



Bill Barrett Corp.
 Project: Weld Co., CO (NAD 83)
 Site: Sec. 21-T5N-R61W
 Well: Hawkins 5-61-21-4841BH
 Wellbore: OH
 Design: plan4 19sep13 rbw
 Lat: 40° 22' 58.63 N
 Long: 104° 13' 21.22 W
 Pad GL: 4665.00
 KB @ 4683.00ft



SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec	Annotation
7133.00	88.300	90.40	6117.32	354.40	956.37	0.00	0.00	974.90	Start DLS 1.00 TFO 29.69
7378.35	90.432	91.61	6120.03	350.08	1201.64	1.00	29.69	1219.53	Start 3322.80 hold at 7378.35 MD
10701.14	90.432	91.61	6095.00	256.45	4523.02	0.00	0.00	4530.29	TD at 10701.14

WELL DETAILS: Hawkins 5-61-21-4841BH

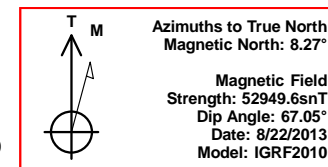
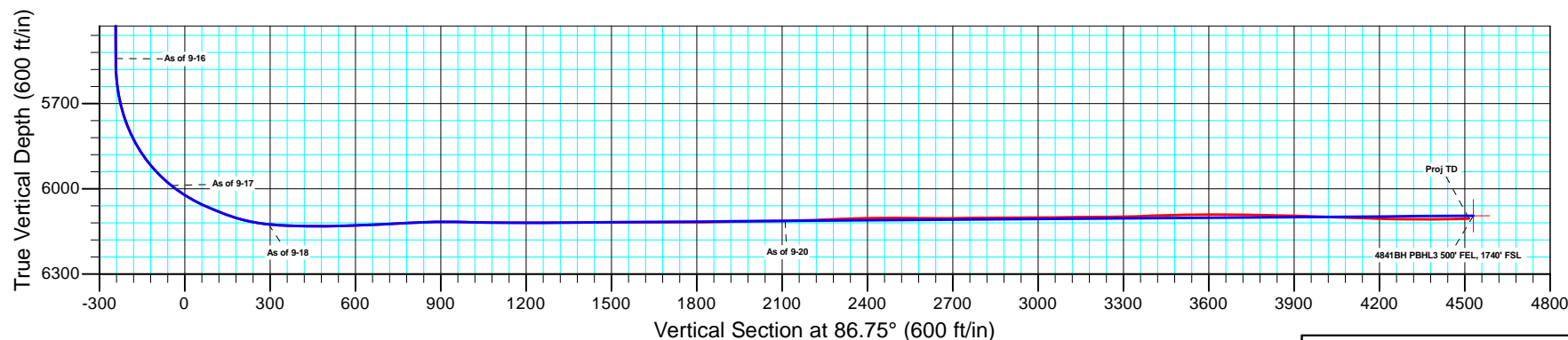
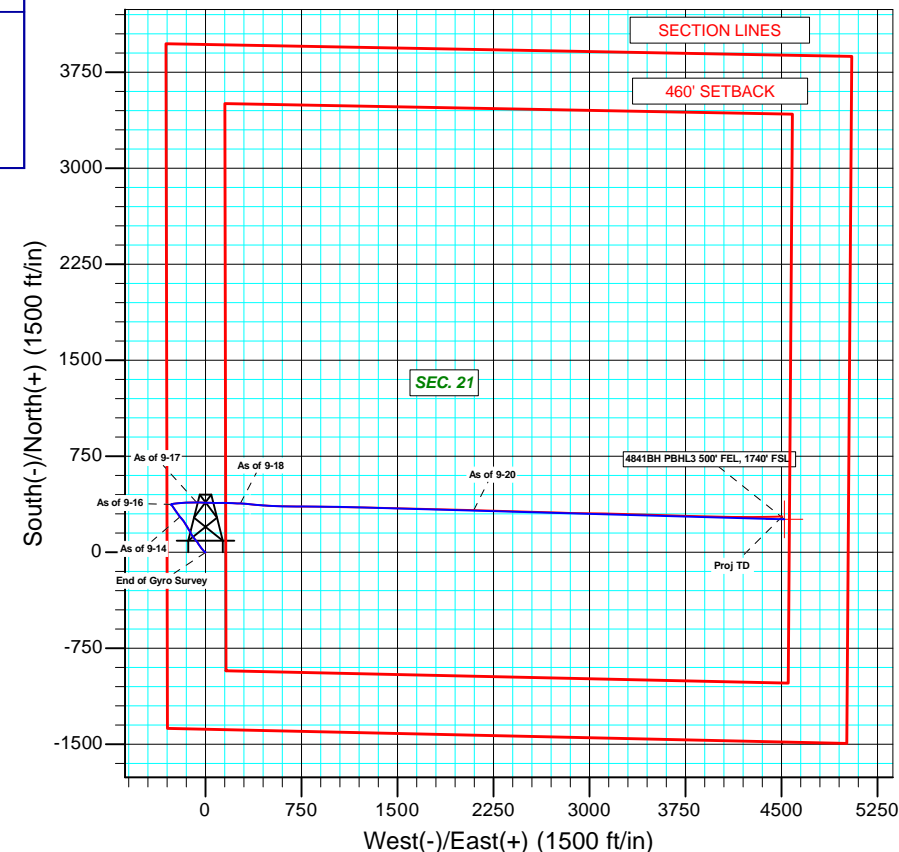
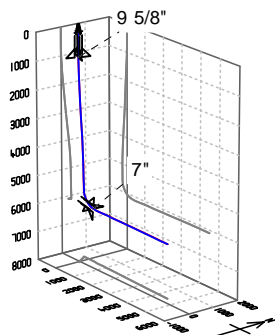
+N/-S	+E/-W	Northing	Ground Level: Easting	4665.00 Latitude	Longitude	Slot
0.00	0.00	1384913.40	3355857.12	40° 22' 58.63 N	104° 13' 21.22 W	

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
4841BH PBHL3	6095.00	256.45	4523.02	40° 23' 1.16 N	104° 12' 22.77 W	Point
4841BH Entry Point	6141.00	349.14	349.00	40° 23' 2.08 N	104° 13' 16.71 W	Point

PROJECT DETAILS: Weld Co., CO (NAD 83)

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



Plan: plan4 19sep13 rbw (Hawkins 5-61-21-4841BH/OH)

Created By: Brandon West

Date: 8:02, September 23 2013

Company:	Bill Barrett Corp.	Local Co-ordinate Reference:	Well Hawkins 5-61-21-4841BH
Project:	Weld Co., CO (NAD 83)	TVD Reference:	KB @ 4683.00ft
Site:	Sec. 21-T5N-R61W	MD Reference:	KB @ 4683.00ft
Well:	Hawkins 5-61-21-4841BH	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	CompassVM

Project	Weld Co., CO (NAD 83)		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Northern Zone		

Site	Sec. 21-T5N-R61W				
Site Position:		Northing:	1,384,933.66 usft	Latitude:	40° 22' 58.83 N
From:	Lat/Long	Easting:	3,355,857.59 usft	Longitude:	104° 13' 21.21 W
Position Uncertainty:	0.00 ft	Slot Radius:	1.10 ft	Grid Convergence:	0.83 °

Well	Hawkins 5-61-21-4841BH					
Well Position	+N/-S	0.00 ft	Northing:	1,384,913.40 usft	Latitude:	40° 22' 58.63 N
	+E/-W	0.00 ft	Easting:	3,355,857.11 usft	Longitude:	104° 13' 21.22 W
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level:	4,665.00 ft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	8/22/2013	8.27	67.05	52,950

Design	OH				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)	
	0.00	0.00	0.00	86.75	

Survey Program	Date	9/23/2013			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
100.00	739.00	Gyro Survey (OH)	MWD	MWD - Standard	
870.00	10,685.00	MWD Survey (OH)	MWD	MWD - Standard	

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)	
739.00	0.090	25.74	738.99	-2.12	-1.02	-1.13	0.00	0.00	0.00	
870.00	1.100	283.90	869.98	-1.73	-2.19	-2.29	0.86	0.77	-77.74	
962.00	3.400	307.50	961.91	0.15	-5.21	-5.20	2.64	2.50	25.65	
1,053.00	5.600	315.60	1,052.62	4.96	-10.46	-10.16	2.51	2.42	8.90	
1,145.00	7.200	322.20	1,144.05	12.73	-17.14	-16.39	1.91	1.74	7.17	
1,237.00	7.500	323.90	1,235.29	22.13	-24.21	-22.92	0.40	0.33	1.85	
1,328.00	6.300	320.80	1,325.63	30.80	-30.86	-29.07	1.38	-1.32	-3.41	
1,419.00	6.500	319.00	1,416.06	38.56	-37.40	-35.15	0.31	0.22	-1.98	
1,515.00	6.300	326.60	1,511.47	47.06	-43.86	-41.13	0.91	-0.21	7.92	
1,610.00	5.500	327.00	1,605.96	55.22	-49.21	-46.01	0.84	-0.84	0.42	

Company:	Bill Barrett Corp.	Local Co-ordinate Reference:	Well Hawkins 5-61-21-4841BH
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Site:	Sec. 21-T5N-R61W	MD Reference:	KB @ 4683.00ft
Well:	Hawkins 5-61-21-4841BH	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	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)
1,705.00	6.900	326.70	1,700.41	63.81	-54.82	-51.12	1.47	1.47	-0.32
1,800.00	6.400	330.30	1,794.77	73.18	-60.58	-56.34	0.69	-0.53	3.79
1,895.00	6.000	318.00	1,889.21	81.47	-66.53	-61.81	1.46	-0.42	-12.95
1,991.00	5.800	319.80	1,984.71	88.90	-73.01	-67.86	0.28	-0.21	1.88
2,087.00	6.400	323.80	2,080.16	96.93	-79.31	-73.69	0.77	0.63	4.17
2,182.00	5.600	318.70	2,174.64	104.68	-85.49	-79.43	1.01	-0.84	-5.37
2,277.00	6.400	322.30	2,269.12	112.35	-91.79	-85.28	0.93	0.84	3.79
2,373.00	7.400	319.30	2,364.43	121.28	-99.09	-92.07	1.11	1.04	-3.13
2,468.00	7.300	332.70	2,458.65	131.28	-105.85	-98.25	1.80	-0.11	14.11
2,563.00	6.800	331.10	2,552.93	141.56	-111.34	-103.15	0.57	-0.53	-1.68
2,658.00	5.800	334.60	2,647.36	150.82	-116.11	-107.39	1.13	-1.05	3.68
2,752.00	6.500	335.50	2,740.82	159.96	-120.36	-111.11	0.75	0.74	0.96
2,847.00	6.100	322.40	2,835.25	168.85	-125.67	-115.91	1.57	-0.42	-13.79
2,943.00	6.100	327.70	2,930.71	177.20	-131.51	-121.26	0.59	0.00	5.52
3,038.00	6.500	333.90	3,025.13	186.30	-136.57	-125.80	0.83	0.42	6.53
3,133.00	8.300	329.40	3,119.34	197.03	-142.43	-131.04	1.99	1.89	-4.74
3,228.00	7.800	330.90	3,213.40	208.56	-149.05	-137.01	0.57	-0.53	1.58
3,323.00	7.700	331.50	3,307.53	219.79	-155.22	-142.53	0.14	-0.11	0.63
3,419.00	8.800	321.50	3,402.54	231.19	-162.86	-149.52	1.88	1.15	-10.42
3,512.00	9.300	322.30	3,494.39	242.70	-171.89	-157.87	0.55	0.54	0.86
3,607.00	9.000	321.10	3,588.18	254.56	-181.25	-166.55	0.37	-0.32	-1.26
3,702.00	8.700	318.20	3,682.05	265.70	-190.70	-175.36	0.57	-0.32	-3.05
3,798.00	8.400	324.10	3,776.98	276.79	-199.65	-183.67	0.97	-0.31	6.15
As of 9-14									
3,892.00	8.100	322.20	3,870.01	287.59	-207.74	-191.13	0.43	-0.32	-2.02
3,986.00	6.800	324.10	3,963.21	297.33	-215.06	-197.89	1.41	-1.38	2.02
4,082.00	6.900	325.60	4,058.53	306.69	-221.65	-203.94	0.21	0.10	1.56
4,177.00	6.400	324.90	4,152.89	315.73	-227.92	-209.68	0.53	-0.53	-0.74
4,272.00	7.400	325.60	4,247.20	325.11	-234.42	-215.64	1.06	1.05	0.74
4,368.00	6.800	330.70	4,342.46	335.17	-240.70	-221.34	0.91	-0.63	5.31
4,463.00	6.700	323.40	4,436.81	344.52	-246.75	-226.85	0.91	-0.11	-7.68
4,557.00	6.400	326.40	4,530.19	353.29	-252.92	-232.52	0.48	-0.32	3.19
4,651.00	5.700	322.80	4,623.67	361.37	-258.64	-237.77	0.85	-0.74	-3.83
4,746.00	3.500	319.90	4,718.36	367.35	-263.36	-242.15	2.33	-2.32	-3.05
4,841.00	2.000	318.70	4,813.25	370.81	-266.33	-244.91	1.58	-1.58	-1.26
4,936.00	0.800	314.50	4,908.22	372.52	-267.89	-246.38	1.27	-1.26	-4.42
5,031.00	1.100	341.50	5,003.20	373.85	-268.66	-247.06	0.56	0.32	28.42
5,127.00	0.900	156.00	5,099.20	374.03	-268.64	-247.04	2.08	-0.21	181.77
5,222.00	1.700	113.00	5,194.18	372.80	-267.04	-245.51	1.27	0.84	-45.26
5,316.00	0.800	97.40	5,288.15	372.17	-265.11	-243.61	1.01	-0.96	-16.60
5,411.00	0.600	31.40	5,383.15	372.51	-264.19	-242.68	0.82	-0.21	-69.47
5,506.00	0.500	341.10	5,478.14	373.33	-264.06	-242.51	0.50	-0.11	-52.95
5,570.00	0.500	39.10	5,542.14	373.81	-263.98	-242.39	0.76	0.00	90.63

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Project:	Weld Co., CO (NAD 83)	TVD Reference:	KB @ 4683.00ft
Site:	Sec. 21-T5N-R61W	MD Reference:	KB @ 4683.00ft
Well:	Hawkins 5-61-21-4841BH	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	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)
As of 9-16									
5,600.00	1.500	78.40	5,572.14	373.99	-263.51	-241.92	3.86	3.33	131.00
5,648.00	5.800	75.80	5,620.03	374.71	-260.54	-238.91	8.96	8.96	-5.42
5,695.00	9.800	75.70	5,666.58	376.28	-254.36	-232.65	8.51	8.51	-0.21
5,727.00	13.200	79.00	5,697.94	377.65	-248.14	-226.36	10.82	10.63	10.31
5,759.00	16.500	81.50	5,728.86	379.02	-240.05	-218.21	10.50	10.31	7.81
5,791.00	19.400	83.20	5,759.30	380.32	-230.28	-208.38	9.21	9.06	5.31
5,822.00	22.900	83.00	5,788.21	381.67	-219.18	-197.22	11.29	11.29	-0.65
5,854.00	26.200	83.60	5,817.31	383.22	-205.97	-183.95	10.34	10.31	1.88
5,885.00	29.400	84.80	5,844.73	384.67	-191.59	-169.51	10.48	10.32	3.87
5,917.00	33.100	85.20	5,872.08	386.11	-175.06	-152.92	11.58	11.56	1.25
5,949.00	36.800	86.70	5,898.31	387.39	-156.77	-134.59	11.87	11.56	4.69
5,981.00	40.000	87.10	5,923.38	388.47	-136.93	-114.72	10.03	10.00	1.25
6,012.00	44.300	88.50	5,946.36	389.25	-116.15	-93.93	14.20	13.87	4.52
6,044.00	48.300	91.20	5,968.47	389.30	-93.02	-70.83	13.91	12.50	8.44
6,076.00	52.000	92.60	5,988.97	388.47	-68.47	-46.37	12.04	11.56	4.38
As of 9-17									
6,108.00	55.300	92.40	6,007.93	387.35	-42.73	-20.73	10.32	10.31	-0.63
6,139.00	58.200	91.70	6,024.93	386.43	-16.82	5.08	9.54	9.35	-2.26
6,170.00	60.900	91.20	6,040.64	385.75	9.89	31.71	8.82	8.71	-1.61
6,202.00	64.800	91.20	6,055.24	385.16	38.35	60.10	12.19	12.19	0.00
6,234.00	67.100	91.00	6,068.28	384.60	67.57	89.23	7.21	7.19	-0.63
6,266.00	68.800	90.10	6,080.29	384.31	97.23	118.82	5.92	5.31	-2.81
6,297.00	68.900	90.10	6,091.48	384.26	126.14	147.69	0.32	0.32	0.00
6,328.00	72.600	90.40	6,101.70	384.13	155.40	176.89	11.97	11.94	0.97
6,360.00	76.200	91.20	6,110.30	383.70	186.21	207.63	11.50	11.25	2.50
6,391.00	79.600	91.80	6,116.80	382.91	216.51	237.84	11.13	10.97	1.94
6,423.00	81.500	92.50	6,122.05	381.72	248.05	269.26	6.32	5.94	2.19
6,449.00	84.100	93.30	6,125.31	380.42	273.81	294.90	10.46	10.00	3.08
As of 9-18									
6,501.00	88.000	95.60	6,128.89	376.39	325.52	346.30	8.70	7.50	4.42
6,527.54	87.739	95.69	6,129.88	373.78	351.90	372.50	1.04	-0.98	0.33
4841BH Entry Point									
6,562.00	87.400	95.80	6,131.34	370.34	386.16	406.51	1.04	-0.98	0.33
6,657.00	91.800	93.70	6,132.00	362.47	480.81	500.55	5.13	4.63	-2.21
6,753.00	91.500	90.90	6,129.24	358.62	576.68	596.06	2.93	-0.31	-2.92
6,848.00	93.100	90.70	6,125.43	357.30	671.59	690.74	1.70	1.68	-0.21
6,942.00	92.900	90.40	6,120.51	356.40	765.46	784.41	0.38	-0.21	-0.32
7,038.00	91.300	90.80	6,116.99	355.39	861.39	880.12	1.72	-1.67	0.42
7,133.00	88.300	90.40	6,117.32	354.40	956.37	974.90	3.19	-3.16	-0.42
7,227.00	90.000	91.10	6,118.71	353.17	1,050.35	1,068.65	1.96	1.81	0.74
7,322.00	89.000	90.70	6,119.54	351.67	1,145.33	1,163.40	1.13	-1.05	-0.42
7,417.00	90.900	91.40	6,119.63	349.93	1,240.31	1,258.13	2.13	2.00	0.74
7,511.00	90.600	92.10	6,118.40	347.06	1,334.26	1,351.76	0.81	-0.32	0.74

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Site:	Sec. 21-T5N-R61W	MD Reference:	KB @ 4683.00ft
Well:	Hawkins 5-61-21-4841BH	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	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)
7,606.00	89.000	90.50	6,118.73	344.91	1,429.22	1,446.46	2.38	-1.68	-1.68
7,702.00	91.000	92.40	6,118.73	342.48	1,525.18	1,542.13	2.87	2.08	1.98
7,797.00	90.200	91.20	6,117.73	339.50	1,620.13	1,636.75	1.52	-0.84	-1.26
7,893.00	89.100	89.70	6,118.32	338.74	1,716.12	1,732.54	1.94	-1.15	-1.56
7,988.00	91.300	92.60	6,117.99	336.84	1,811.09	1,827.25	3.83	2.32	3.05
8,083.00	90.800	91.80	6,116.25	333.19	1,906.00	1,921.80	0.99	-0.53	-0.84
8,178.00	91.300	91.90	6,114.51	330.12	2,000.93	2,016.41	0.54	0.53	0.11
8,273.00	90.600	90.90	6,112.93	327.80	2,095.89	2,111.08	1.28	-0.74	-1.05
As of 9-20									
8,368.00	92.400	91.50	6,110.44	325.81	2,190.83	2,205.76	2.00	1.89	0.63
8,462.00	92.400	91.20	6,106.51	323.60	2,284.72	2,299.38	0.32	0.00	-0.32
8,557.00	91.000	92.00	6,103.69	320.95	2,379.64	2,393.99	1.70	-1.47	0.84
8,653.00	89.800	92.20	6,103.02	317.43	2,475.57	2,489.57	1.27	-1.25	0.21
8,749.00	89.500	91.80	6,103.61	314.08	2,571.51	2,585.17	0.52	-0.31	-0.42
8,844.00	90.200	91.50	6,103.85	311.35	2,666.47	2,679.82	0.80	0.74	-0.32
8,939.00	90.600	91.70	6,103.19	308.69	2,761.43	2,774.48	0.47	0.42	0.21
9,035.00	90.500	91.30	6,102.27	306.18	2,857.39	2,870.14	0.43	-0.10	-0.42
9,129.00	90.300	90.90	6,101.61	304.38	2,951.37	2,963.87	0.48	-0.21	-0.43
9,224.00	90.500	91.40	6,100.95	302.47	3,046.35	3,058.59	0.57	0.21	0.53
9,320.00	90.800	91.20	6,099.86	300.29	3,142.32	3,154.28	0.38	0.31	-0.21
9,415.00	90.200	90.50	6,099.03	298.88	3,237.31	3,249.03	0.97	-0.63	-0.74
9,509.00	91.800	91.20	6,097.39	297.49	3,331.28	3,342.78	1.86	1.70	0.74
9,603.00	91.500	90.60	6,094.68	296.01	3,425.23	3,436.49	0.71	-0.32	-0.64
9,699.00	92.200	93.10	6,091.58	292.92	3,521.12	3,532.05	2.70	0.73	2.60
9,794.00	89.600	92.60	6,090.09	288.19	3,615.98	3,626.50	2.79	-2.74	-0.53
9,889.00	89.000	91.90	6,091.25	284.46	3,710.90	3,721.05	0.97	-0.63	-0.74
9,985.00	88.100	91.70	6,093.68	281.45	3,806.82	3,816.65	0.96	-0.94	-0.21
10,080.00	88.600	91.00	6,096.42	279.21	3,901.75	3,911.30	0.91	0.53	-0.74
10,174.00	88.500	91.00	6,098.80	277.57	3,995.71	4,005.02	0.11	-0.11	0.00
10,268.00	88.000	91.10	6,101.67	275.85	4,089.65	4,098.71	0.54	-0.53	0.11
10,362.00	87.800	90.40	6,105.11	274.62	4,183.58	4,192.42	0.77	-0.21	-0.74
10,457.00	89.500	89.40	6,107.35	274.79	4,278.55	4,287.24	2.08	1.79	-1.05
10,553.00	90.100	89.00	6,107.68	276.13	4,374.54	4,383.15	0.75	0.63	-0.42
10,629.00	91.400	88.30	6,106.69	277.92	4,450.51	4,459.10	1.94	1.71	-0.92
10,685.00	91.400	88.30	6,105.32	279.58	4,506.46	4,515.07	0.00	0.00	0.00
Proj TD - 4841BH PBHL3 500' FEL, 1740' FSL									

Company:	Bill Barrett Corp.	Local Co-ordinate Reference:	Well Hawkins 5-61-21-4841BH
Project:	Weld Co., CO (NAD 83)	TVD Reference:	KB @ 4683.00ft
Site:	Sec. 21-T5N-R61W	MD Reference:	KB @ 4683.00ft
Well:	Hawkins 5-61-21-4841BH	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	CompassVM

Survey Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
3,798.00	3,776.98	276.79	-199.65	As of 9-14
5,570.00	5,542.14	373.81	-263.98	As of 9-16
6,076.00	5,988.97	388.47	-68.47	As of 9-17
6,449.00	6,125.31	380.42	273.81	As of 9-18
8,273.00	6,112.93	327.80	2,095.89	As of 9-20
10,685.00	6,105.32	279.58	4,506.46	Proj TD

Checked By: _____ Approved By: _____ Date: _____