



PROJECT DETAILS: Weld County, 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
Local North: True

Project: Weld County, CO NAD 83
Site: Kunsemiller 5-61-20_19NW21 Pad
Well: Kunsemiller 5-61-20-2417C2
Wellbore: OH
Design: Plan 2



Azimuths to True North
Magnetic North: 8.13°



Magnetic Field
Strength: 52548.1nT
Dip Angle: 66.98°
Date: 10/6/2016
Model: BGGM2016

Plan: Plan 2 (Kunsemiller 5-61-20-2417C2/OH)

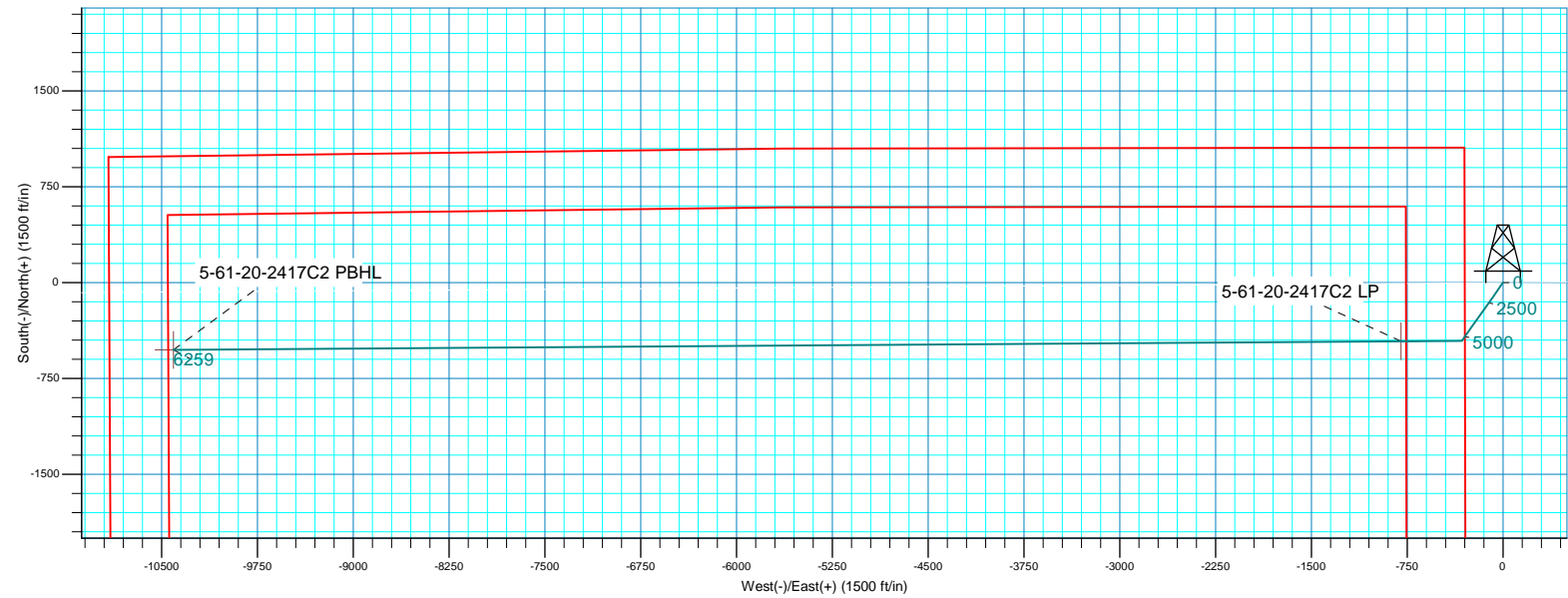
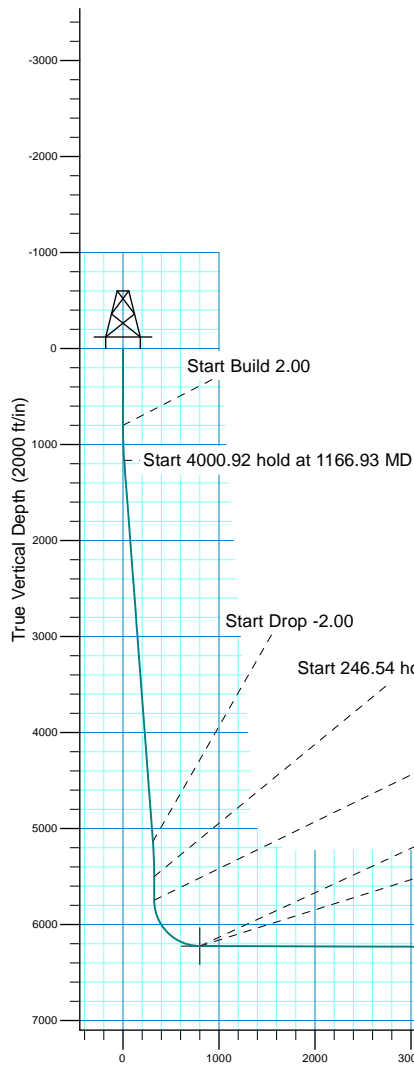
Created By: Seth Burstad Date: 10-7-2016

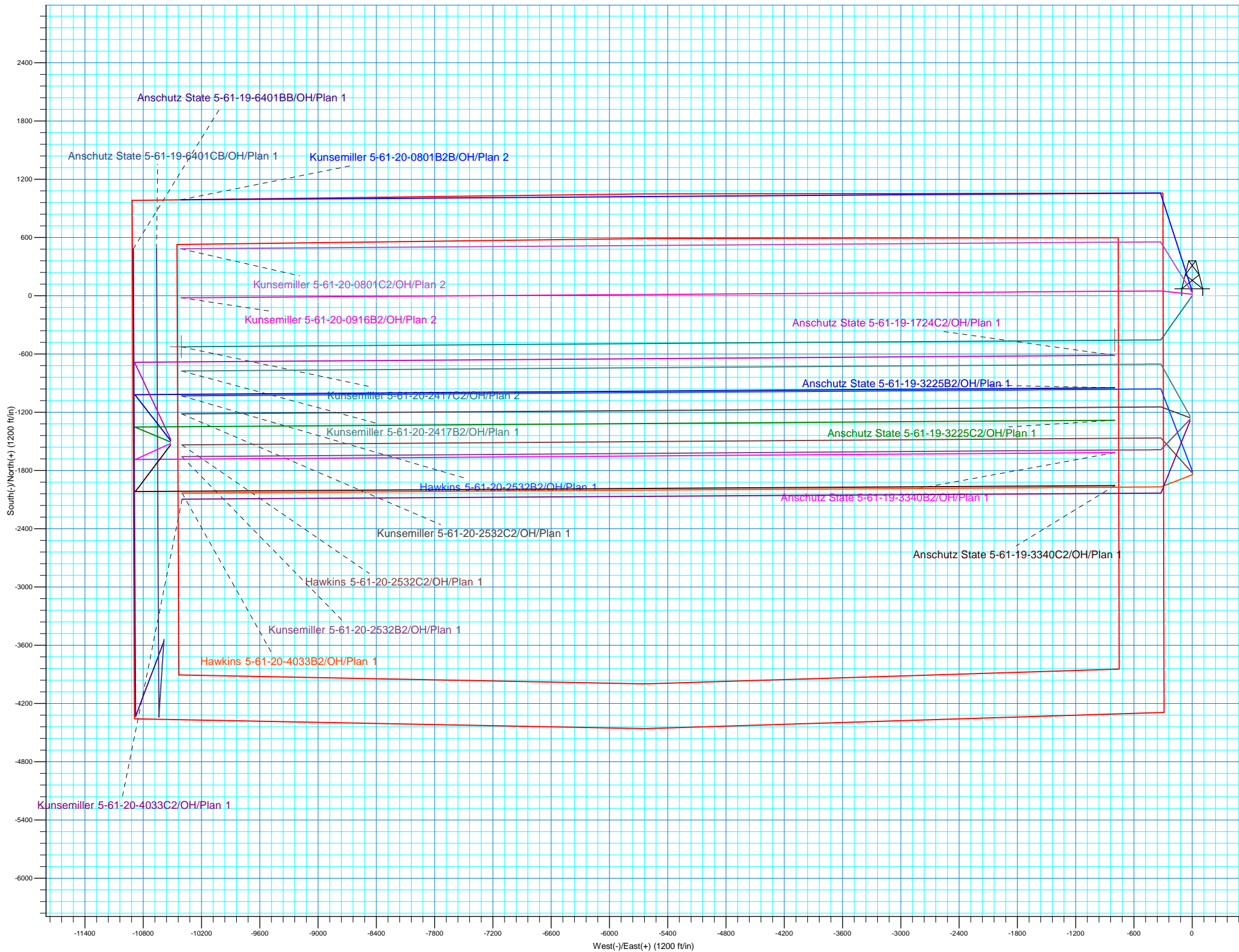
SECTION DETAILS

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
800.00	0.00	0.000	800.00	0.00	0.00	0.00	0.00	0.00
1166.93	7.34	215.323	1165.93	-19.15	-13.57	2.00	215.32	13.70
5167.85	7.34	215.323	5134.07	-436.11	-309.05	0.00	0.00	312.10
5534.78	0.00	0.000	5500.00	-455.26	-322.62	2.00	180.00	325.81
5781.32	0.00	0.000	5746.54	-455.26	-322.62	0.00	0.00	325.81
6529.58	89.79	269.598	6224.00	-458.60	-798.33	12.00	269.60	801.53
16139.44	89.79	269.598	6259.00	-526.00	-10407.89	0.00	0.00	10411.32

WELL DETAILS: Kunsemiller 5-61-20-2417C2

		GL 4638' & KB 16' @ 4654.00ft		4638.00	Longitude
+N/-S	+E/-W	Northing	Easting	Latitude	
0.00	0.00	1387832.50	3355806.46	40° 23' 27.481 N	104° 13' 21.331 W







Bill Barrett Corp.

Weld County, CO NAD 83
Kunsemiller 5-61-20_19NW21 Pad
Kunsemiller 5-61-20-2417C2

OH

Plan: Plan 2

Standard Planning Report

07 October, 2016



Database:	Casper District	Local Co-ordinate Reference:	Well Kunsemiller 5-61-20-2417C2
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 5-61-20-2417C2	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan 2		

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 5-61-20-2417C2, 1051' FNL 300' FWL Sec 21 T5N R61W			
Well Position	+N/-S	-45.58 ft	Northing:	1,387,832.50 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 2			
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	
800.00	0.00	0.000	800.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,166.93	7.34	215.323	1,165.93	-19.15	-13.57	2.00	2.00	0.00	215.32	
5,167.85	7.34	215.323	5,134.07	-436.11	-309.05	0.00	0.00	0.00	0.00	
5,534.78	0.00	0.000	5,500.00	-455.26	-322.62	2.00	-2.00	0.00	180.00	
5,781.32	0.00	0.000	5,746.54	-455.26	-322.62	0.00	0.00	0.00	0.00	
6,529.58	89.79	269.598	6,224.00	-458.60	-798.33	12.00	12.00	-12.08	269.60	
16,139.44	89.79	269.598	6,259.00	-526.00	-10,407.89	0.00	0.00	0.00	0.00	5-61-20-2417C2 PBH

Database:	Casper District	Local Co-ordinate Reference:	Well Kunsemiller 5-61-20-2417C2
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 5-61-20-2417C2	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan 2		

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
Start Build 2.00									
900.00	2.00	215.323	899.98	-1.42	-1.01	1.02	2.00	2.00	0.00
1,000.00	4.00	215.323	999.84	-5.69	-4.03	4.07	2.00	2.00	0.00
1,100.00	6.00	215.323	1,099.45	-12.80	-9.07	9.16	2.00	2.00	0.00
1,166.93	7.34	215.323	1,165.93	-19.15	-13.57	13.70	2.00	2.00	0.00
Start 4000.92 hold at 1166.93 MD									
1,200.00	7.34	215.323	1,198.73	-22.59	-16.01	16.17	0.00	0.00	0.00
1,300.00	7.34	215.323	1,297.91	-33.01	-23.40	23.63	0.00	0.00	0.00
1,400.00	7.34	215.323	1,397.09	-43.44	-30.78	31.09	0.00	0.00	0.00
1,500.00	7.34	215.323	1,496.27	-53.86	-38.17	38.54	0.00	0.00	0.00
1,600.00	7.34	215.323	1,595.45	-64.28	-45.55	46.00	0.00	0.00	0.00
1,700.00	7.34	215.323	1,694.63	-74.70	-52.94	53.46	0.00	0.00	0.00
1,800.00	7.34	215.323	1,793.81	-85.12	-60.32	60.92	0.00	0.00	0.00
1,900.00	7.34	215.323	1,892.99	-95.55	-67.71	68.38	0.00	0.00	0.00
2,000.00	7.34	215.323	1,992.17	-105.97	-75.09	75.84	0.00	0.00	0.00
2,100.00	7.34	215.323	2,091.35	-116.39	-82.48	83.29	0.00	0.00	0.00
2,200.00	7.34	215.323	2,190.54	-126.81	-89.86	90.75	0.00	0.00	0.00
2,300.00	7.34	215.323	2,289.72	-137.23	-97.25	98.21	0.00	0.00	0.00
2,400.00	7.34	215.323	2,388.90	-147.65	-104.64	105.67	0.00	0.00	0.00
2,500.00	7.34	215.323	2,488.08	-158.08	-112.02	113.13	0.00	0.00	0.00
2,600.00	7.34	215.323	2,587.26	-168.50	-119.41	120.59	0.00	0.00	0.00
2,700.00	7.34	215.323	2,686.44	-178.92	-126.79	128.04	0.00	0.00	0.00
2,800.00	7.34	215.323	2,785.62	-189.34	-134.18	135.50	0.00	0.00	0.00
2,900.00	7.34	215.323	2,884.80	-199.76	-141.56	142.96	0.00	0.00	0.00
3,000.00	7.34	215.323	2,983.98	-210.19	-148.95	150.42	0.00	0.00	0.00
3,100.00	7.34	215.323	3,083.16	-220.61	-156.33	157.88	0.00	0.00	0.00
3,200.00	7.34	215.323	3,182.34	-231.03	-163.72	165.34	0.00	0.00	0.00
3,300.00	7.34	215.323	3,281.52	-241.45	-171.10	172.79	0.00	0.00	0.00
3,400.00	7.34	215.323	3,380.71	-251.87	-178.49	180.25	0.00	0.00	0.00
3,500.00	7.34	215.323	3,479.89	-262.29	-185.87	187.71	0.00	0.00	0.00
3,600.00	7.34	215.323	3,579.07	-272.72	-193.26	195.17	0.00	0.00	0.00
3,700.00	7.34	215.323	3,678.25	-283.14	-200.65	202.63	0.00	0.00	0.00
3,800.00	7.34	215.323	3,777.43	-293.56	-208.03	210.09	0.00	0.00	0.00
3,900.00	7.34	215.323	3,876.61	-303.98	-215.42	217.54	0.00	0.00	0.00
4,000.00	7.34	215.323	3,975.79	-314.40	-222.80	225.00	0.00	0.00	0.00
4,100.00	7.34	215.323	4,074.97	-324.82	-230.19	232.46	0.00	0.00	0.00
4,200.00	7.34	215.323	4,174.15	-335.25	-237.57	239.92	0.00	0.00	0.00
4,300.00	7.34	215.323	4,273.33	-345.67	-244.96	247.38	0.00	0.00	0.00
4,400.00	7.34	215.323	4,372.51	-356.09	-252.34	254.84	0.00	0.00	0.00
4,500.00	7.34	215.323	4,471.70	-366.51	-259.73	262.29	0.00	0.00	0.00
4,600.00	7.34	215.323	4,570.88	-376.93	-267.11	269.75	0.00	0.00	0.00
4,700.00	7.34	215.323	4,670.06	-387.36	-274.50	277.21	0.00	0.00	0.00
4,800.00	7.34	215.323	4,769.24	-397.78	-281.88	284.67	0.00	0.00	0.00
4,900.00	7.34	215.323	4,868.42	-408.20	-289.27	292.13	0.00	0.00	0.00
5,000.00	7.34	215.323	4,967.60	-418.62	-296.66	299.59	0.00	0.00	0.00

Database:	Casper District	Local Co-ordinate Reference:	Well Kunsemiller 5-61-20-2417C2
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 5-61-20-2417C2	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan 2		

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)
5,100.00	7.34	215.323	5,066.78	-429.04	-304.04	307.04	0.00	0.00	0.00
5,167.85	7.34	215.323	5,134.07	-436.11	-309.05	312.10	0.00	0.00	0.00
Start Drop -2.00									
5,200.00	6.70	215.323	5,165.98	-439.32	-311.32	314.40	2.00	-2.00	0.00
5,300.00	4.70	215.323	5,265.48	-447.42	-317.06	320.19	2.00	-2.00	0.00
5,400.00	2.70	215.323	5,365.27	-452.67	-320.79	323.96	2.00	-2.00	0.00
5,500.00	0.70	215.323	5,465.22	-455.09	-322.50	325.68	2.00	-2.00	0.00
5,534.78	0.00	0.000	5,500.00	-455.26	-322.62	325.81	2.00	-2.00	0.00
Start 246.54 hold at 5534.78 MD									
5,600.00	0.00	0.000	5,565.22	-455.26	-322.62	325.81	0.00	0.00	0.00
5,700.00	0.00	0.000	5,665.22	-455.26	-322.62	325.81	0.00	0.00	0.00
5,781.32	0.00	0.000	5,746.54	-455.26	-322.62	325.81	0.00	0.00	0.00
Start DLS 12.00 TFO 269.60									
5,800.00	2.24	269.598	5,765.22	-455.26	-322.99	326.17	12.00	12.00	0.00
5,900.00	14.24	269.598	5,864.00	-455.36	-337.29	340.48	12.00	12.00	0.00
6,000.00	26.24	269.598	5,957.66	-455.61	-371.83	375.02	12.00	12.00	0.00
6,100.00	38.24	269.598	6,042.08	-455.98	-425.08	428.27	12.00	12.00	0.00
6,200.00	50.24	269.598	6,113.59	-456.47	-494.72	497.91	12.00	12.00	0.00
6,300.00	62.24	269.598	6,169.06	-457.05	-577.70	580.90	12.00	12.00	0.00
6,400.00	74.24	269.598	6,206.06	-457.70	-670.41	673.60	12.00	12.00	0.00
6,500.00	86.24	269.598	6,222.98	-458.39	-768.78	771.98	12.00	12.00	0.00
6,529.58	89.79	269.598	6,224.00	-458.60	-798.33	801.53	12.00	12.00	0.00
Start 9609.86 hold at 6529.58 MD									
6,600.00	89.79	269.598	6,224.26	-459.09	-868.75	871.95	0.00	0.00	0.00
6,700.00	89.79	269.598	6,224.62	-459.79	-968.75	971.95	0.00	0.00	0.00
6,800.00	89.79	269.598	6,224.99	-460.49	-1,068.75	1,071.95	0.00	0.00	0.00
6,900.00	89.79	269.598	6,225.35	-461.19	-1,168.74	1,171.95	0.00	0.00	0.00
7,000.00	89.79	269.598	6,225.72	-461.90	-1,268.74	1,271.95	0.00	0.00	0.00
7,100.00	89.79	269.598	6,226.08	-462.60	-1,368.74	1,371.95	0.00	0.00	0.00
7,200.00	89.79	269.598	6,226.44	-463.30	-1,468.73	1,471.95	0.00	0.00	0.00
7,300.00	89.79	269.598	6,226.81	-464.00	-1,568.73	1,571.95	0.00	0.00	0.00
7,400.00	89.79	269.598	6,227.17	-464.70	-1,668.73	1,671.95	0.00	0.00	0.00
7,500.00	89.79	269.598	6,227.54	-465.40	-1,768.72	1,771.95	0.00	0.00	0.00
7,600.00	89.79	269.598	6,227.90	-466.10	-1,868.72	1,871.95	0.00	0.00	0.00
7,700.00	89.79	269.598	6,228.26	-466.81	-1,968.72	1,971.95	0.00	0.00	0.00
7,800.00	89.79	269.598	6,228.63	-467.51	-2,068.72	2,071.94	0.00	0.00	0.00
7,900.00	89.79	269.598	6,228.99	-468.21	-2,168.71	2,171.94	0.00	0.00	0.00
8,000.00	89.79	269.598	6,229.36	-468.91	-2,268.71	2,271.94	0.00	0.00	0.00
8,100.00	89.79	269.598	6,229.72	-469.61	-2,368.71	2,371.94	0.00	0.00	0.00
8,200.00	89.79	269.598	6,230.09	-470.31	-2,468.70	2,471.94	0.00	0.00	0.00
8,300.00	89.79	269.598	6,230.45	-471.01	-2,568.70	2,571.94	0.00	0.00	0.00
8,400.00	89.79	269.598	6,230.81	-471.72	-2,668.70	2,671.94	0.00	0.00	0.00
8,500.00	89.79	269.598	6,231.18	-472.42	-2,768.69	2,771.94	0.00	0.00	0.00
8,600.00	89.79	269.598	6,231.54	-473.12	-2,868.69	2,871.94	0.00	0.00	0.00
8,700.00	89.79	269.598	6,231.91	-473.82	-2,968.69	2,971.94	0.00	0.00	0.00
8,800.00	89.79	269.598	6,232.27	-474.52	-3,068.68	3,071.94	0.00	0.00	0.00
8,900.00	89.79	269.598	6,232.63	-475.22	-3,168.68	3,171.94	0.00	0.00	0.00
9,000.00	89.79	269.598	6,233.00	-475.92	-3,268.68	3,271.94	0.00	0.00	0.00
9,100.00	89.79	269.598	6,233.36	-476.62	-3,368.67	3,371.94	0.00	0.00	0.00
9,200.00	89.79	269.598	6,233.73	-477.33	-3,468.67	3,471.94	0.00	0.00	0.00
9,300.00	89.79	269.598	6,234.09	-478.03	-3,568.67	3,571.93	0.00	0.00	0.00
9,400.00	89.79	269.598	6,234.46	-478.73	-3,668.67	3,671.93	0.00	0.00	0.00
9,500.00	89.79	269.598	6,234.82	-479.43	-3,768.66	3,771.93	0.00	0.00	0.00

Database:	Casper District	Local Co-ordinate Reference:	Well Kunsemiller 5-61-20-2417C2
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 5-61-20-2417C2	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan 2		

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)
9,600.00	89.79	269.598	6,235.18	-480.13	-3,868.66	3,871.93	0.00	0.00	0.00
9,700.00	89.79	269.598	6,235.55	-480.83	-3,968.66	3,971.93	0.00	0.00	0.00
9,800.00	89.79	269.598	6,235.91	-481.53	-4,068.65	4,071.93	0.00	0.00	0.00
9,900.00	89.79	269.598	6,236.28	-482.24	-4,168.65	4,171.93	0.00	0.00	0.00
10,000.00	89.79	269.598	6,236.64	-482.94	-4,268.65	4,271.93	0.00	0.00	0.00
10,100.00	89.79	269.598	6,237.00	-483.64	-4,368.64	4,371.93	0.00	0.00	0.00
10,200.00	89.79	269.598	6,237.37	-484.34	-4,468.64	4,471.93	0.00	0.00	0.00
10,300.00	89.79	269.598	6,237.73	-485.04	-4,568.64	4,571.93	0.00	0.00	0.00
10,400.00	89.79	269.598	6,238.10	-485.74	-4,668.63	4,671.93	0.00	0.00	0.00
10,500.00	89.79	269.598	6,238.46	-486.44	-4,768.63	4,771.93	0.00	0.00	0.00
10,600.00	89.79	269.598	6,238.83	-487.15	-4,868.63	4,871.93	0.00	0.00	0.00
10,700.00	89.79	269.598	6,239.19	-487.85	-4,968.62	4,971.93	0.00	0.00	0.00
10,800.00	89.79	269.598	6,239.55	-488.55	-5,068.62	5,071.92	0.00	0.00	0.00
10,900.00	89.79	269.598	6,239.92	-489.25	-5,168.62	5,171.92	0.00	0.00	0.00
11,000.00	89.79	269.598	6,240.28	-489.95	-5,268.62	5,271.92	0.00	0.00	0.00
11,100.00	89.79	269.598	6,240.65	-490.65	-5,368.61	5,371.92	0.00	0.00	0.00
11,200.00	89.79	269.598	6,241.01	-491.35	-5,468.61	5,471.92	0.00	0.00	0.00
11,300.00	89.79	269.598	6,241.38	-492.05	-5,568.61	5,571.92	0.00	0.00	0.00
11,400.00	89.79	269.598	6,241.74	-492.76	-5,668.60	5,671.92	0.00	0.00	0.00
11,500.00	89.79	269.598	6,242.10	-493.46	-5,768.60	5,771.92	0.00	0.00	0.00
11,600.00	89.79	269.598	6,242.47	-494.16	-5,868.60	5,871.92	0.00	0.00	0.00
11,700.00	89.79	269.598	6,242.83	-494.86	-5,968.59	5,971.92	0.00	0.00	0.00
11,800.00	89.79	269.598	6,243.20	-495.56	-6,068.59	6,071.92	0.00	0.00	0.00
11,900.00	89.79	269.598	6,243.56	-496.26	-6,168.59	6,171.92	0.00	0.00	0.00
12,000.00	89.79	269.598	6,243.92	-496.96	-6,268.58	6,271.92	0.00	0.00	0.00
12,100.00	89.79	269.598	6,244.29	-497.67	-6,368.58	6,371.92	0.00	0.00	0.00
12,200.00	89.79	269.598	6,244.65	-498.37	-6,468.58	6,471.92	0.00	0.00	0.00
12,300.00	89.79	269.598	6,245.02	-499.07	-6,568.57	6,571.91	0.00	0.00	0.00
12,400.00	89.79	269.598	6,245.38	-499.77	-6,668.57	6,671.91	0.00	0.00	0.00
12,500.00	89.79	269.598	6,245.75	-500.47	-6,768.57	6,771.91	0.00	0.00	0.00
12,600.00	89.79	269.598	6,246.11	-501.17	-6,868.57	6,871.91	0.00	0.00	0.00
12,700.00	89.79	269.598	6,246.47	-501.87	-6,968.56	6,971.91	0.00	0.00	0.00
12,800.00	89.79	269.598	6,246.84	-502.58	-7,068.56	7,071.91	0.00	0.00	0.00
12,900.00	89.79	269.598	6,247.20	-503.28	-7,168.56	7,171.91	0.00	0.00	0.00
13,000.00	89.79	269.598	6,247.57	-503.98	-7,268.55	7,271.91	0.00	0.00	0.00
13,100.00	89.79	269.598	6,247.93	-504.68	-7,368.55	7,371.91	0.00	0.00	0.00
13,200.00	89.79	269.598	6,248.29	-505.38	-7,468.55	7,471.91	0.00	0.00	0.00
13,300.00	89.79	269.598	6,248.66	-506.08	-7,568.54	7,571.91	0.00	0.00	0.00
13,400.00	89.79	269.598	6,249.02	-506.78	-7,668.54	7,671.91	0.00	0.00	0.00
13,500.00	89.79	269.598	6,249.39	-507.48	-7,768.54	7,771.91	0.00	0.00	0.00
13,600.00	89.79	269.598	6,249.75	-508.19	-7,868.53	7,871.91	0.00	0.00	0.00
13,700.00	89.79	269.598	6,250.12	-508.89	-7,968.53	7,971.91	0.00	0.00	0.00
13,800.00	89.79	269.598	6,250.48	-509.59	-8,068.53	8,071.90	0.00	0.00	0.00
13,900.00	89.79	269.598	6,250.84	-510.29	-8,168.52	8,171.90	0.00	0.00	0.00
14,000.00	89.79	269.598	6,251.21	-510.99	-8,268.52	8,271.90	0.00	0.00	0.00
14,100.00	89.79	269.598	6,251.57	-511.69	-8,368.52	8,371.90	0.00	0.00	0.00
14,200.00	89.79	269.598	6,251.94	-512.39	-8,468.52	8,471.90	0.00	0.00	0.00
14,300.00	89.79	269.598	6,252.30	-513.10	-8,568.51	8,571.90	0.00	0.00	0.00
14,400.00	89.79	269.598	6,252.67	-513.80	-8,668.51	8,671.90	0.00	0.00	0.00
14,500.00	89.79	269.598	6,253.03	-514.50	-8,768.51	8,771.90	0.00	0.00	0.00
14,600.00	89.79	269.598	6,253.39	-515.20	-8,868.50	8,871.90	0.00	0.00	0.00
14,700.00	89.79	269.598	6,253.76	-515.90	-8,968.50	8,971.90	0.00	0.00	0.00
14,800.00	89.79	269.598	6,254.12	-516.60	-9,068.50	9,071.90	0.00	0.00	0.00
14,900.00	89.79	269.598	6,254.49	-517.30	-9,168.49	9,171.90	0.00	0.00	0.00

Database:	Casper District	Local Co-ordinate Reference:	Well Kunsemiller 5-61-20-2417C2
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 5-61-20-2417C2	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan 2		

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)
15,000.00	89.79	269.598	6,254.85	-518.01	-9,268.49	9,271.90	0.00	0.00	0.00
15,100.00	89.79	269.598	6,255.21	-518.71	-9,368.49	9,371.90	0.00	0.00	0.00
15,200.00	89.79	269.598	6,255.58	-519.41	-9,468.48	9,471.90	0.00	0.00	0.00
15,300.00	89.79	269.598	6,255.94	-520.11	-9,568.48	9,571.89	0.00	0.00	0.00
15,400.00	89.79	269.598	6,256.31	-520.81	-9,668.48	9,671.89	0.00	0.00	0.00
15,500.00	89.79	269.598	6,256.67	-521.51	-9,768.48	9,771.89	0.00	0.00	0.00
15,600.00	89.79	269.598	6,257.04	-522.21	-9,868.47	9,871.89	0.00	0.00	0.00
15,700.00	89.79	269.598	6,257.40	-522.91	-9,968.47	9,971.89	0.00	0.00	0.00
15,800.00	89.79	269.598	6,257.76	-523.62	-10,068.47	10,071.89	0.00	0.00	0.00
15,900.00	89.79	269.598	6,258.13	-524.32	-10,168.46	10,171.89	0.00	0.00	0.00
16,000.00	89.79	269.598	6,258.49	-525.02	-10,268.46	10,271.89	0.00	0.00	0.00
16,100.00	89.79	269.598	6,258.86	-525.72	-10,368.46	10,371.89	0.00	0.00	0.00
16,139.44	89.79	269.598	6,259.00	-526.00	-10,407.89	10,411.33	0.00	0.00	0.00
TD at 16139.44									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
5-61-20-2417C2 LP	0.00	0.000	6,224.00	-458.60	-798.33	1,387,362.45	3,355,014.82	40° 23' 22.949 N	104° 13' 31.649 W
- plan hits target center									
- Point									
5-61-20-2417C2 PBHL	0.00	0.000	6,259.00	-526.00	-10,407.89	1,387,156.63	3,345,407.25	40° 23' 22.261 N	104° 15' 35.842 W
- plan hits target center									
- Point									

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
4,441.83	4,414.00	SHANNON		0.00		
4,683.81	4,654.00	BASE OF FOX HILLS		0.00		
5,920.75	5,884.00	SHARON SPRINGS		0.00		
6,029.85	5,984.00	NIOBRARA		0.00		
6,342.10	6,187.00	TOP "C" TARGET		0.00		
6,407.34	6,208.00	LANDING POINT		0.00		
6,443.77	6,216.00	BASE "C" TARGET		0.00		
10,373.25	6,238.00	TD		0.00		

Database:	Casper District	Local Co-ordinate Reference:	Well Kunsemiller 5-61-20-2417C2
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 5-61-20-2417C2	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan 2		

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
800.00	800.00	0.00	0.00	Start Build 2.00
1,166.93	1,165.93	-19.15	-13.57	Start 4000.92 hold at 1166.93 MD
5,167.85	5,134.07	-436.11	-309.05	Start Drop -2.00
5,534.78	5,500.00	-455.26	-322.62	Start 246.54 hold at 5534.78 MD
5,781.32	5,746.54	-455.26	-322.62	Start DLS 12.00 TFO 269.60
6,529.58	6,224.00	-458.60	-798.33	Start 9609.86 hold at 6529.58 MD
16,139.44	6,259.00	-526.00	-10,407.89	TD at 16139.44