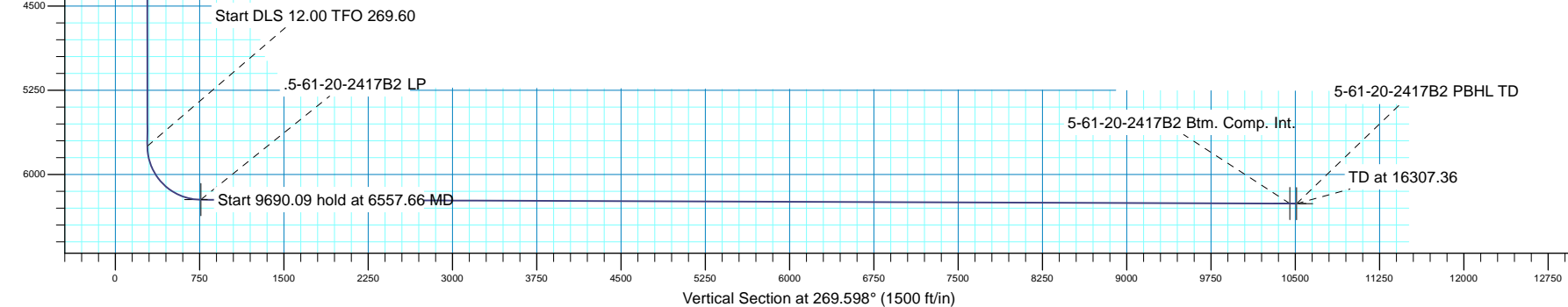
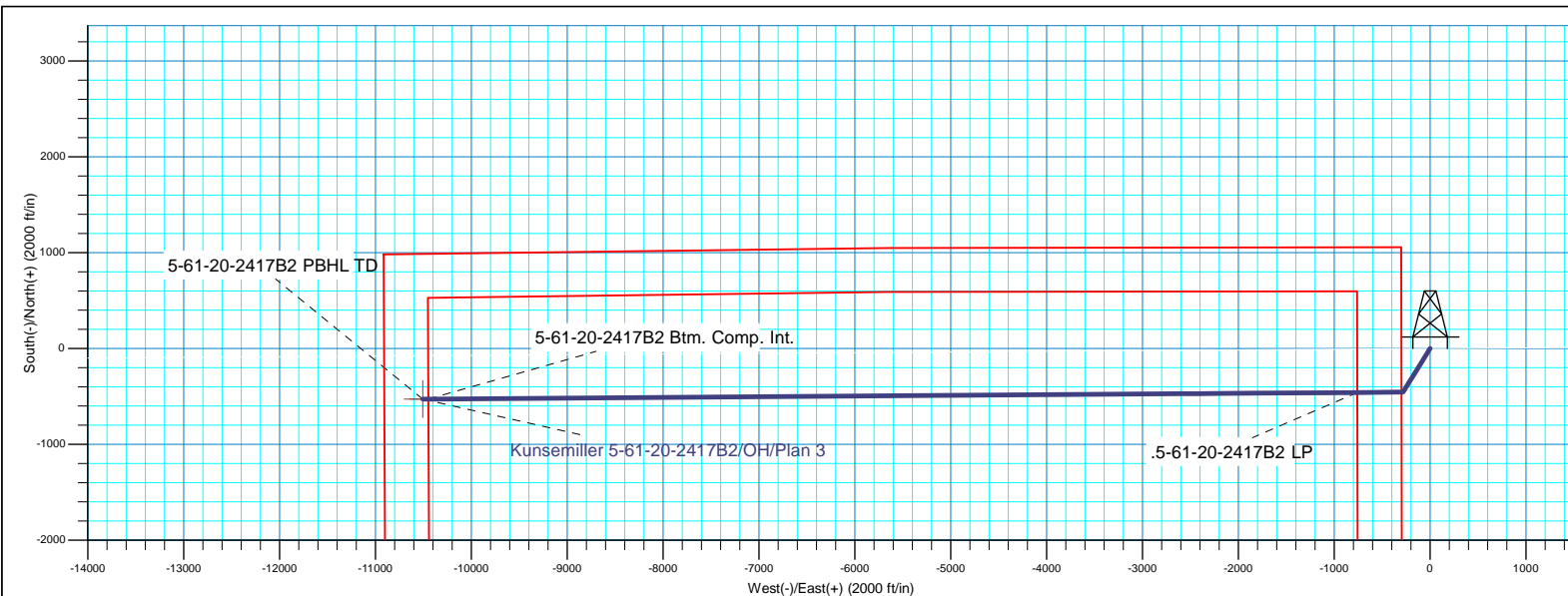
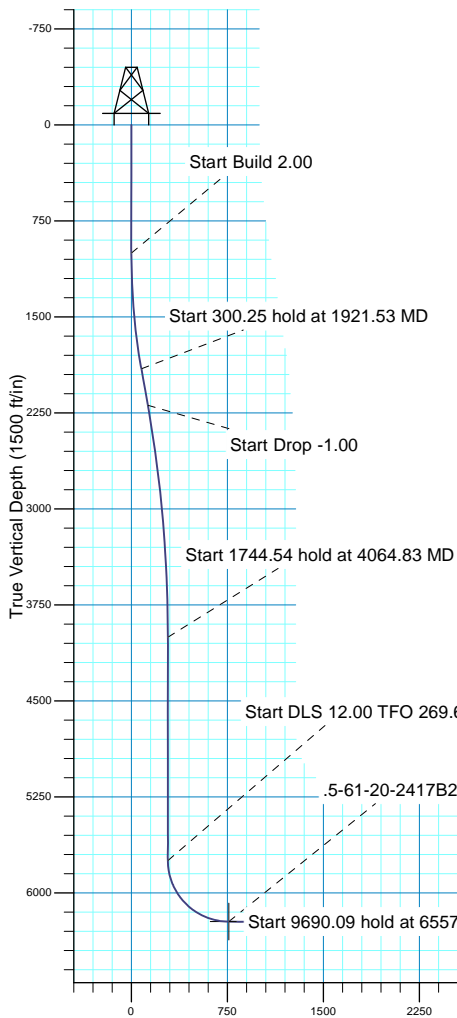

SECTION DETAILS

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
1921.53	18.43	211.820	1905.72	-124.86	-77.48	2.00	211.82	78.35
2221.78	18.43	211.820	2190.57	-205.52	-127.53	0.00	0.00	128.97
4064.83	0.00	0.000	4002.00	-455.23	-282.48	1.00	180.00	285.67
5809.37	0.00	0.000	5746.54	-455.23	-282.48	0.00	0.00	285.67
6557.66	89.79	269.595	6224.00	-458.59	-758.22	12.00	269.60	761.42
16247.75	89.79	269.595	6258.79	-527.06	-10448.00	0.00	0.00	10451.44
16307.36	89.80	270.453	6259.00	-527.04	-10507.61	1.44	89.49	10511.05

WELL DETAILS: Kunsemiller 5-61-20-2417B2

		GL 4638' & KB 16' @ 4654.00ft		4638.00	Longitude
+N/-S	+E/-W	Northing	Easting	Latitude	
0.00	0.00	1387832.49	3355806.46	40° 23' 27.481 N	104° 13' 21.331 W





Bill Barrett Corporation

Bill Barrett Corp.

Weld County, CO NAD 83
Kunsemiller 5-61-20_19NW21 Pad
Kunsemiller 5-61-20-2417B2

OH

Plan: Plan 3

Standard Planning Report

22 June, 2017



Scientific Drilling

www.scientificdrilling.com



Database:	Casper District	Local Co-ordinate Reference:	Well Kunsemiller 5-61-20-2417B2
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 5-61-20-2417B2	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 5-61-20-2417B2, 1051' FNL 300' FWL Sec 21 T5N R61W			
Well Position	+N/-S	-45.59 ft	Northing:	1,387,832.49 usft
	+E/-W	0.00 ft	Easting:	3,355,806.45 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

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	269.598

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	
1,921.53	18.43	211.820	1,905.72	-124.86	-77.48	2.00	2.00	0.00	211.82	
2,221.78	18.43	211.820	2,190.57	-205.52	-127.53	0.00	0.00	0.00	0.00	
4,064.83	0.00	0.000	4,002.00	-455.23	-282.48	1.00	-1.00	0.00	180.00	
5,809.37	0.00	0.000	5,746.54	-455.23	-282.48	0.00	0.00	0.00	0.00	
6,557.66	89.79	269.595	6,224.00	-458.59	-758.22	12.00	12.00	-12.08	269.60	
16,247.75	89.79	269.595	6,258.79	-527.06	-10,448.00	0.00	0.00	0.00	0.00	5-61-20-2417B2 Btm.
16,307.36	89.80	270.453	6,259.00	-527.04	-10,507.61	1.44	0.01	1.44	89.49	5-61-20-2417B2 PBH

Database:	Casper District	Local Co-ordinate Reference:	Well Kunsemiller 5-61-20-2417B2
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 5-61-20-2417B2	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	211.820	1,099.98	-1.48	-0.92	0.93	2.00	2.00	0.00
1,200.00	4.00	211.820	1,199.84	-5.93	-3.68	3.72	2.00	2.00	0.00
1,300.00	6.00	211.820	1,299.45	-13.33	-8.27	8.37	2.00	2.00	0.00
1,400.00	8.00	211.820	1,398.70	-23.69	-14.70	14.87	2.00	2.00	0.00
1,500.00	10.00	211.820	1,497.47	-36.98	-22.95	23.21	2.00	2.00	0.00
1,600.00	12.00	211.820	1,595.62	-53.19	-33.01	33.38	2.00	2.00	0.00
1,700.00	14.00	211.820	1,693.06	-72.31	-44.87	45.37	2.00	2.00	0.00
1,800.00	16.00	211.820	1,789.64	-94.30	-58.51	59.17	2.00	2.00	0.00
1,900.00	18.00	211.820	1,885.27	-119.14	-73.93	74.76	2.00	2.00	0.00
1,921.53	18.43	211.820	1,905.72	-124.86	-77.48	78.35	2.00	2.00	0.00
Start 300.25 hold at 1921.53 MD									
2,000.00	18.43	211.820	1,980.16	-145.94	-90.56	91.58	0.00	0.00	0.00
2,100.00	18.43	211.820	2,075.04	-172.80	-107.23	108.44	0.00	0.00	0.00
2,200.00	18.43	211.820	2,169.91	-199.67	-123.90	125.29	0.00	0.00	0.00
2,221.78	18.43	211.820	2,190.57	-205.52	-127.53	128.97	0.00	0.00	0.00
Start Drop -1.00									
2,300.00	17.65	211.820	2,264.94	-226.10	-140.30	141.88	1.00	-1.00	0.00
2,400.00	16.65	211.820	2,360.50	-251.15	-155.84	157.60	1.00	-1.00	0.00
2,500.00	15.65	211.820	2,456.55	-274.78	-170.51	172.43	1.00	-1.00	0.00
2,600.00	14.65	211.820	2,553.07	-296.99	-184.29	186.37	1.00	-1.00	0.00
2,700.00	13.65	211.820	2,650.04	-317.76	-197.17	199.40	1.00	-1.00	0.00
2,800.00	12.65	211.820	2,747.42	-337.08	-209.17	211.53	1.00	-1.00	0.00
2,900.00	11.65	211.820	2,845.18	-354.97	-220.26	222.75	1.00	-1.00	0.00
3,000.00	10.65	211.820	2,943.29	-371.39	-230.46	233.06	1.00	-1.00	0.00
3,100.00	9.65	211.820	3,041.72	-386.37	-239.75	242.45	1.00	-1.00	0.00
3,200.00	8.65	211.820	3,140.45	-399.88	-248.13	250.93	1.00	-1.00	0.00
3,300.00	7.65	211.820	3,239.44	-411.92	-255.60	258.49	1.00	-1.00	0.00
3,400.00	6.65	211.820	3,338.66	-422.49	-262.17	265.12	1.00	-1.00	0.00
3,500.00	5.65	211.820	3,438.08	-431.59	-267.81	270.83	1.00	-1.00	0.00
3,600.00	4.65	211.820	3,537.68	-439.22	-272.54	275.62	1.00	-1.00	0.00
3,700.00	3.65	211.820	3,637.41	-445.36	-276.36	279.48	1.00	-1.00	0.00
3,800.00	2.65	211.820	3,737.26	-450.03	-279.25	282.40	1.00	-1.00	0.00
3,900.00	1.65	211.820	3,837.19	-453.22	-281.23	284.40	1.00	-1.00	0.00
4,000.00	0.65	211.820	3,937.17	-454.92	-282.29	285.47	1.00	-1.00	0.00
4,064.83	0.00	0.000	4,002.00	-455.23	-282.48	285.67	1.00	-1.00	0.00
Start 1744.54 hold at 4064.83 MD									
4,100.00	0.00	0.000	4,037.17	-455.23	-282.48	285.67	0.00	0.00	0.00
4,200.00	0.00	0.000	4,137.17	-455.23	-282.48	285.67	0.00	0.00	0.00
4,300.00	0.00	0.000	4,237.17	-455.23	-282.48	285.67	0.00	0.00	0.00
4,400.00	0.00	0.000	4,337.17	-455.23	-282.48	285.67	0.00	0.00	0.00
4,476.83	0.00	0.000	4,414.00	-455.23	-282.48	285.67	0.00	0.00	0.00
SHANNON									

Database:	Casper District	Local Co-ordinate Reference:	Well Kunsemiller 5-61-20-2417B2
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 5-61-20-2417B2	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	4,437.17	-455.23	-282.48	285.67	0.00	0.00	0.00
4,600.00	0.00	0.000	4,537.17	-455.23	-282.48	285.67	0.00	0.00	0.00
4,700.00	0.00	0.000	4,637.17	-455.23	-282.48	285.67	0.00	0.00	0.00
4,716.83	0.00	0.000	4,654.00	-455.23	-282.48	285.67	0.00	0.00	0.00
BASE OF FOX HILLS									
4,800.00	0.00	0.000	4,737.17	-455.23	-282.48	285.67	0.00	0.00	0.00
4,900.00	0.00	0.000	4,837.17	-455.23	-282.48	285.67	0.00	0.00	0.00
5,000.00	0.00	0.000	4,937.17	-455.23	-282.48	285.67	0.00	0.00	0.00
5,100.00	0.00	0.000	5,037.17	-455.23	-282.48	285.67	0.00	0.00	0.00
5,200.00	0.00	0.000	5,137.17	-455.23	-282.48	285.67	0.00	0.00	0.00
5,300.00	0.00	0.000	5,237.17	-455.23	-282.48	285.67	0.00	0.00	0.00
5,400.00	0.00	0.000	5,337.17	-455.23	-282.48	285.67	0.00	0.00	0.00
5,500.00	0.00	0.000	5,437.17	-455.23	-282.48	285.67	0.00	0.00	0.00
5,600.00	0.00	0.000	5,537.17	-455.23	-282.48	285.67	0.00	0.00	0.00
5,700.00	0.00	0.000	5,637.17	-455.23	-282.48	285.67	0.00	0.00	0.00
5,800.00	0.00	0.000	5,737.17	-455.23	-282.48	285.67	0.00	0.00	0.00
5,809.37	0.00	0.000	5,746.54	-455.23	-282.48	285.67	0.00	0.00	0.00
Start DLS 12.00 TFO 269.60									
5,900.00	10.88	269.595	5,836.63	-455.29	-291.06	294.24	12.00	12.00	0.00
5,948.81	16.73	269.595	5,884.00	-455.37	-302.69	305.88	12.00	12.00	0.00
SHARON SPRINGS									
6,000.00	22.88	269.595	5,932.14	-455.50	-320.03	323.22	12.00	12.00	0.00
6,057.90	29.82	269.595	5,984.00	-455.68	-345.71	348.90	12.00	12.00	0.00
NIOBRARA									
6,100.00	34.88	269.595	6,019.55	-455.84	-368.23	371.42	12.00	12.00	0.00
6,200.00	46.88	269.595	6,095.03	-456.30	-433.55	436.74	12.00	12.00	0.00
6,300.00	58.88	269.595	6,155.27	-456.86	-513.14	516.33	12.00	12.00	0.00
6,370.15	67.29	269.595	6,187.00	-457.30	-575.63	578.83	12.00	12.00	0.00
TOP "C" TARGET									
6,400.00	70.88	269.595	6,197.65	-457.50	-603.51	606.70	12.00	12.00	0.00
6,435.40	75.12	269.595	6,208.00	-457.74	-637.35	640.55	12.00	12.00	0.00
LANDING POINT									
6,471.82	79.49	269.595	6,216.00	-457.99	-672.87	676.07	12.00	12.00	0.00
BASE "C" TARGET									
6,500.00	82.88	269.595	6,220.32	-458.19	-700.72	703.91	12.00	12.00	0.00
6,557.66	89.79	269.595	6,224.00	-458.59	-758.22	761.42	12.00	12.00	0.00
Start 9690.09 hold at 6557.66 MD									
6,600.00	89.79	269.595	6,224.15	-458.89	-800.56	803.76	0.00	0.00	0.00
6,700.00	89.79	269.595	6,224.51	-459.60	-900.56	903.76	0.00	0.00	0.00
6,800.00	89.79	269.595	6,224.87	-460.30	-1,000.55	1,003.76	0.00	0.00	0.00
6,900.00	89.79	269.595	6,225.23	-461.01	-1,100.55	1,103.76	0.00	0.00	0.00
7,000.00	89.79	269.595	6,225.59	-461.72	-1,200.55	1,203.76	0.00	0.00	0.00
7,100.00	89.79	269.595	6,225.95	-462.42	-1,300.54	1,303.76	0.00	0.00	0.00
7,200.00	89.79	269.595	6,226.31	-463.13	-1,400.54	1,403.76	0.00	0.00	0.00
7,300.00	89.79	269.595	6,226.67	-463.84	-1,500.54	1,503.76	0.00	0.00	0.00
7,400.00	89.79	269.595	6,227.03	-464.54	-1,600.53	1,603.75	0.00	0.00	0.00
7,500.00	89.79	269.595	6,227.38	-465.25	-1,700.53	1,703.75	0.00	0.00	0.00
7,600.00	89.79	269.595	6,227.74	-465.96	-1,800.53	1,803.75	0.00	0.00	0.00
7,700.00	89.79	269.595	6,228.10	-466.66	-1,900.53	1,903.75	0.00	0.00	0.00
7,800.00	89.79	269.595	6,228.46	-467.37	-2,000.52	2,003.75	0.00	0.00	0.00
7,900.00	89.79	269.595	6,228.82	-468.08	-2,100.52	2,103.75	0.00	0.00	0.00
8,000.00	89.79	269.595	6,229.18	-468.78	-2,200.52	2,203.75	0.00	0.00	0.00
8,100.00	89.79	269.595	6,229.54	-469.49	-2,300.51	2,303.75	0.00	0.00	0.00

Database:	Casper District	Local Co-ordinate Reference:	Well Kunsemiller 5-61-20-2417B2
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 5-61-20-2417B2	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	89.79	269.595	6,229.90	-470.20	-2,400.51	2,403.75	0.00	0.00	0.00
8,300.00	89.79	269.595	6,230.26	-470.90	-2,500.51	2,503.75	0.00	0.00	0.00
8,400.00	89.79	269.595	6,230.62	-471.61	-2,600.50	2,603.75	0.00	0.00	0.00
8,500.00	89.79	269.595	6,230.98	-472.32	-2,700.50	2,703.75	0.00	0.00	0.00
8,600.00	89.79	269.595	6,231.33	-473.02	-2,800.50	2,803.75	0.00	0.00	0.00
8,700.00	89.79	269.595	6,231.69	-473.73	-2,900.49	2,903.75	0.00	0.00	0.00
8,800.00	89.79	269.595	6,232.05	-474.44	-3,000.49	3,003.75	0.00	0.00	0.00
8,900.00	89.79	269.595	6,232.41	-475.14	-3,100.49	3,103.75	0.00	0.00	0.00
9,000.00	89.79	269.595	6,232.77	-475.85	-3,200.48	3,203.74	0.00	0.00	0.00
9,100.00	89.79	269.595	6,233.13	-476.56	-3,300.48	3,303.74	0.00	0.00	0.00
9,200.00	89.79	269.595	6,233.49	-477.26	-3,400.48	3,403.74	0.00	0.00	0.00
9,300.00	89.79	269.595	6,233.85	-477.97	-3,500.48	3,503.74	0.00	0.00	0.00
9,400.00	89.79	269.595	6,234.21	-478.68	-3,600.47	3,603.74	0.00	0.00	0.00
9,500.00	89.79	269.595	6,234.57	-479.38	-3,700.47	3,703.74	0.00	0.00	0.00
9,600.00	89.79	269.595	6,234.92	-480.09	-3,800.47	3,803.74	0.00	0.00	0.00
9,700.00	89.79	269.595	6,235.28	-480.80	-3,900.46	3,903.74	0.00	0.00	0.00
9,800.00	89.79	269.595	6,235.64	-481.50	-4,000.46	4,003.74	0.00	0.00	0.00
9,900.00	89.79	269.595	6,236.00	-482.21	-4,100.46	4,103.74	0.00	0.00	0.00
10,000.00	89.79	269.595	6,236.36	-482.92	-4,200.45	4,203.74	0.00	0.00	0.00
10,100.00	89.79	269.595	6,236.72	-483.62	-4,300.45	4,303.74	0.00	0.00	0.00
10,200.00	89.79	269.595	6,237.08	-484.33	-4,400.45	4,403.74	0.00	0.00	0.00
10,300.00	89.79	269.595	6,237.44	-485.04	-4,500.44	4,503.74	0.00	0.00	0.00
10,400.00	89.79	269.595	6,237.80	-485.74	-4,600.44	4,603.74	0.00	0.00	0.00
10,456.80	89.79	269.595	6,238.00	-486.14	-4,657.24	4,660.53	0.00	0.00	0.00
TD									
10,500.00	89.79	269.595	6,238.16	-486.45	-4,700.44	4,703.73	0.00	0.00	0.00
10,600.00	89.79	269.595	6,238.51	-487.16	-4,800.43	4,803.73	0.00	0.00	0.00
10,700.00	89.79	269.595	6,238.87	-487.86	-4,900.43	4,903.73	0.00	0.00	0.00
10,800.00	89.79	269.595	6,239.23	-488.57	-5,000.43	5,003.73	0.00	0.00	0.00
10,900.00	89.79	269.595	6,239.59	-489.28	-5,100.43	5,103.73	0.00	0.00	0.00
11,000.00	89.79	269.595	6,239.95	-489.98	-5,200.42	5,203.73	0.00	0.00	0.00
11,100.00	89.79	269.595	6,240.31	-490.69	-5,300.42	5,303.73	0.00	0.00	0.00
11,200.00	89.79	269.595	6,240.67	-491.40	-5,400.42	5,403.73	0.00	0.00	0.00
11,300.00	89.79	269.595	6,241.03	-492.10	-5,500.41	5,503.73	0.00	0.00	0.00
11,400.00	89.79	269.595	6,241.39	-492.81	-5,600.41	5,603.73	0.00	0.00	0.00
11,500.00	89.79	269.595	6,241.75	-493.52	-5,700.41	5,703.73	0.00	0.00	0.00
11,600.00	89.79	269.595	6,242.10	-494.22	-5,800.40	5,803.73	0.00	0.00	0.00
11,700.00	89.79	269.595	6,242.46	-494.93	-5,900.40	5,903.73	0.00	0.00	0.00
11,800.00	89.79	269.595	6,242.82	-495.64	-6,000.40	6,003.73	0.00	0.00	0.00
11,900.00	89.79	269.595	6,243.18	-496.34	-6,100.39	6,103.73	0.00	0.00	0.00
12,000.00	89.79	269.595	6,243.54	-497.05	-6,200.39	6,203.73	0.00	0.00	0.00
12,100.00	89.79	269.595	6,243.90	-497.76	-6,300.39	6,303.72	0.00	0.00	0.00
12,200.00	89.79	269.595	6,244.26	-498.46	-6,400.38	6,403.72	0.00	0.00	0.00
12,300.00	89.79	269.595	6,244.62	-499.17	-6,500.38	6,503.72	0.00	0.00	0.00
12,400.00	89.79	269.595	6,244.98	-499.88	-6,600.38	6,603.72	0.00	0.00	0.00
12,500.00	89.79	269.595	6,245.34	-500.58	-6,700.37	6,703.72	0.00	0.00	0.00
12,600.00	89.79	269.595	6,245.69	-501.29	-6,800.37	6,803.72	0.00	0.00	0.00
12,700.00	89.79	269.595	6,246.05	-502.00	-6,900.37	6,903.72	0.00	0.00	0.00
12,800.00	89.79	269.595	6,246.41	-502.70	-7,000.37	7,003.72	0.00	0.00	0.00
12,900.00	89.79	269.595	6,246.77	-503.41	-7,100.36	7,103.72	0.00	0.00	0.00
13,000.00	89.79	269.595	6,247.13	-504.12	-7,200.36	7,203.72	0.00	0.00	0.00
13,100.00	89.79	269.595	6,247.49	-504.82	-7,300.36	7,303.72	0.00	0.00	0.00
13,200.00	89.79	269.595	6,247.85	-505.53	-7,400.35	7,403.72	0.00	0.00	0.00

Database:	Casper District	Local Co-ordinate Reference:	Well Kunsemiller 5-61-20-2417B2
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 5-61-20-2417B2	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	89.79	269.595	6,248.21	-506.24	-7,500.35	7,503.72	0.00	0.00	0.00
13,400.00	89.79	269.595	6,248.57	-506.94	-7,600.35	7,603.72	0.00	0.00	0.00
13,500.00	89.79	269.595	6,248.93	-507.65	-7,700.34	7,703.72	0.00	0.00	0.00
13,600.00	89.79	269.595	6,249.28	-508.35	-7,800.34	7,803.72	0.00	0.00	0.00
13,700.00	89.79	269.595	6,249.64	-509.06	-7,900.34	7,903.71	0.00	0.00	0.00
13,800.00	89.79	269.595	6,250.00	-509.77	-8,000.33	8,003.71	0.00	0.00	0.00
13,900.00	89.79	269.595	6,250.36	-510.47	-8,100.33	8,103.71	0.00	0.00	0.00
14,000.00	89.79	269.595	6,250.72	-511.18	-8,200.33	8,203.71	0.00	0.00	0.00
14,100.00	89.79	269.595	6,251.08	-511.89	-8,300.32	8,303.71	0.00	0.00	0.00
14,200.00	89.79	269.595	6,251.44	-512.59	-8,400.32	8,403.71	0.00	0.00	0.00
14,300.00	89.79	269.595	6,251.80	-513.30	-8,500.32	8,503.71	0.00	0.00	0.00
14,400.00	89.79	269.595	6,252.16	-514.01	-8,600.32	8,603.71	0.00	0.00	0.00
14,500.00	89.79	269.595	6,252.52	-514.71	-8,700.31	8,703.71	0.00	0.00	0.00
14,600.00	89.79	269.595	6,252.87	-515.42	-8,800.31	8,803.71	0.00	0.00	0.00
14,700.00	89.79	269.595	6,253.23	-516.13	-8,900.31	8,903.71	0.00	0.00	0.00
14,800.00	89.79	269.595	6,253.59	-516.83	-9,000.30	9,003.71	0.00	0.00	0.00
14,900.00	89.79	269.595	6,253.95	-517.54	-9,100.30	9,103.71	0.00	0.00	0.00
15,000.00	89.79	269.595	6,254.31	-518.25	-9,200.30	9,203.71	0.00	0.00	0.00
15,100.00	89.79	269.595	6,254.67	-518.95	-9,300.29	9,303.71	0.00	0.00	0.00
15,200.00	89.79	269.595	6,255.03	-519.66	-9,400.29	9,403.70	0.00	0.00	0.00
15,300.00	89.79	269.595	6,255.39	-520.37	-9,500.29	9,503.70	0.00	0.00	0.00
15,400.00	89.79	269.595	6,255.75	-521.07	-9,600.28	9,603.70	0.00	0.00	0.00
15,500.00	89.79	269.595	6,256.11	-521.78	-9,700.28	9,703.70	0.00	0.00	0.00
15,600.00	89.79	269.595	6,256.46	-522.49	-9,800.28	9,803.70	0.00	0.00	0.00
15,700.00	89.79	269.595	6,256.82	-523.19	-9,900.27	9,903.70	0.00	0.00	0.00
15,800.00	89.79	269.595	6,257.18	-523.90	-10,000.27	10,003.70	0.00	0.00	0.00
15,900.00	89.79	269.595	6,257.54	-524.61	-10,100.27	10,103.70	0.00	0.00	0.00
16,000.00	89.79	269.595	6,257.90	-525.31	-10,200.26	10,203.70	0.00	0.00	0.00
16,100.00	89.79	269.595	6,258.26	-526.02	-10,300.26	10,303.70	0.00	0.00	0.00
16,200.00	89.79	269.595	6,258.62	-526.73	-10,400.26	10,403.70	0.00	0.00	0.00
16,247.75	89.79	269.595	6,258.79	-527.06	-10,448.00	10,451.44	0.00	0.00	0.00
Start DLS 1.44 TFO 89.49									
16,300.00	89.80	270.348	6,258.97	-527.09	-10,500.26	10,503.70	1.44	0.01	1.44
16,307.36	89.80	270.453	6,259.00	-527.04	-10,507.61	10,511.05	1.44	0.01	1.44
TD at 16307.36									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
5-61-20-2417B2 LP - hit/miss target - Shape - Point	0.00	0.000	6,224.00	-458.59	-758.22	1,387,363.02	3,355,054.93	40° 23' 22.949 N	104° 13' 31.130 W
5-61-20-2417B2 Btm. Cc - plan hits target center - Point	0.00	0.000	6,258.79	-527.06	-10,448.00	1,387,154.98	3,345,367.16	40° 23' 22.250 N	104° 15' 36.360 W
5-61-20-2417B2 PBHL T - plan hits target center - Point	0.00	0.000	6,259.00	-527.04	-10,507.61	1,387,154.14	3,345,307.55	40° 23' 22.250 N	104° 15' 37.130 W

Database:	Casper District	Local Co-ordinate Reference:	Well Kunsemiller 5-61-20-2417B2
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 5-61-20-2417B2	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan 3		

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
4,476.83	4,414.00	SHANNON		0.00	
4,716.83	4,654.00	BASE OF FOX HILLS		0.00	
5,948.81	5,884.00	SHARON SPRINGS		0.00	
6,057.90	5,984.00	NIOBRARA		0.00	
6,370.15	6,187.00	TOP "C" TARGET		0.00	
6,435.40	6,208.00	LANDING POINT		0.00	
6,471.82	6,216.00	BASE "C" TARGET		0.00	
10,456.80	6,238.00	TD		0.00	

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
1,000.00	1,000.00	0.00	0.00	Start Build 2.00	
1,921.53	1,905.72	-124.86	-77.48	Start 300.25 hold at 1921.53 MD	
2,221.78	2,190.57	-205.52	-127.53	Start Drop -1.00	
4,064.83	4,002.00	-455.23	-282.48	Start 1744.54 hold at 4064.83 MD	
5,809.37	5,746.54	-455.23	-282.48	Start DLS 12.00 TFO 269.60	
6,557.66	6,224.00	-458.59	-758.22	Start 9690.09 hold at 6557.66 MD	
16,247.75	6,258.79	-527.06	-10,448.00	Start DLS 1.44 TFO 89.49	
16,307.36	6,259.00	-527.04	-10,507.61	TD at 16307.36	