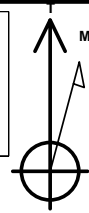
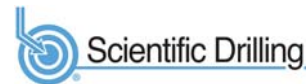


Geodetic System: US State Plane 1983
 Datum: North American Datum 1983
 Ellipsoid: GRS 1980
 Zone: Colorado Northern Zone
 System Datum: Mean Sea Level
 Local North: True

Project: Weld County, CO NAD 83
 Site: Kunsemiller 5-61-20_19NW21 Pad
 Well: Kunsemiller 5-61-20-0801B2B
 Wellbore: OH
 Design: Plan 3



Azimuths to True North
 Magnetic North: 8.25°



Magnetic Field
 Strength: 52350.3nT
 Dip Angle: 67.07°
 Date: 6/22/2017
 Model: HDGM

Plan: Plan 3 (Kunsemiller 5-61-20-0801B2B/OH)

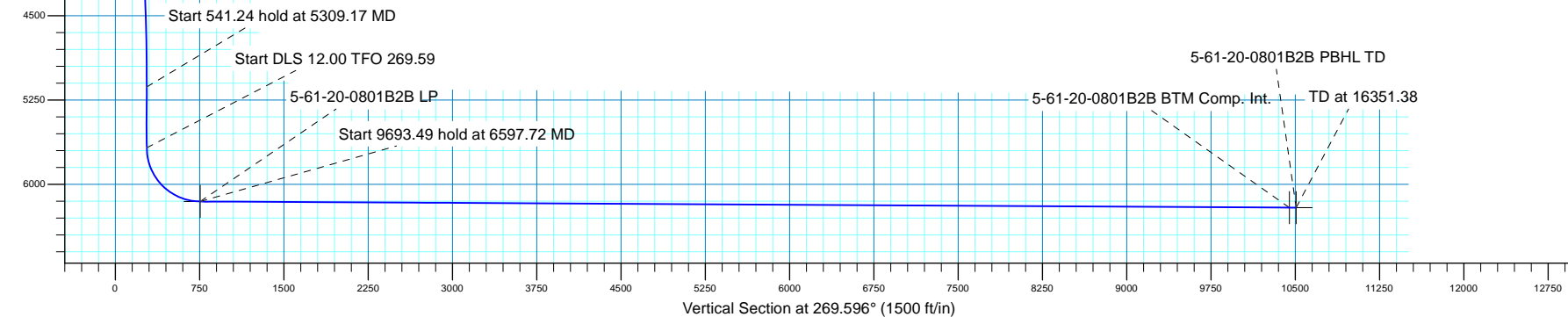
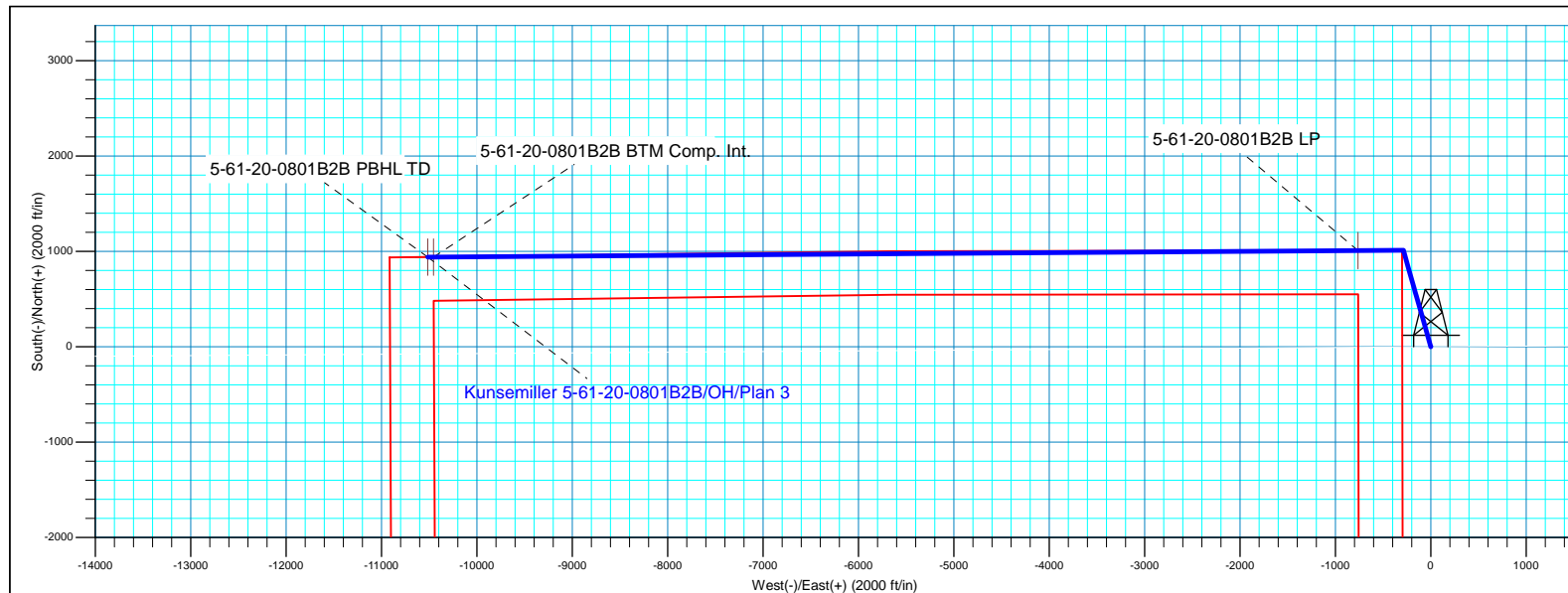
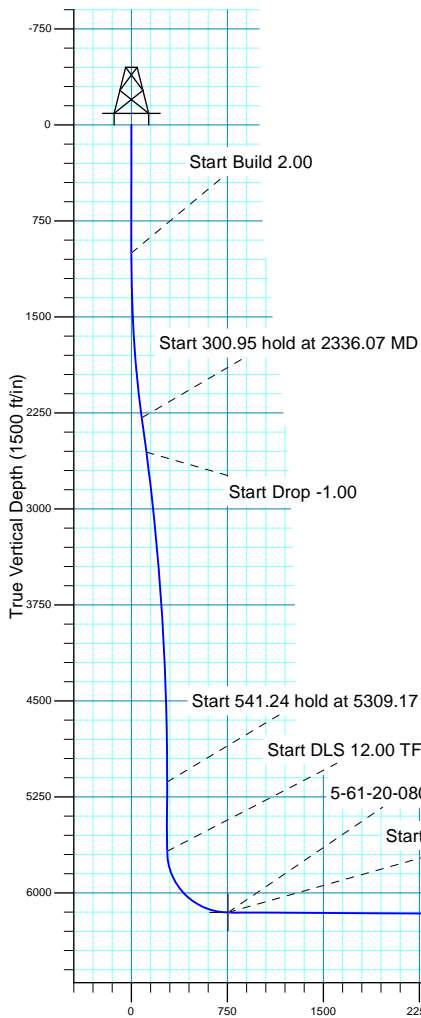
Created By: Seth Burstad Date: 6-22-2017

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
2336.07	26.72	344.169	2288.16	294.35	-83.46	2.00	344.17	81.39
2637.02	26.72	344.169	2556.97	424.54	-120.38	0.00	0.00	117.38
5309.17	0.00	0.000	5133.30	1013.23	-287.31	1.00	180.00	280.16
5850.41	0.00	0.000	5674.54	1013.23	-287.31	0.00	0.00	280.16
6597.72	89.68	269.593	6152.00	1009.86	-762.07	12.00	269.59	754.93
16291.21	89.68	269.593	6206.66	941.03	-10455.16	0.00	0.00	10448.27
16351.38	89.68	269.068	6207.00	940.33	-10515.33	0.87	-90.15	10508.43

WELL DETAILS: Kunsemiller 5-61-20-0801B2B

		GL 4638' & KB 16' @ 4654.00ft		4638.00	Longitude
+N/-S	+E/-W	Northing	Easting	Latitude	
0.00	0.00	1387878.04	3355805.80	40° 23' 27.931 N	104° 13' 21.331 W





Bill Barrett Corporation

Bill Barrett Corp.

Weld County, CO NAD 83

Kunsemiller 5-61-20_19NW21 Pad

Kunsemiller 5-61-20-0801B2B

OH

Plan: Plan 3

Standard Planning Report

22 June, 2017



Scientific Drilling

www.scientificdrilling.com



Database:	Casper District	Local Co-ordinate Reference:	Well Kunsemiller 5-61-20-0801B2B
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 5-61-20-0801B2B	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 5-61-20-0801B2B, 1006' FNL 300' FWL Sec 21 T5N R61W					
Well Position	+N/-S	-0.03 ft	Northing:	1,387,878.04 usft	Latitude:	40° 23' 27.931 N
	+E/-W	0.00 ft	Easting:	3,355,805.79 usft	Longitude:	104° 13' 21.331 W
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) (ft)	+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	
2,336.07	26.72	344.169	2,288.16	294.35	-83.46	2.00	2.00	0.00	344.17	
2,637.02	26.72	344.169	2,556.97	424.54	-120.38	0.00	0.00	0.00	0.00	
5,309.17	0.00	0.000	5,133.30	1,013.23	-287.31	1.00	-1.00	0.00	180.00	
5,850.41	0.00	0.000	5,674.54	1,013.23	-287.31	0.00	0.00	0.00	0.00	
6,597.72	89.68	269.593	6,152.00	1,009.86	-762.07	12.00	12.00	-12.10	269.59	
16,291.21	89.68	269.593	6,206.66	941.04	-10,455.16	0.00	0.00	0.00	0.00	5-61-20-0801B2B BTI
16,351.38	89.68	269.068	6,207.00	940.34	-10,515.33	0.87	0.00	-0.87	-90.15	5-61-20-0801B2B PB

Database:	Casper District	Local Co-ordinate Reference:	Well Kunsemiller 5-61-20-0801B2B
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 5-61-20-0801B2B	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	344.169	1,099.98	1.68	-0.48	0.46	2.00	2.00	0.00
1,200.00	4.00	344.169	1,199.84	6.71	-1.90	1.86	2.00	2.00	0.00
1,300.00	6.00	344.169	1,299.45	15.10	-4.28	4.17	2.00	2.00	0.00
1,400.00	8.00	344.169	1,398.70	26.82	-7.61	7.42	2.00	2.00	0.00
1,500.00	10.00	344.169	1,497.47	41.87	-11.87	11.58	2.00	2.00	0.00
1,600.00	12.00	344.169	1,595.62	60.23	-17.08	16.65	2.00	2.00	0.00
1,700.00	14.00	344.169	1,693.06	81.87	-23.21	22.64	2.00	2.00	0.00
1,800.00	16.00	344.169	1,789.64	106.77	-30.27	29.52	2.00	2.00	0.00
1,900.00	18.00	344.169	1,885.27	134.89	-38.25	37.30	2.00	2.00	0.00
2,000.00	20.00	344.169	1,979.82	166.21	-47.13	45.96	2.00	2.00	0.00
2,100.00	22.00	344.169	2,073.17	200.69	-56.91	55.49	2.00	2.00	0.00
2,200.00	24.00	344.169	2,165.21	238.28	-67.57	65.88	2.00	2.00	0.00
2,300.00	26.00	344.169	2,255.84	278.94	-79.09	77.13	2.00	2.00	0.00
2,336.07	26.72	344.169	2,288.16	294.35	-83.46	81.39	2.00	2.00	0.00
Start 300.95 hold at 2336.07 MD									
2,400.00	26.72	344.169	2,345.26	322.00	-91.31	89.03	0.00	0.00	0.00
2,500.00	26.72	344.169	2,434.58	365.26	-103.57	100.99	0.00	0.00	0.00
2,600.00	26.72	344.169	2,523.90	408.52	-115.84	112.96	0.00	0.00	0.00
2,637.02	26.72	344.169	2,556.97	424.54	-120.38	117.38	0.00	0.00	0.00
Start Drop -1.00									
2,700.00	26.09	344.169	2,613.38	451.48	-128.02	124.84	1.00	-1.00	0.00
2,800.00	25.09	344.169	2,703.57	493.04	-139.81	136.33	1.00	-1.00	0.00
2,900.00	24.09	344.169	2,794.49	533.07	-151.16	147.40	1.00	-1.00	0.00
3,000.00	23.09	344.169	2,886.14	571.58	-162.08	158.04	1.00	-1.00	0.00
3,100.00	22.09	344.169	2,978.46	608.54	-172.56	168.26	1.00	-1.00	0.00
3,200.00	21.09	344.169	3,071.44	643.94	-182.59	178.05	1.00	-1.00	0.00
3,300.00	20.09	344.169	3,165.05	677.78	-192.19	187.41	1.00	-1.00	0.00
3,400.00	19.09	344.169	3,259.26	710.03	-201.34	196.32	1.00	-1.00	0.00
3,500.00	18.09	344.169	3,354.04	740.71	-210.03	204.81	1.00	-1.00	0.00
3,600.00	17.09	344.169	3,449.36	769.78	-218.28	212.85	1.00	-1.00	0.00
3,700.00	16.09	344.169	3,545.20	797.26	-226.07	220.44	1.00	-1.00	0.00
3,800.00	15.09	344.169	3,641.52	823.11	-233.40	227.59	1.00	-1.00	0.00
3,900.00	14.09	344.169	3,738.29	847.35	-240.27	234.29	1.00	-1.00	0.00
4,000.00	13.09	344.169	3,835.49	869.96	-246.68	240.54	1.00	-1.00	0.00
4,100.00	12.09	344.169	3,933.08	890.93	-252.63	246.34	1.00	-1.00	0.00
4,200.00	11.09	344.169	4,031.04	910.26	-258.11	251.69	1.00	-1.00	0.00
4,300.00	10.09	344.169	4,129.34	927.95	-263.13	256.58	1.00	-1.00	0.00
4,400.00	9.09	344.169	4,227.94	943.98	-267.67	261.01	1.00	-1.00	0.00
4,500.00	8.09	344.169	4,326.82	958.35	-271.75	264.98	1.00	-1.00	0.00
4,582.93	7.26	344.169	4,409.00	969.01	-274.77	267.93	1.00	-1.00	0.00
SHANNON									
4,600.00	7.09	344.169	4,425.94	971.06	-275.35	268.50	1.00	-1.00	0.00

Database:	Casper District	Local Co-ordinate Reference:	Well Kunsemiller 5-61-20-0801B2B
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 5-61-20-0801B2B	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)
4,700.00	6.09	344.169	4,525.27	982.10	-278.48	271.55	1.00	-1.00	0.00
4,800.00	5.09	344.169	4,624.80	991.48	-281.14	274.14	1.00	-1.00	0.00
4,829.31	4.80	344.169	4,654.00	993.91	-281.83	274.82	1.00	-1.00	0.00
BASE OF FOX HILLS									
4,900.00	4.09	344.169	4,724.48	999.18	-283.33	276.27	1.00	-1.00	0.00
5,000.00	3.09	344.169	4,824.28	1,005.21	-285.03	277.94	1.00	-1.00	0.00
5,100.00	2.09	344.169	4,924.17	1,009.56	-286.27	279.14	1.00	-1.00	0.00
5,200.00	1.09	344.169	5,024.13	1,012.23	-287.03	279.88	1.00	-1.00	0.00
5,300.00	0.09	344.169	5,124.13	1,013.22	-287.31	280.16	1.00	-1.00	0.00
5,309.17	0.00	0.000	5,133.30	1,013.23	-287.31	280.16	1.00	-1.00	0.00
Start 541.24 hold at 5309.17 MD									
5,400.00	0.00	0.000	5,224.13	1,013.23	-287.31	280.16	0.00	0.00	0.00
5,500.00	0.00	0.000	5,324.13	1,013.23	-287.31	280.16	0.00	0.00	0.00
5,600.00	0.00	0.000	5,424.13	1,013.23	-287.31	280.16	0.00	0.00	0.00
5,700.00	0.00	0.000	5,524.13	1,013.23	-287.31	280.16	0.00	0.00	0.00
5,800.00	0.00	0.000	5,624.13	1,013.23	-287.31	280.16	0.00	0.00	0.00
5,850.41	0.00	0.000	5,674.54	1,013.23	-287.31	280.16	0.00	0.00	0.00
Start DLS 12.00 TFO 269.59									
5,900.00	5.95	269.593	5,724.04	1,013.21	-289.88	282.73	12.00	12.00	0.00
6,000.00	17.95	269.593	5,821.69	1,013.07	-310.55	303.40	12.00	12.00	0.00
6,061.70	25.35	269.593	5,879.00	1,012.90	-333.30	326.15	12.00	12.00	0.00
SHARON SPRINGS									
6,100.00	29.95	269.593	5,912.92	1,012.78	-351.07	343.92	12.00	12.00	0.00
6,180.56	39.62	269.593	5,979.00	1,012.45	-396.97	389.82	12.00	12.00	0.00
NIORARA									
6,200.00	41.95	269.593	5,993.72	1,012.36	-409.67	402.52	12.00	12.00	0.00
6,300.00	53.95	269.593	6,060.57	1,011.84	-483.79	476.64	12.00	12.00	0.00
6,362.61	61.46	269.593	6,094.00	1,011.46	-536.68	529.53	12.00	12.00	0.00
TOP "B" TARGET									
6,400.00	65.95	269.593	6,110.56	1,011.22	-570.19	563.04	12.00	12.00	0.00
6,461.71	73.36	269.593	6,132.00	1,010.81	-628.01	620.86	12.00	12.00	0.00
LANDING POINT									
6,493.12	77.12	269.593	6,140.00	1,010.60	-658.37	651.23	12.00	12.00	0.00
BASE "B" TARGET									
6,500.00	77.95	269.593	6,141.49	1,010.55	-665.09	657.95	12.00	12.00	0.00
6,597.72	89.68	269.593	6,152.00	1,009.86	-762.07	754.93	12.00	12.00	0.00
Start 9693.49 hold at 6597.72 MD									
6,600.00	89.68	269.593	6,152.01	1,009.84	-764.35	757.21	0.00	0.00	0.00
6,700.00	89.68	269.593	6,152.57	1,009.13	-864.35	857.21	0.00	0.00	0.00
6,800.00	89.68	269.593	6,153.14	1,008.42	-964.34	957.21	0.00	0.00	0.00
6,900.00	89.68	269.593	6,153.70	1,007.71	-1,064.34	1,057.21	0.00	0.00	0.00
7,000.00	89.68	269.593	6,154.27	1,007.00	-1,164.33	1,157.20	0.00	0.00	0.00
7,100.00	89.68	269.593	6,154.83	1,006.29	-1,264.33	1,257.20	0.00	0.00	0.00
7,200.00	89.68	269.593	6,155.39	1,005.58	-1,364.33	1,357.20	0.00	0.00	0.00
7,300.00	89.68	269.593	6,155.96	1,004.87	-1,464.32	1,457.20	0.00	0.00	0.00
7,400.00	89.68	269.593	6,156.52	1,004.16	-1,564.32	1,557.20	0.00	0.00	0.00
7,500.00	89.68	269.593	6,157.09	1,003.45	-1,664.31	1,657.20	0.00	0.00	0.00
7,600.00	89.68	269.593	6,157.65	1,002.74	-1,764.31	1,757.20	0.00	0.00	0.00
7,700.00	89.68	269.593	6,158.21	1,002.03	-1,864.31	1,857.19	0.00	0.00	0.00
7,800.00	89.68	269.593	6,158.78	1,001.32	-1,964.30	1,957.19	0.00	0.00	0.00
7,900.00	89.68	269.593	6,159.34	1,000.61	-2,064.30	2,057.19	0.00	0.00	0.00
8,000.00	89.68	269.593	6,159.91	999.90	-2,164.29	2,157.19	0.00	0.00	0.00
8,100.00	89.68	269.593	6,160.47	999.19	-2,264.29	2,257.19	0.00	0.00	0.00

Database:	Casper District	Local Co-ordinate Reference:	Well Kunsemiller 5-61-20-0801B2B
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 5-61-20-0801B2B	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	89.68	269.593	6,161.03	998.48	-2,364.28	2,357.19	0.00	0.00	0.00
8,300.00	89.68	269.593	6,161.60	997.77	-2,464.28	2,457.18	0.00	0.00	0.00
8,400.00	89.68	269.593	6,162.16	997.06	-2,564.28	2,557.18	0.00	0.00	0.00
8,500.00	89.68	269.593	6,162.72	996.35	-2,664.27	2,657.18	0.00	0.00	0.00
8,600.00	89.68	269.593	6,163.29	995.64	-2,764.27	2,757.18	0.00	0.00	0.00
8,700.00	89.68	269.593	6,163.85	994.93	-2,864.26	2,857.18	0.00	0.00	0.00
8,800.00	89.68	269.593	6,164.42	994.22	-2,964.26	2,957.18	0.00	0.00	0.00
8,900.00	89.68	269.593	6,164.98	993.51	-3,064.26	3,057.17	0.00	0.00	0.00
9,000.00	89.68	269.593	6,165.54	992.80	-3,164.25	3,157.17	0.00	0.00	0.00
9,100.00	89.68	269.593	6,166.11	992.09	-3,264.25	3,257.17	0.00	0.00	0.00
9,200.00	89.68	269.593	6,166.67	991.38	-3,364.24	3,357.17	0.00	0.00	0.00
9,300.00	89.68	269.593	6,167.24	990.67	-3,464.24	3,457.17	0.00	0.00	0.00
9,400.00	89.68	269.593	6,167.80	989.96	-3,564.24	3,557.17	0.00	0.00	0.00
9,500.00	89.68	269.593	6,168.36	989.25	-3,664.23	3,657.17	0.00	0.00	0.00
9,600.00	89.68	269.593	6,168.93	988.54	-3,764.23	3,757.16	0.00	0.00	0.00
9,700.00	89.68	269.593	6,169.49	987.83	-3,864.22	3,857.16	0.00	0.00	0.00
9,800.00	89.68	269.593	6,170.06	987.12	-3,964.22	3,957.16	0.00	0.00	0.00
9,900.00	89.68	269.593	6,170.62	986.41	-4,064.22	4,057.16	0.00	0.00	0.00
10,000.00	89.68	269.593	6,171.18	985.70	-4,164.21	4,157.16	0.00	0.00	0.00
10,100.00	89.68	269.593	6,171.75	984.99	-4,264.21	4,257.16	0.00	0.00	0.00
10,200.00	89.68	269.593	6,172.31	984.28	-4,364.20	4,357.15	0.00	0.00	0.00
10,300.00	89.68	269.593	6,172.87	983.57	-4,464.20	4,457.15	0.00	0.00	0.00
10,400.00	89.68	269.593	6,173.44	982.86	-4,564.19	4,557.15	0.00	0.00	0.00
10,500.00	89.68	269.593	6,174.00	982.15	-4,664.19	4,657.15	0.00	0.00	0.00
10,600.00	89.68	269.593	6,174.57	981.44	-4,764.19	4,757.15	0.00	0.00	0.00
10,700.00	89.68	269.593	6,175.13	980.73	-4,864.18	4,857.15	0.00	0.00	0.00
10,800.00	89.68	269.593	6,175.69	980.02	-4,964.18	4,957.14	0.00	0.00	0.00
10,900.00	89.68	269.593	6,176.26	979.31	-5,064.17	5,057.14	0.00	0.00	0.00
11,000.00	89.68	269.593	6,176.82	978.60	-5,164.17	5,157.14	0.00	0.00	0.00
11,100.00	89.68	269.593	6,177.39	977.89	-5,264.17	5,257.14	0.00	0.00	0.00
11,200.00	89.68	269.593	6,177.95	977.18	-5,364.16	5,357.14	0.00	0.00	0.00
11,300.00	89.68	269.593	6,178.51	976.47	-5,464.16	5,457.14	0.00	0.00	0.00
11,400.00	89.68	269.593	6,179.08	975.76	-5,564.15	5,557.13	0.00	0.00	0.00
11,500.00	89.68	269.593	6,179.64	975.05	-5,664.15	5,657.13	0.00	0.00	0.00
11,600.00	89.68	269.593	6,180.21	974.34	-5,764.15	5,757.13	0.00	0.00	0.00
11,700.00	89.68	269.593	6,180.77	973.63	-5,864.14	5,857.13	0.00	0.00	0.00
11,800.00	89.68	269.593	6,181.33	972.92	-5,964.14	5,957.13	0.00	0.00	0.00
11,900.00	89.68	269.593	6,181.90	972.21	-6,064.13	6,057.13	0.00	0.00	0.00
11,918.19	89.68	269.593	6,182.00	972.09	-6,082.32	6,075.31	0.00	0.00	0.00
TD									
12,000.00	89.68	269.593	6,182.46	971.51	-6,164.13	6,157.13	0.00	0.00	0.00
12,100.00	89.68	269.593	6,183.03	970.80	-6,264.12	6,257.12	0.00	0.00	0.00
12,200.00	89.68	269.593	6,183.59	970.09	-6,364.12	6,357.12	0.00	0.00	0.00
12,300.00	89.68	269.593	6,184.15	969.38	-6,464.12	6,457.12	0.00	0.00	0.00
12,400.00	89.68	269.593	6,184.72	968.67	-6,564.11	6,557.12	0.00	0.00	0.00
12,500.00	89.68	269.593	6,185.28	967.96	-6,664.11	6,657.12	0.00	0.00	0.00
12,600.00	89.68	269.593	6,185.84	967.25	-6,764.10	6,757.12	0.00	0.00	0.00
12,700.00	89.68	269.593	6,186.41	966.54	-6,864.10	6,857.11	0.00	0.00	0.00
12,800.00	89.68	269.593	6,186.97	965.83	-6,964.10	6,957.11	0.00	0.00	0.00
12,900.00	89.68	269.593	6,187.54	965.12	-7,064.09	7,057.11	0.00	0.00	0.00
13,000.00	89.68	269.593	6,188.10	964.41	-7,164.09	7,157.11	0.00	0.00	0.00
13,100.00	89.68	269.593	6,188.66	963.70	-7,264.08	7,257.11	0.00	0.00	0.00
13,200.00	89.68	269.593	6,189.23	962.99	-7,364.08	7,357.11	0.00	0.00	0.00

Database:	Casper District	Local Co-ordinate Reference:	Well Kunsemiller 5-61-20-0801B2B
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 5-61-20-0801B2B	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	89.68	269.593	6,189.79	962.28	-7,464.08	7,457.10	0.00	0.00	0.00
13,400.00	89.68	269.593	6,190.36	961.57	-7,564.07	7,557.10	0.00	0.00	0.00
13,500.00	89.68	269.593	6,190.92	960.86	-7,664.07	7,657.10	0.00	0.00	0.00
13,600.00	89.68	269.593	6,191.48	960.15	-7,764.06	7,757.10	0.00	0.00	0.00
13,700.00	89.68	269.593	6,192.05	959.44	-7,864.06	7,857.10	0.00	0.00	0.00
13,800.00	89.68	269.593	6,192.61	958.73	-7,964.05	7,957.10	0.00	0.00	0.00
13,900.00	89.68	269.593	6,193.18	958.02	-8,064.05	8,057.10	0.00	0.00	0.00
14,000.00	89.68	269.593	6,193.74	957.31	-8,164.05	8,157.09	0.00	0.00	0.00
14,100.00	89.68	269.593	6,194.30	956.60	-8,264.04	8,257.09	0.00	0.00	0.00
14,200.00	89.68	269.593	6,194.87	955.89	-8,364.04	8,357.09	0.00	0.00	0.00
14,300.00	89.68	269.593	6,195.43	955.18	-8,464.03	8,457.09	0.00	0.00	0.00
14,400.00	89.68	269.593	6,196.00	954.47	-8,564.03	8,557.09	0.00	0.00	0.00
14,500.00	89.68	269.593	6,196.56	953.76	-8,664.03	8,657.09	0.00	0.00	0.00
14,600.00	89.68	269.593	6,197.12	953.05	-8,764.02	8,757.08	0.00	0.00	0.00
14,700.00	89.68	269.593	6,197.69	952.34	-8,864.02	8,857.08	0.00	0.00	0.00
14,800.00	89.68	269.593	6,198.25	951.63	-8,964.01	8,957.08	0.00	0.00	0.00
14,900.00	89.68	269.593	6,198.81	950.92	-9,064.01	9,057.08	0.00	0.00	0.00
15,000.00	89.68	269.593	6,199.38	950.21	-9,164.01	9,157.08	0.00	0.00	0.00
15,100.00	89.68	269.593	6,199.94	949.50	-9,264.00	9,257.08	0.00	0.00	0.00
15,200.00	89.68	269.593	6,200.51	948.79	-9,364.00	9,357.07	0.00	0.00	0.00
15,300.00	89.68	269.593	6,201.07	948.08	-9,463.99	9,457.07	0.00	0.00	0.00
15,400.00	89.68	269.593	6,201.63	947.37	-9,563.99	9,557.07	0.00	0.00	0.00
15,500.00	89.68	269.593	6,202.20	946.66	-9,663.98	9,657.07	0.00	0.00	0.00
15,600.00	89.68	269.593	6,202.76	945.95	-9,763.98	9,757.07	0.00	0.00	0.00
15,700.00	89.68	269.593	6,203.33	945.24	-9,863.98	9,857.07	0.00	0.00	0.00
15,800.00	89.68	269.593	6,203.89	944.53	-9,963.97	9,957.07	0.00	0.00	0.00
15,900.00	89.68	269.593	6,204.45	943.82	-10,063.97	10,057.06	0.00	0.00	0.00
16,000.00	89.68	269.593	6,205.02	943.11	-10,163.96	10,157.06	0.00	0.00	0.00
16,100.00	89.68	269.593	6,205.58	942.40	-10,263.96	10,257.06	0.00	0.00	0.00
16,200.00	89.68	269.593	6,206.15	941.69	-10,363.96	10,357.06	0.00	0.00	0.00
16,291.21	89.68	269.593	6,206.66	941.04	-10,455.16	10,448.27	0.00	0.00	0.00
Start DLS 0.87 TFO -90.15									
16,300.00	89.68	269.516	6,206.71	940.97	-10,463.95	10,457.06	0.87	0.00	-0.87
16,351.38	89.68	269.068	6,207.00	940.34	-10,515.33	10,508.43	0.87	0.00	-0.87
TD at 16351.38									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
5-61-20-0801B2B LP - hit/miss target - Shape - Point	0.00	0.000	6,152.00	1,009.87	-762.07	1,388,876.82	3,355,029.26	40° 23' 37.910 N	104° 13' 31.181 W
- plan misses target center by 0.01ft at 6597.72ft MD (6152.00 TVD, 1009.86 N, -762.07 E)									
5-61-20-0801B2B BTM () - plan hits target center - Point	0.00	0.000	6,206.66	941.04	-10,455.16	1,388,668.37	3,345,338.19	40° 23' 37.208 N	104° 15' 36.461 W
5-61-20-0801B2B PBHL - plan hits target center - Point	0.00	0.000	6,207.00	940.34	-10,515.33	1,388,666.80	3,345,278.04	40° 23' 37.201 N	104° 15' 37.238 W

Database:	Casper District	Local Co-ordinate Reference:	Well Kunsemiller 5-61-20-0801B2B
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 5-61-20-0801B2B	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan 3		

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
4,582.93	4,409.00	SHANNON		0.00	
4,829.31	4,654.00	BASE OF FOX HILLS		0.00	
6,061.70	5,879.00	SHARON SPRINGS		0.00	
6,180.56	5,979.00	NIOBRARA		0.00	
6,362.61	6,094.00	TOP "B" TARGET		0.00	
6,461.71	6,132.00	LANDING POINT		0.00	
6,493.12	6,140.00	BASE "B" TARGET		0.00	
11,918.19	6,182.00	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
2,336.07	2,288.16	294.35	-83.46	Start 300.95 hold at 2336.07 MD
2,637.02	2,556.97	424.54	-120.38	Start Drop -1.00
5,309.17	5,133.30	1,013.23	-287.31	Start 541.24 hold at 5309.17 MD
5,850.41	5,674.54	1,013.23	-287.31	Start DLS 12.00 TFO 269.59
6,597.72	6,152.00	1,009.86	-762.07	Start 9693.49 hold at 6597.72 MD
16,291.21	6,206.66	941.04	-10,455.16	Start DLS 0.87 TFO -90.15
16,351.38	6,207.00	940.34	-10,515.33	TD at 16351.38