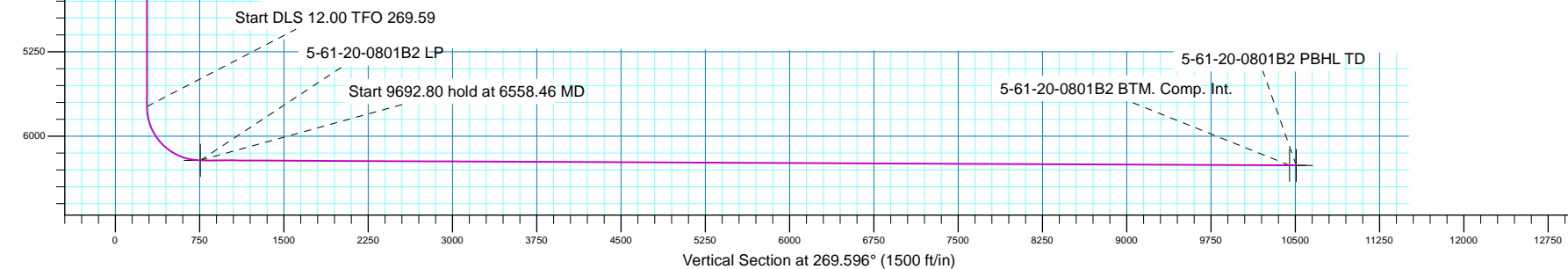
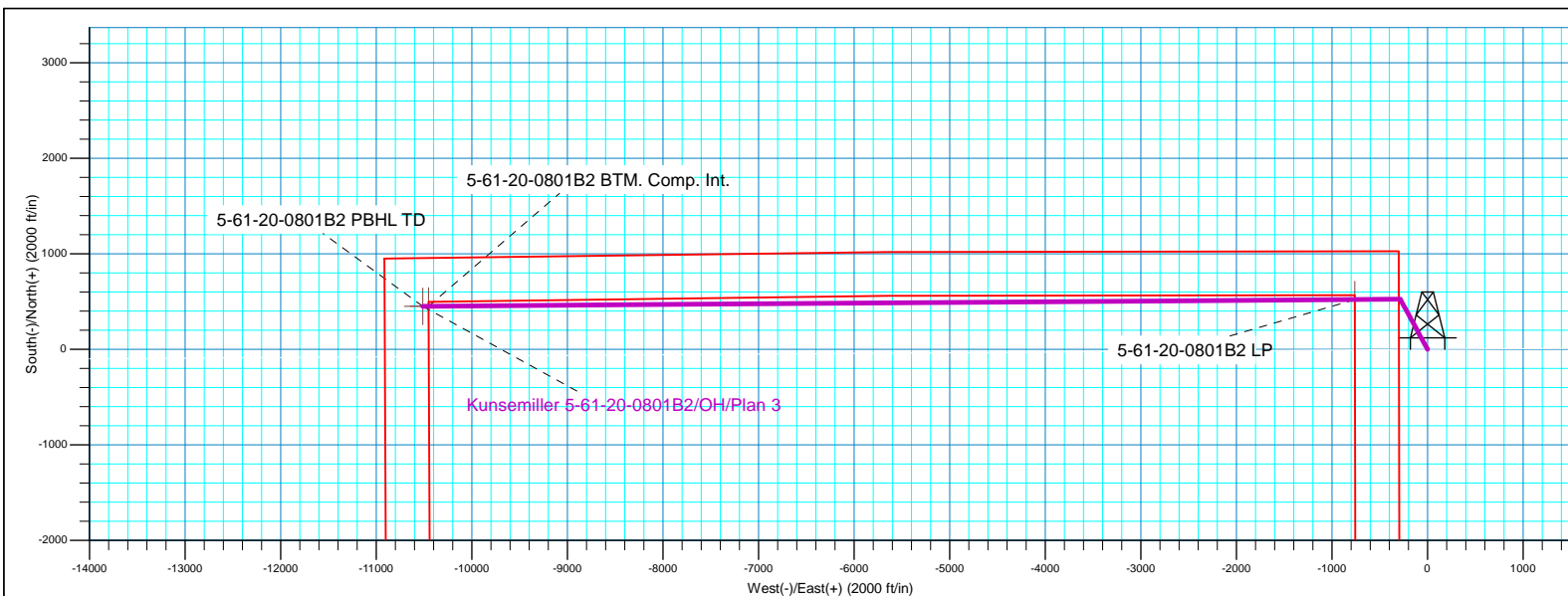
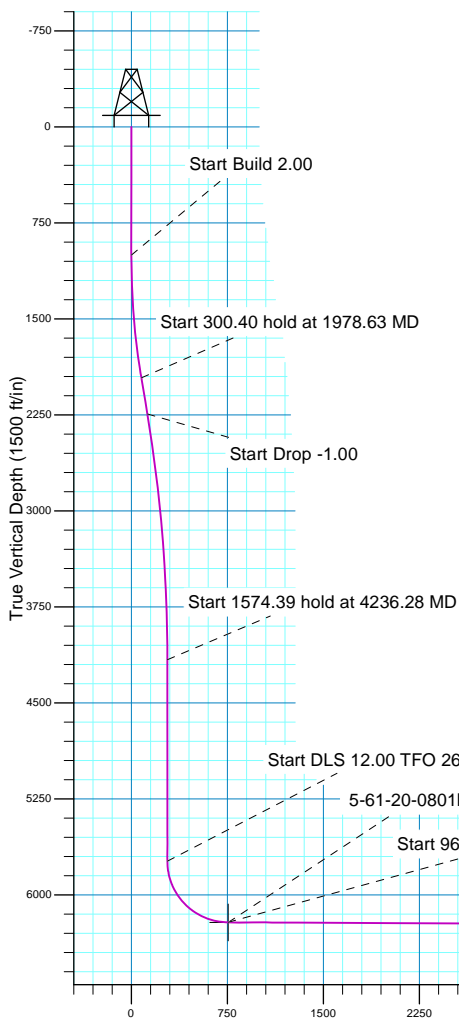

SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect
0.00	0.00	0.000	0.00	0.00	0.00	0.00	0.00	0.00
1000.00	0.00	0.000	1000.00	0.00	0.00	0.00	0.00	0.00
1978.63	19.57	331.479	1959.70	145.44	-79.04	2.00	331.48	78.01
2279.02	19.57	331.479	2242.74	233.86	-127.09	0.00	0.00	125.44
4236.28	0.00	0.000	4162.15	524.75	-285.17	1.00	180.00	281.46
5810.67	0.00	0.000	5736.54	524.75	-285.17	0.00	0.00	281.46
6558.46	89.74	269.593	6214.00	521.37	-760.42	12.00	269.59	756.72
16251.26	89.74	269.593	6258.72	452.54	-10452.87	0.00	0.00	10449.42
16310.88	89.73	268.355	6259.00	451.47	-10512.48	2.08	-90.44	10509.03

WELL DETAILS: Kunsemiller 5-61-20-0801B2

+N/-S	+E/-W	GL 4638' & KB 16' @	4654.00ft	4638.00	Longitude
Northing	Easting	Latitude			
0.00	0.00	1387862.71	3355806.02	40° 23' 27.779 N	104° 13' 21.331 W





Bill Barrett Corporation

Bill Barrett Corp.

Weld County, CO NAD 83
Kunsemiller 5-61-20_19NW21 Pad
Kunsemiller 5-61-20-0801B2

OH

Plan: Plan 3

Standard Planning Report

22 June, 2017



Scientific Drilling

www.scientificdrilling.com



Database:	Casper District	Local Co-ordinate Reference:	Well Kunsemiller 5-61-20-0801B2
Company:	Bill Barrett Corp.	TVD Reference:	GL 4638' & KB 16' @ 4654.00ft
Project:	Weld County, CO NAD 83	MD Reference:	GL 4638' & KB 16' @ 4654.00ft
Site:	Kunsemiller 5-61-20_19NW21 Pad	North Reference:	True
Well:	Kunsemiller 5-61-20-0801B2	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan 3		

Project	Weld County, 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	Kunsemiller 5-61-20_19NW21 Pad, Site Center : 5-61-20-20801B2B			
Site Position:		Northing:	1,387,878.07 usft	Latitude: 40° 23' 27.931 N
From:	Lat/Long	Easting:	3,355,805.79 usft	Longitude: 104° 13' 21.331 W
Position Uncertainty:	0.00 ft	Slot Radius:	13.200 in	Grid Convergence: 0.83 °

Well	Kunsemiller 5-61-20-0801B2, 1021' FNL 300' FWL Sec 21 T5N R61W			
Well Position	+N/-S	-15.36 ft	Northing:	1,387,862.71 usft
	+E/-W	0.00 ft	Easting:	3,355,806.02 usft
Position Uncertainty		0.00 ft	Wellhead Elevation:	0.00 ft
			Ground Level:	4,638.00 ft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2015	11/23/2015	8.20	67.05	52,650
	BGGM2016	10/6/2016	8.13	66.98	52,548
	HDGM	6/22/2017	8.25	67.07	52,350

Design	Plan 3			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.00	0.00	0.00	269.596

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.00	0.00	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,000.00	0.00	0.000	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,978.63	19.57	331.479	1,959.70	145.44	-79.04	2.00	2.00	0.00	331.48	
2,279.02	19.57	331.479	2,242.74	233.86	-127.09	0.00	0.00	0.00	0.00	
4,236.28	0.00	0.000	4,162.15	524.75	-285.17	1.00	-1.00	0.00	180.00	
5,810.67	0.00	0.000	5,736.54	524.75	-285.17	0.00	0.00	0.00	0.00	
6,558.46	89.74	269.593	6,214.00	521.38	-760.42	12.00	12.00	-12.09	269.59	
16,251.26	89.74	269.593	6,258.72	452.54	-10,452.87	0.00	0.00	0.00	0.00	5-61-20-0801B2 BTM
16,310.88	89.73	268.355	6,259.00	451.48	-10,512.48	2.08	-0.02	-2.08	-90.44	5-61-20-0801B2 PBH

Database:	Casper District	Local Co-ordinate Reference:	Well Kunsemiller 5-61-20-0801B2
Company:	Bill Barrett Corp.	TVD Reference:	GL 4638' & KB 16' @ 4654.00ft
Project:	Weld County, CO NAD 83	MD Reference:	GL 4638' & KB 16' @ 4654.00ft
Site:	Kunsemiller 5-61-20_19NW21 Pad	North Reference:	True
Well:	Kunsemiller 5-61-20-0801B2	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan 3		

Planned 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)
0.00	0.00	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.000	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.000	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.000	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.000	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.000	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.000	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.000	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.000	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.000	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.000	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
Start Build 2.00									
1,100.00	2.00	331.479	1,099.98	1.53	-0.83	0.82	2.00	2.00	0.00
1,200.00	4.00	331.479	1,199.84	6.13	-3.33	3.29	2.00	2.00	0.00
1,300.00	6.00	331.479	1,299.45	13.79	-7.49	7.40	2.00	2.00	0.00
1,400.00	8.00	331.479	1,398.70	24.50	-13.31	13.14	2.00	2.00	0.00
1,500.00	10.00	331.479	1,497.47	38.24	-20.78	20.51	2.00	2.00	0.00
1,600.00	12.00	331.479	1,595.62	55.00	-29.89	29.50	2.00	2.00	0.00
1,700.00	14.00	331.479	1,693.06	74.77	-40.63	40.10	2.00	2.00	0.00
1,800.00	16.00	331.479	1,789.64	97.51	-52.99	52.30	2.00	2.00	0.00
1,900.00	18.00	331.479	1,885.27	123.20	-66.95	66.08	2.00	2.00	0.00
1,978.63	19.57	331.479	1,959.70	145.44	-79.04	78.01	2.00	2.00	0.00
Start 300.40 hold at 1978.63 MD									
2,000.00	19.57	331.479	1,979.84	151.73	-82.46	81.39	0.00	0.00	0.00
2,100.00	19.57	331.479	2,074.06	181.17	-98.45	97.17	0.00	0.00	0.00
2,200.00	19.57	331.479	2,168.29	210.60	-114.45	112.96	0.00	0.00	0.00
2,279.02	19.57	331.479	2,242.74	233.86	-127.09	125.44	0.00	0.00	0.00
Start Drop -1.00									
2,300.00	19.36	331.479	2,262.52	240.01	-130.43	128.73	1.00	-1.00	0.00
2,400.00	18.36	331.479	2,357.15	268.41	-145.87	143.97	1.00	-1.00	0.00
2,500.00	17.36	331.479	2,452.33	295.36	-160.51	158.43	1.00	-1.00	0.00
2,600.00	16.36	331.479	2,548.03	320.85	-174.36	172.10	1.00	-1.00	0.00
2,700.00	15.36	331.479	2,644.22	344.87	-187.41	184.98	1.00	-1.00	0.00
2,800.00	14.36	331.479	2,740.87	367.40	-199.66	197.07	1.00	-1.00	0.00
2,900.00	13.36	331.479	2,837.96	388.45	-211.10	208.36	1.00	-1.00	0.00
3,000.00	12.36	331.479	2,935.45	408.01	-221.73	218.85	1.00	-1.00	0.00
3,100.00	11.36	331.479	3,033.31	426.08	-231.55	228.54	1.00	-1.00	0.00
3,200.00	10.36	331.479	3,131.52	442.63	-240.55	237.42	1.00	-1.00	0.00
3,300.00	9.36	331.479	3,230.04	457.68	-248.72	245.49	1.00	-1.00	0.00
3,400.00	8.36	331.479	3,328.84	471.22	-256.08	252.75	1.00	-1.00	0.00
3,500.00	7.36	331.479	3,427.90	483.24	-262.61	259.20	1.00	-1.00	0.00
3,600.00	6.36	331.479	3,527.18	493.74	-268.32	264.83	1.00	-1.00	0.00
3,700.00	5.36	331.479	3,626.66	502.71	-273.20	269.64	1.00	-1.00	0.00
3,800.00	4.36	331.479	3,726.30	510.16	-277.24	273.64	1.00	-1.00	0.00
3,900.00	3.36	331.479	3,826.07	516.08	-280.46	276.81	1.00	-1.00	0.00
4,000.00	2.36	331.479	3,925.94	520.47	-282.84	279.17	1.00	-1.00	0.00
4,100.00	1.36	331.479	4,025.89	523.33	-284.40	280.70	1.00	-1.00	0.00
4,200.00	0.36	331.479	4,125.88	524.65	-285.12	281.41	1.00	-1.00	0.00
4,236.28	0.00	0.000	4,162.15	524.75	-285.17	281.46	1.00	-1.00	0.00
Start 1574.39 hold at 4236.28 MD									
4,300.00	0.00	0.000	4,225.87	524.75	-285.17	281.46	0.00	0.00	0.00
4,400.00	0.00	0.000	4,325.87	524.75	-285.17	281.46	0.00	0.00	0.00
4,478.13	0.00	0.000	4,404.00	524.75	-285.17	281.46	0.00	0.00	0.00
SHANNON									

Database:	Casper District	Local Co-ordinate Reference:	Well Kunsemiller 5-61-20-0801B2
Company:	Bill Barrett Corp.	TVD Reference:	GL 4638' & KB 16' @ 4654.00ft
Project:	Weld County, CO NAD 83	MD Reference:	GL 4638' & KB 16' @ 4654.00ft
Site:	Kunsemiller 5-61-20_19NW21 Pad	North Reference:	True
Well:	Kunsemiller 5-61-20-0801B2	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan 3		

Planned 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)
4,500.00	0.00	0.000	4,425.87	524.75	-285.17	281.46	0.00	0.00	0.00
4,600.00	0.00	0.000	4,525.87	524.75	-285.17	281.46	0.00	0.00	0.00
4,700.00	0.00	0.000	4,625.87	524.75	-285.17	281.46	0.00	0.00	0.00
4,728.13	0.00	0.000	4,654.00	524.75	-285.17	281.46	0.00	0.00	0.00
BASE OF FOX HILLS									
4,800.00	0.00	0.000	4,725.87	524.75	-285.17	281.46	0.00	0.00	0.00
4,900.00	0.00	0.000	4,825.87	524.75	-285.17	281.46	0.00	0.00	0.00
5,000.00	0.00	0.000	4,925.87	524.75	-285.17	281.46	0.00	0.00	0.00
5,100.00	0.00	0.000	5,025.87	524.75	-285.17	281.46	0.00	0.00	0.00
5,200.00	0.00	0.000	5,125.87	524.75	-285.17	281.46	0.00	0.00	0.00
5,300.00	0.00	0.000	5,225.87	524.75	-285.17	281.46	0.00	0.00	0.00
5,400.00	0.00	0.000	5,325.87	524.75	-285.17	281.46	0.00	0.00	0.00
5,500.00	0.00	0.000	5,425.87	524.75	-285.17	281.46	0.00	0.00	0.00
5,600.00	0.00	0.000	5,525.87	524.75	-285.17	281.46	0.00	0.00	0.00
5,700.00	0.00	0.000	5,625.87	524.75	-285.17	281.46	0.00	0.00	0.00
5,800.00	0.00	0.000	5,725.87	524.75	-285.17	281.46	0.00	0.00	0.00
5,810.67	0.00	0.000	5,736.54	524.75	-285.17	281.46	0.00	0.00	0.00
Start DLS 12.00 TFO 269.59									
5,900.00	10.72	269.593	5,825.35	524.69	-293.50	289.80	12.00	12.00	0.00
5,950.10	16.72	269.593	5,874.00	524.61	-305.38	301.68	11.98	11.98	0.00
SHARON SPRINGS									
6,000.00	22.72	269.593	5,920.95	524.49	-322.22	318.51	12.02	12.02	0.00
6,059.20	29.82	269.593	5,974.00	524.30	-348.40	344.70	12.00	12.00	0.00
NIOBRARA									
6,100.00	34.72	269.593	6,008.49	524.15	-370.18	366.48	12.00	12.00	0.00
6,200.00	46.72	269.593	6,084.14	523.68	-435.30	431.60	12.00	12.00	0.00
6,300.00	58.72	269.593	6,144.60	523.12	-514.72	511.02	12.00	12.00	0.00
6,371.45	67.29	269.593	6,177.00	522.67	-578.32	574.62	12.00	12.00	0.00
TOP "C" TARGET									
6,400.00	70.72	269.593	6,187.23	522.48	-604.98	601.28	12.00	12.00	0.00
6,436.69	75.12	269.593	6,198.00	522.23	-640.04	636.34	12.00	12.00	0.00
LANDING POINT									
6,473.11	79.49	269.593	6,206.00	521.98	-675.56	671.86	12.00	12.00	0.00
BASE "C" TARGET									
6,500.00	82.72	269.593	6,210.16	521.79	-702.12	698.43	12.00	12.00	0.00
6,558.46	89.74	269.593	6,214.00	521.38	-760.42	756.72	12.00	12.00	0.00
Start 9692.80 hold at 6558.46 MD									
6,600.00	89.74	269.593	6,214.19	521.08	-801.96	798.26	0.00	0.00	0.00
6,700.00	89.74	269.593	6,214.65	520.37	-901.95	898.26	0.00	0.00	0.00
6,800.00	89.74	269.593	6,215.11	519.66	-1,001.95	998.26	0.00	0.00	0.00
6,900.00	89.74	269.593	6,215.58	518.95	-1,101.95	1,098.26	0.00	0.00	0.00
7,000.00	89.74	269.593	6,216.04	518.24	-1,201.94	1,198.26	0.00	0.00	0.00
7,100.00	89.74	269.593	6,216.50	517.53	-1,301.94	1,298.26	0.00	0.00	0.00
7,200.00	89.74	269.593	6,216.96	516.82	-1,401.93	1,398.26	0.00	0.00	0.00
7,300.00	89.74	269.593	6,217.42	516.11	-1,501.93	1,498.25	0.00	0.00	0.00
7,400.00	89.74	269.593	6,217.88	515.40	-1,601.93	1,598.25	0.00	0.00	0.00
7,500.00	89.74	269.593	6,218.34	514.69	-1,701.92	1,698.25	0.00	0.00	0.00
7,600.00	89.74	269.593	6,218.81	513.98	-1,801.92	1,798.25	0.00	0.00	0.00
7,700.00	89.74	269.593	6,219.27	513.27	-1,901.92	1,898.25	0.00	0.00	0.00
7,800.00	89.74	269.593	6,219.73	512.56	-2,001.91	1,998.25	0.00	0.00	0.00
7,900.00	89.74	269.593	6,220.19	511.85	-2,101.91	2,098.25	0.00	0.00	0.00
8,000.00	89.74	269.593	6,220.65	511.14	-2,201.91	2,198.25	0.00	0.00	0.00
8,100.00	89.74	269.593	6,221.11	510.43	-2,301.90	2,298.25	0.00	0.00	0.00

Database:	Casper District	Local Co-ordinate Reference:	Well Kunsemiller 5-61-20-0801B2
Company:	Bill Barrett Corp.	TVD Reference:	GL 4638' & KB 16' @ 4654.00ft
Project:	Weld County, CO NAD 83	MD Reference:	GL 4638' & KB 16' @ 4654.00ft
Site:	Kunsemiller 5-61-20_19NW21 Pad	North Reference:	True
Well:	Kunsemiller 5-61-20-0801B2	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan 3		

Planned 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)
8,200.00	89.74	269.593	6,221.57	509.72	-2,401.90	2,398.25	0.00	0.00	0.00
8,300.00	89.74	269.593	6,222.03	509.01	-2,501.90	2,498.24	0.00	0.00	0.00
8,400.00	89.74	269.593	6,222.50	508.30	-2,601.89	2,598.24	0.00	0.00	0.00
8,500.00	89.74	269.593	6,222.96	507.59	-2,701.89	2,698.24	0.00	0.00	0.00
8,600.00	89.74	269.593	6,223.42	506.88	-2,801.88	2,798.24	0.00	0.00	0.00
8,700.00	89.74	269.593	6,223.88	506.17	-2,901.88	2,898.24	0.00	0.00	0.00
8,800.00	89.74	269.593	6,224.34	505.46	-3,001.88	2,998.24	0.00	0.00	0.00
8,900.00	89.74	269.593	6,224.80	504.75	-3,101.87	3,098.24	0.00	0.00	0.00
9,000.00	89.74	269.593	6,225.26	504.04	-3,201.87	3,198.24	0.00	0.00	0.00
9,100.00	89.74	269.593	6,225.73	503.33	-3,301.87	3,298.24	0.00	0.00	0.00
9,200.00	89.74	269.593	6,226.19	502.62	-3,401.86	3,398.23	0.00	0.00	0.00
9,300.00	89.74	269.593	6,226.65	501.91	-3,501.86	3,498.23	0.00	0.00	0.00
9,400.00	89.74	269.593	6,227.11	501.20	-3,601.86	3,598.23	0.00	0.00	0.00
9,500.00	89.74	269.593	6,227.57	500.49	-3,701.85	3,698.23	0.00	0.00	0.00
9,600.00	89.74	269.593	6,228.03	499.78	-3,801.85	3,798.23	0.00	0.00	0.00
9,700.00	89.74	269.593	6,228.49	499.07	-3,901.85	3,898.23	0.00	0.00	0.00
9,800.00	89.74	269.593	6,228.96	498.36	-4,001.84	3,998.23	0.00	0.00	0.00
9,900.00	89.74	269.593	6,229.42	497.65	-4,101.84	4,098.23	0.00	0.00	0.00
10,000.00	89.74	269.593	6,229.88	496.94	-4,201.83	4,198.23	0.00	0.00	0.00
10,100.00	89.74	269.593	6,230.34	496.23	-4,301.83	4,298.22	0.00	0.00	0.00
10,200.00	89.74	269.593	6,230.80	495.52	-4,401.83	4,398.22	0.00	0.00	0.00
10,300.00	89.74	269.593	6,231.26	494.81	-4,501.82	4,498.22	0.00	0.00	0.00
10,400.00	89.74	269.593	6,231.72	494.10	-4,601.82	4,598.22	0.00	0.00	0.00
10,500.00	89.74	269.593	6,232.19	493.39	-4,701.82	4,698.22	0.00	0.00	0.00
10,600.00	89.74	269.593	6,232.65	492.68	-4,801.81	4,798.22	0.00	0.00	0.00
10,700.00	89.74	269.593	6,233.11	491.96	-4,901.81	4,898.22	0.00	0.00	0.00
10,800.00	89.74	269.593	6,233.57	491.25	-5,001.81	4,998.22	0.00	0.00	0.00
10,900.00	89.74	269.593	6,234.03	490.54	-5,101.80	5,098.22	0.00	0.00	0.00
11,000.00	89.74	269.593	6,234.49	489.83	-5,201.80	5,198.22	0.00	0.00	0.00
11,100.00	89.74	269.593	6,234.95	489.12	-5,301.79	5,298.21	0.00	0.00	0.00
11,200.00	89.74	269.593	6,235.41	488.41	-5,401.79	5,398.21	0.00	0.00	0.00
11,300.00	89.74	269.593	6,235.88	487.70	-5,501.79	5,498.21	0.00	0.00	0.00
11,400.00	89.74	269.593	6,236.34	486.99	-5,601.78	5,598.21	0.00	0.00	0.00
11,500.00	89.74	269.593	6,236.80	486.28	-5,701.78	5,698.21	0.00	0.00	0.00
11,600.00	89.74	269.593	6,237.26	485.57	-5,801.78	5,798.21	0.00	0.00	0.00
11,700.00	89.74	269.593	6,237.72	484.86	-5,901.77	5,898.21	0.00	0.00	0.00
11,800.00	89.74	269.593	6,238.18	484.15	-6,001.77	5,998.21	0.00	0.00	0.00
11,900.00	89.74	269.593	6,238.64	483.44	-6,101.77	6,098.21	0.00	0.00	0.00
12,000.00	89.74	269.593	6,239.11	482.73	-6,201.76	6,198.20	0.00	0.00	0.00
12,100.00	89.74	269.593	6,239.57	482.02	-6,301.76	6,298.20	0.00	0.00	0.00
12,200.00	89.74	269.593	6,240.03	481.31	-6,401.76	6,398.20	0.00	0.00	0.00
12,300.00	89.74	269.593	6,240.49	480.60	-6,501.75	6,498.20	0.00	0.00	0.00
12,400.00	89.74	269.593	6,240.95	479.89	-6,601.75	6,598.20	0.00	0.00	0.00
12,500.00	89.74	269.593	6,241.41	479.18	-6,701.74	6,698.20	0.00	0.00	0.00
12,600.00	89.74	269.593	6,241.87	478.47	-6,801.74	6,798.20	0.00	0.00	0.00
12,700.00	89.74	269.593	6,242.34	477.76	-6,901.74	6,898.20	0.00	0.00	0.00
12,800.00	89.74	269.593	6,242.80	477.05	-7,001.73	6,998.20	0.00	0.00	0.00
12,844.06	89.74	269.593	6,243.00	476.74	-7,045.79	7,042.26	0.00	0.00	0.00
TD									
12,900.00	89.74	269.593	6,243.26	476.34	-7,101.73	7,098.20	0.00	0.00	0.00
13,000.00	89.74	269.593	6,243.72	475.63	-7,201.73	7,198.19	0.00	0.00	0.00
13,100.00	89.74	269.593	6,244.18	474.92	-7,301.72	7,298.19	0.00	0.00	0.00
13,200.00	89.74	269.593	6,244.64	474.21	-7,401.72	7,398.19	0.00	0.00	0.00

Database:	Casper District	Local Co-ordinate Reference:	Well Kunsemiller 5-61-20-0801B2
Company:	Bill Barrett Corp.	TVD Reference:	GL 4638' & KB 16' @ 4654.00ft
Project:	Weld County, CO NAD 83	MD Reference:	GL 4638' & KB 16' @ 4654.00ft
Site:	Kunsemiller 5-61-20_19NW21 Pad	North Reference:	True
Well:	Kunsemiller 5-61-20-0801B2	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan 3		

Planned 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)
13,300.00	89.74	269.593	6,245.10	473.50	-7,501.72	7,498.19	0.00	0.00	0.00
13,400.00	89.74	269.593	6,245.57	472.79	-7,601.71	7,598.19	0.00	0.00	0.00
13,500.00	89.74	269.593	6,246.03	472.08	-7,701.71	7,698.19	0.00	0.00	0.00
13,600.00	89.74	269.593	6,246.49	471.37	-7,801.71	7,798.19	0.00	0.00	0.00
13,700.00	89.74	269.593	6,246.95	470.66	-7,901.70	7,898.19	0.00	0.00	0.00
13,800.00	89.74	269.593	6,247.41	469.95	-8,001.70	7,998.19	0.00	0.00	0.00
13,900.00	89.74	269.593	6,247.87	469.24	-8,101.69	8,098.18	0.00	0.00	0.00
14,000.00	89.74	269.593	6,248.33	468.53	-8,201.69	8,198.18	0.00	0.00	0.00
14,100.00	89.74	269.593	6,248.79	467.82	-8,301.69	8,298.18	0.00	0.00	0.00
14,200.00	89.74	269.593	6,249.26	467.11	-8,401.68	8,398.18	0.00	0.00	0.00
14,300.00	89.74	269.593	6,249.72	466.40	-8,501.68	8,498.18	0.00	0.00	0.00
14,400.00	89.74	269.593	6,250.18	465.69	-8,601.68	8,598.18	0.00	0.00	0.00
14,500.00	89.74	269.593	6,250.64	464.98	-8,701.67	8,698.18	0.00	0.00	0.00
14,600.00	89.74	269.593	6,251.10	464.27	-8,801.67	8,798.18	0.00	0.00	0.00
14,700.00	89.74	269.593	6,251.56	463.56	-8,901.67	8,898.18	0.00	0.00	0.00
14,800.00	89.74	269.593	6,252.02	462.85	-9,001.66	8,998.17	0.00	0.00	0.00
14,900.00	89.74	269.593	6,252.49	462.14	-9,101.66	9,098.17	0.00	0.00	0.00
15,000.00	89.74	269.593	6,252.95	461.43	-9,201.66	9,198.17	0.00	0.00	0.00
15,100.00	89.74	269.593	6,253.41	460.72	-9,301.65	9,298.17	0.00	0.00	0.00
15,200.00	89.74	269.593	6,253.87	460.01	-9,401.65	9,398.17	0.00	0.00	0.00
15,300.00	89.74	269.593	6,254.33	459.30	-9,501.64	9,498.17	0.00	0.00	0.00
15,400.00	89.74	269.593	6,254.79	458.59	-9,601.64	9,598.17	0.00	0.00	0.00
15,500.00	89.74	269.593	6,255.25	457.88	-9,701.64	9,698.17	0.00	0.00	0.00
15,600.00	89.74	269.593	6,255.72	457.17	-9,801.63	9,798.17	0.00	0.00	0.00
15,700.00	89.74	269.593	6,256.18	456.46	-9,901.63	9,898.17	0.00	0.00	0.00
15,800.00	89.74	269.593	6,256.64	455.75	-10,001.63	9,998.16	0.00	0.00	0.00
15,900.00	89.74	269.593	6,257.10	455.04	-10,101.62	10,098.16	0.00	0.00	0.00
16,000.00	89.74	269.593	6,257.56	454.33	-10,201.62	10,198.16	0.00	0.00	0.00
16,100.00	89.74	269.593	6,258.02	453.62	-10,301.62	10,298.16	0.00	0.00	0.00
16,200.00	89.74	269.593	6,258.48	452.91	-10,401.61	10,398.16	0.00	0.00	0.00
16,251.26	89.74	269.593	6,258.72	452.54	-10,452.87	10,449.42	0.00	0.00	0.00
Start DLS 2.08 TFO -90.44									
16,300.00	89.73	268.581	6,258.95	451.77	-10,501.60	10,498.16	2.08	-0.02	-2.08
16,310.88	89.73	268.355	6,259.00	451.48	-10,512.48	10,509.03	2.08	-0.02	-2.08
TD at 16310.88									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
5-61-20-0801B2 LP - hit/miss target - Shape - Point	0.00	0.000	6,214.00	521.38	-760.42	1,388,373.08	3,355,038.18	40° 23' 32.932 N	104° 13' 31.159 W
- plan misses target center by 0.01ft at 6558.46ft MD (6214.00 TVD, 521.38 N, -760.42 E)									
5-61-20-0801B2 BTM. (0.00	0.000	6,258.72	452.54	-10,452.87	1,388,164.63	3,345,347.74	40° 23' 32.230 N	104° 15' 36.428 W
- plan hits target center									
- Point									
5-61-20-0801B2 PBHL	0.00	0.000	6,259.00	451.48	-10,512.48	1,388,162.71	3,345,288.16	40° 23' 32.219 N	104° 15' 37.199 W
- plan hits target center									
- Point									

Database:	Casper District	Local Co-ordinate Reference:	Well Kunsemiller 5-61-20-0801B2
Company:	Bill Barrett Corp.	TVD Reference:	GL 4638' & KB 16' @ 4654.00ft
Project:	Weld County, CO NAD 83	MD Reference:	GL 4638' & KB 16' @ 4654.00ft
Site:	Kunsemiller 5-61-20_19NW21 Pad	North Reference:	True
Well:	Kunsemiller 5-61-20-0801B2	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan 3		

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
4,478.13	4,404.00	SHANNON		0.00	
4,728.13	4,654.00	BASE OF FOX HILLS		0.00	
5,950.10	5,874.00	SHARON SPRINGS		0.00	
6,059.20	5,974.00	NIOBRARA		0.00	
6,371.45	6,177.00	TOP "C" TARGET		0.00	
6,436.69	6,198.00	LANDING POINT		0.00	
6,473.11	6,206.00	BASE "C" TARGET		0.00	
12,844.06	6,243.00	TD		0.00	

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
1,000.00	1,000.00	0.00	0.00	Start Build 2.00
1,978.63	1,959.70	145.44	-79.04	Start 300.40 hold at 1978.63 MD
2,279.02	2,242.74	233.86	-127.09	Start Drop -1.00
4,236.28	4,162.15	524.75	-285.17	Start 1574.39 hold at 4236.28 MD
5,810.67	5,736.54	524.75	-285.17	Start DLS 12.00 TFO 269.59
6,558.46	6,214.00	521.38	-760.42	Start 9692.80 hold at 6558.46 MD
16,251.26	6,258.72	452.54	-10,452.87	Start DLS 2.08 TFO -90.44
16,310.88	6,259.00	451.48	-10,512.48	TD at 16310.88