69	-219.91	0.86	0.74	0.43
9,731.00	89.80	91.50	6,497.21	-1,202.72	1,959.60	-275.17	2.24	-1.17	-1.91
9,826.00	90.00	90.50	6,497.37	-1,204.38	2,054.58	-332.89	1.07	0.21	-1.05
9,920.00	89.20	92.70	6,498.03	-1,207.01	2,148.54	-389.21	2.49	-0.85	2.34
10,015.00	90.00	92.70	6,498.69	-1,211.48	2,243.43	-444.66	0.84	0.84	0.00

Company:	Bill Barrett Corp.	Local Co-ordinate Reference:	Well Helton 05-63-27-4956CDH
Project:	Weld Co., CO	TVD Reference:	WELL @ 4558.00usft (Original Well Elev)
Site:	Sec.27-T5N-R63W	MD Reference:	WELL @ 4558.00usft (Original Well Elev)
Well:	Helton 05-63-27-4956CDH	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDMDBBW

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
10,109.00	90.20	93.00	6,498.53	-1,216.16	2,337.31	-499.34	0.38	0.21	0.32	
10,203.00	89.40	93.00	6,498.86	-1,221.07	2,431.18	-553.81	0.85	-0.85	0.00	
10,298.00	91.70	92.80	6,497.95	-1,225.88	2,526.05	-608.98	2.43	2.42	-0.21	
10,393.00	90.90	93.70	6,495.79	-1,231.27	2,620.87	-663.68	1.27	-0.84	0.95	
10,487.00	86.40	92.20	6,498.00	-1,236.10	2,714.69	-718.19	5.05	-4.79	-1.60	
10,582.00	88.70	91.00	6,502.07	-1,238.75	2,809.56	-775.06	2.73	2.42	-1.26	
10,675.00	90.60	92.10	6,502.63	-1,241.27	2,902.52	-830.84	2.36	2.04	1.18	
10,770.00	88.60	90.70	6,503.30	-1,243.59	2,997.48	-888.03	2.57	-2.11	-1.47	
10,864.00	89.90	93.10	6,504.53	-1,246.70	3,091.41	-943.95	2.90	1.38	2.55	
10,959.00	86.60	90.20	6,507.43	-1,249.44	3,186.31	-1,000.76	4.62	-3.47	-3.05	
11,053.00	87.20	88.60	6,512.51	-1,248.46	3,280.16	-1,059.85	1.82	0.64	-1.70	
11,147.00	88.50	87.70	6,516.04	-1,245.42	3,374.04	-1,120.56	1.68	1.38	-0.96	
Last Archer Survey										
11,198.00	88.40	87.10	6,517.42	-1,243.11	3,424.97	-1,154.01	1.19	-0.20	-1.18	
PTB - Helton 05-63-27-4956CDH TGT										
11,263.00	88.40	87.10	6,519.23	-1,239.82	3,489.86	-1,196.91	0.00	0.00	0.00	

Survey Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
814.00	814.00	0.00	0.00	First Archer Survey	
11,198.00	6,517.42	-1,243.11	3,424.97	Last Archer Survey	
11,263.00	6,519.23	-1,239.82	3,489.86	PTB	

Checked By: _____	Approved By: _____	Date: _____
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