



Bill Barrett Corporation

Bill Barrett Corp.

Weld County, CO NAD 83

Anschutz State 5-62-22_23 NWNW Pad

Anschutz State 5-62-22-0164BB

OH

Design: OH

Standard Survey Report

25 November, 2015



Scientific Drilling

www.scientificdrilling.com



Company:	Bill Barrett Corp.	Local Co-ordinate Reference:	Well Anschutz State 5-62-22-0164BB
Project:	Weld County, CO NAD 83	TVD Reference:	GL 4730' & KB 16' @ 4746.00ft (Cade 24)
Site:	Anschutz State 5-62-22_23 NWNW Pad	MD Reference:	GL 4730' & KB 16' @ 4746.00ft (Cade 24)
Well:	Anschutz State 5-62-22-0164BB	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Casper District

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		Anschutz State 5-62-22_23 NWNW Pad, Site Center: AS 5-62-22-1609B2			
Site Position:		Northing:	1,387,395.10 usft	Latitude:	40° 23' 26.801 N
From:	Lat/Long	Easting:	3,329,229.54 usft	Longitude:	104° 19' 4.861 W
Position Uncertainty:	0.00 ft	Slot Radius:	13.200 in	Grid Convergence:	0.76 °

Well	Anschutz State 5-62-22-0164BB, 600' FNL 375' FWL Sec 22 T5N R62W					
Well Position	+N/-S	0.00 ft	Northing:	1,387,455.55 usft	Latitude:	40° 23' 27.398 N
	+E/-W	0.00 ft	Easting:	3,329,229.57 usft	Longitude:	104° 19' 4.850 W
Position Uncertainty		0.00 ft	Wellhead Elevation:	0.00 ft	Ground Level:	4,730.00 ft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2015	10/13/2015	8.27	67.03	52,649

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	180.86	

Survey Program	Date	11/25/2015			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
100.00	725.00	Survey #1 - Surface (OH)	NS-GYRO-MS	North sensing gyrocompassing m/s	
886.00	10,925.00	Survey #2 - Vertical / Curve / Lateral (OH)	SDI MWD	SDI MWD - Standard ver 1.0.1	

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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
100.00	0.45	258.01	100.00	-0.08	-0.38	0.09	0.45	0.45	0.00	
First MS Survey										
200.00	0.39	251.88	200.00	-0.27	-1.09	0.29	0.07	-0.06	-6.13	
300.00	0.06	82.78	300.00	-0.37	-1.36	0.39	0.45	-0.33	-169.10	
400.00	0.16	265.05	400.00	-0.37	-1.45	0.40	0.22	0.10	-177.73	
500.00	0.24	3.27	500.00	-0.18	-1.58	0.20	0.31	0.08	98.22	
600.00	0.30	34.04	599.99	0.25	-1.42	-0.23	0.15	0.06	30.77	
700.00	0.30	322.47	699.99	0.67	-1.43	-0.65	0.35	0.00	-71.57	
725.00	0.26	317.29	724.99	0.77	-1.51	-0.74	0.19	-0.16	-20.72	

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Site:	Anschutz State 5-62-22_23 NWNW Pad	MD Reference:	GL 4730' & KB 16' @ 4746.00ft (Cade 24)
Well:	Anschutz State 5-62-22-0164BB	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Casper District

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)
Last MS Survey									
886.00	0.18	340.40	885.99	1.27	-1.84	-1.25	0.07	-0.05	14.35
First SDI MWD Survey									
978.00	2.64	56.77	977.96	2.57	-0.12	-2.57	2.83	2.67	83.01
1,070.00	4.31	28.47	1,069.79	6.77	3.30	-6.82	2.55	1.82	-30.76
1,161.00	5.54	21.62	1,160.46	13.86	6.55	-13.96	1.50	1.35	-7.53
1,253.00	7.39	4.83	1,251.87	23.89	8.69	-24.02	2.85	2.01	-18.25
1,345.00	8.62	354.28	1,342.98	36.64	8.50	-36.77	2.08	1.34	-11.47
1,436.00	8.35	342.51	1,432.99	49.73	5.83	-49.82	1.93	-0.30	-12.93
1,527.00	8.53	334.07	1,523.01	62.11	0.89	-62.11	1.37	0.20	-9.27
1,619.00	8.71	317.81	1,613.98	73.40	-6.77	-73.29	2.65	0.20	-17.67
1,711.00	7.30	307.53	1,705.09	82.13	-16.08	-81.88	2.18	-1.53	-11.17
1,803.00	6.77	307.26	1,796.40	88.97	-25.04	-88.59	0.58	-0.58	-0.29
1,894.00	7.30	310.78	1,886.71	95.99	-33.68	-95.48	0.75	0.58	3.87
1,986.00	7.47	307.70	1,977.95	103.47	-42.84	-102.81	0.47	0.18	-3.35
2,078.00	7.03	305.33	2,069.21	110.38	-52.16	-109.59	0.58	-0.48	-2.58
2,169.00	7.74	313.94	2,159.46	117.86	-61.12	-116.92	1.44	0.78	9.46
2,261.00	7.21	319.22	2,250.68	126.53	-69.35	-125.47	0.94	-0.58	5.74
2,353.00	6.95	318.34	2,341.98	135.06	-76.82	-133.89	0.31	-0.28	-0.96
2,447.00	8.35	319.13	2,435.14	144.47	-85.07	-143.17	1.49	1.49	0.84
2,541.00	8.09	316.14	2,528.17	154.40	-94.12	-152.97	0.53	-0.28	-3.18
2,636.00	8.18	318.34	2,622.22	164.27	-103.24	-162.70	0.34	0.09	2.32
2,730.00	7.30	313.77	2,715.36	173.39	-112.00	-171.69	1.14	-0.94	-4.86
2,824.00	8.18	312.89	2,808.50	182.08	-121.21	-180.24	0.94	0.94	-0.94
2,919.00	8.35	311.92	2,902.52	191.28	-131.30	-189.29	0.23	0.18	-1.02
3,012.00	8.27	320.36	2,994.55	200.95	-140.59	-198.81	1.31	-0.09	9.08
3,107.00	8.00	325.63	3,088.59	211.67	-148.68	-209.41	0.83	-0.28	5.55
3,201.00	9.15	323.08	3,181.54	223.04	-156.86	-220.66	1.29	1.22	-2.71
3,295.00	7.83	318.16	3,274.51	233.79	-165.62	-231.27	1.60	-1.40	-5.23
3,389.00	7.91	318.86	3,367.62	243.43	-174.15	-240.79	0.13	0.09	0.74
3,483.00	9.23	325.19	3,460.57	254.49	-182.71	-251.72	1.72	1.40	6.73
3,578.00	10.64	325.81	3,554.15	268.00	-191.99	-265.09	1.49	1.48	0.65
3,672.00	11.70	328.27	3,646.36	283.29	-201.88	-280.22	1.24	1.13	2.62
3,767.00	11.61	325.37	3,739.41	299.34	-212.38	-296.12	0.62	-0.09	-3.05
3,862.00	10.64	323.79	3,832.62	314.29	-222.99	-310.90	1.07	-1.02	-1.66
3,956.00	10.38	328.71	3,925.05	328.53	-232.51	-325.00	0.99	-0.28	5.23
4,051.00	9.67	328.88	4,018.59	342.67	-241.08	-339.01	0.75	-0.75	0.18
4,145.00	8.53	326.07	4,111.41	355.21	-249.06	-351.43	1.30	-1.21	-2.99
4,239.00	9.67	331.17	4,204.23	367.91	-256.75	-364.02	1.48	1.21	5.43
4,333.00	10.55	327.56	4,296.77	382.09	-265.18	-378.07	1.15	0.94	-3.84
4,428.00	10.46	328.27	4,390.17	396.77	-274.38	-392.60	0.17	-0.09	0.75
4,522.00	8.62	328.71	4,482.87	410.05	-282.52	-405.76	1.96	-1.96	0.47
4,617.00	9.06	329.41	4,576.74	422.57	-290.03	-418.17	0.48	0.46	0.74

Company:	Bill Barrett Corp.	Local Co-ordinate Reference:	Well Anschutz State 5-62-22-0164BB
Project:	Weld County, CO NAD 83	TVD Reference:	GL 4730' & KB 16' @ 4746.00ft (Cade 24)
Site:	Anschutz State 5-62-22_23 NWNW Pad	MD Reference:	GL 4730' & KB 16' @ 4746.00ft (Cade 24)
Well:	Anschutz State 5-62-22-0164BB	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Casper District

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)	
4,711.00	8.35	324.31	4,669.66	434.48	-297.78	-429.96	1.12	-0.76	-5.43	
4,806.00	8.27	331.61	4,763.67	446.10	-305.05	-441.47	1.11	-0.08	7.68	
4,900.00	9.50	333.80	4,856.54	459.00	-311.69	-454.27	1.36	1.31	2.33	
4,995.00	9.15	336.00	4,950.28	472.94	-318.22	-468.11	0.53	-0.37	2.32	
5,089.00	8.00	328.18	5,043.23	485.33	-324.71	-480.40	1.74	-1.22	-8.32	
5,183.00	7.74	322.47	5,136.35	495.90	-332.02	-490.87	0.88	-0.28	-6.07	
5,278.00	6.33	322.55	5,230.63	505.14	-339.10	-499.99	1.48	-1.48	0.08	
5,373.00	5.10	326.16	5,325.16	512.80	-344.64	-507.57	1.35	-1.29	3.80	
5,468.00	4.22	326.60	5,419.84	519.23	-348.91	-513.93	0.93	-0.93	0.46	
5,563.00	2.55	306.47	5,514.68	523.40	-352.53	-518.05	2.13	-1.76	-21.19	
5,658.00	0.35	235.81	5,609.64	524.49	-354.47	-519.11	2.59	-2.32	-74.38	
5,752.00	0.70	137.28	5,703.64	523.91	-354.32	-518.53	0.88	0.37	-104.82	
5,847.00	0.53	64.86	5,798.64	523.67	-353.53	-518.31	0.78	-0.18	-76.23	
5,941.00	3.25	152.84	5,892.58	521.48	-351.92	-516.14	3.48	2.89	93.60	
6,035.00	16.53	166.81	5,984.99	506.02	-347.63	-500.75	14.25	14.13	14.86	
6,131.00	28.23	172.79	6,073.61	470.07	-341.65	-464.89	12.40	12.19	6.23	
6,225.00	38.08	176.48	6,152.22	418.95	-337.06	-413.85	10.69	10.48	3.93	
6,320.00	49.24	180.26	6,220.85	353.51	-335.42	-348.44	12.06	11.75	3.98	
6,414.00	57.51	181.84	6,276.88	278.16	-336.86	-273.07	8.90	8.80	1.68	
6,509.00	65.95	181.14	6,321.84	194.59	-339.01	-189.48	8.91	8.88	-0.74	
6,604.00	70.61	183.42	6,356.99	106.44	-342.55	-101.29	5.39	4.91	2.40	
6,695.00	84.06	183.07	6,376.89	18.00	-347.56	-12.78	14.78	14.78	-0.38	
6,813.00	90.92	184.39	6,382.06	-99.56	-355.23	104.88	5.92	5.81	1.12	
6,904.00	90.04	181.75	6,381.30	-190.42	-360.10	195.80	3.06	-0.97	-2.90	
6,996.00	90.31	178.15	6,381.02	-282.41	-360.02	287.78	3.92	0.29	-3.91	
7,088.00	90.31	177.01	6,380.52	-374.32	-356.14	379.62	1.24	0.00	-1.24	
7,180.00	89.69	178.77	6,380.52	-466.25	-352.75	471.50	2.03	-0.67	1.91	
7,272.00	90.31	182.19	6,380.52	-558.24	-353.52	563.48	3.78	0.67	3.72	
7,363.00	88.72	182.72	6,381.29	-649.15	-357.42	654.44	1.84	-1.75	0.58	
7,455.00	89.69	181.93	6,382.56	-741.06	-361.15	746.40	1.36	1.05	-0.86	
7,547.00	89.87	178.50	6,382.92	-833.05	-361.49	838.38	3.73	0.20	-3.73	
7,638.00	89.96	177.80	6,383.05	-924.00	-358.56	929.27	0.78	0.10	-0.77	
7,730.00	89.25	178.15	6,383.69	-1,015.94	-355.30	1,021.16	0.86	-0.77	0.38	
7,822.00	90.04	180.44	6,384.26	-1,107.92	-354.17	1,113.11	2.63	0.86	2.49	
7,913.00	91.63	182.90	6,382.93	-1,198.86	-356.82	1,204.08	3.22	1.75	2.70	
8,005.00	91.10	183.95	6,380.74	-1,290.67	-362.32	1,295.96	1.28	-0.58	1.14	
8,096.00	90.48	184.48	6,379.48	-1,381.42	-369.01	1,386.80	0.90	-0.68	0.58	
8,188.00	88.72	184.74	6,380.13	-1,473.11	-376.40	1,478.60	1.93	-1.91	0.28	
8,280.00	88.99	183.78	6,381.96	-1,564.84	-383.23	1,570.41	1.08	0.29	-1.04	
8,371.00	89.60	183.95	6,383.08	-1,655.62	-389.37	1,661.28	0.70	0.67	0.19	
8,462.00	88.90	182.46	6,384.28	-1,746.47	-394.45	1,752.19	1.81	-0.77	-1.64	
8,554.00	88.90	182.02	6,386.04	-1,838.38	-398.05	1,844.15	0.48	0.00	-0.48	
8,645.00	88.37	181.58	6,388.21	-1,929.31	-400.91	1,935.11	0.76	-0.58	-0.48	
8,737.00	90.40	182.02	6,389.20	-2,021.26	-403.80	2,027.09	2.26	2.21	0.48	

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Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Casper District

Survey									
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8,829.00	91.19	181.14	6,387.92	-2,113.21	-406.33	2,119.07	1.29	0.86	-0.96
8,920.00	90.57	181.31	6,386.52	-2,204.18	-408.28	2,210.06	0.71	-0.68	0.19
9,012.00	91.71	181.14	6,384.69	-2,296.14	-410.24	2,302.04	1.25	1.24	-0.18
9,104.00	90.66	180.79	6,382.79	-2,388.10	-411.79	2,394.02	1.20	-1.14	-0.38
9,195.00	89.52	179.73	6,382.65	-2,479.10	-412.21	2,485.01	1.71	-1.25	-1.16
9,287.00	89.69	180.17	6,383.28	-2,571.10	-412.13	2,576.99	0.51	0.18	0.48
9,379.00	90.40	179.47	6,383.21	-2,663.10	-411.84	2,668.98	1.08	0.77	-0.76
9,470.00	90.92	179.21	6,382.16	-2,754.08	-410.79	2,759.94	0.64	0.57	-0.29
9,562.00	89.43	179.38	6,381.88	-2,846.07	-409.66	2,851.90	1.63	-1.62	0.18
9,654.00	89.96	181.14	6,382.37	-2,938.07	-410.07	2,943.89	2.00	0.58	1.91
9,745.00	90.13	180.79	6,382.30	-3,029.05	-411.61	3,034.89	0.43	0.19	-0.38
9,837.00	90.13	179.47	6,382.09	-3,121.05	-411.82	3,126.88	1.43	0.00	-1.43
9,928.00	91.28	181.14	6,380.97	-3,212.04	-412.30	3,217.87	2.23	1.26	1.84
10,020.00	90.92	181.67	6,379.20	-3,303.99	-414.55	3,309.84	0.70	-0.39	0.58
10,111.00	89.78	182.19	6,378.65	-3,394.94	-417.62	3,400.82	1.38	-1.25	0.57
10,206.00	90.31	181.14	6,378.57	-3,489.90	-420.38	3,495.81	1.24	0.56	-1.11
10,300.00	90.66	181.05	6,377.78	-3,583.88	-422.18	3,589.81	0.38	0.37	-0.10
10,394.00	88.46	182.28	6,378.50	-3,677.83	-424.91	3,683.79	2.68	-2.34	1.31
10,489.00	88.20	181.93	6,381.27	-3,772.72	-428.39	3,778.73	0.46	-0.27	-0.37
10,584.00	87.93	181.58	6,384.48	-3,867.62	-431.30	3,873.66	0.47	-0.28	-0.37
10,678.00	89.16	181.05	6,386.86	-3,961.57	-433.46	3,967.62	1.42	1.31	-0.56
10,772.00	89.08	180.52	6,388.31	-4,055.54	-434.75	4,061.61	0.57	-0.09	-0.56
10,867.00	89.78	180.35	6,389.25	-4,150.54	-435.47	4,156.61	0.76	0.74	-0.18
Last SDI MWD Survey									
10,925.00	89.78	180.35	6,389.47	-4,208.54	-435.82	4,214.60	0.00	0.00	0.00
Projection to TD									

Design Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
100.00	100.00	-0.08	-0.38	First MS Survey
725.00	724.99	0.77	-1.51	Last MS Survey
886.00	885.99	1.27	-1.84	First SDI MWD Survey
10,867.00	6,389.25	-4,150.54	-435.47	Last SDI MWD Survey
10,925.00	6,389.47	-4,208.54	-435.82	Projection to TD

Checked By: _____ Approved By: _____ Date: _____

WELL DETAILS: Anschutz State 5-62-22-0164BB			
GL 4730' & KB 16' @ 4746.00ft (Cade 24)	4730.00		
Northing	Easting	Latitude	Longitude
1387455.54	3329229.57	40° 23' 27.398 N	104° 19' 4.850 W

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

