



# **Piceance Energy, LLC**

**Mesa County, CO  
Bruton 30-10 Pad  
Bruton 30-10E**

**Slot B-7**

**Plan: Design #2**

## **Standard Planning Report**

**09 July, 2015**



Project: Mesa County, CO  
 Site: Bruton 30-10 Pad  
 Well: Bruton 30-10E  
 Wellbore: Slot B-7  
 Design: Design #2  
 Latitude: 39° 14' 53.311 N  
 Longitude: 107° 48' 32.080 W  
 Ground Level: 7643.00  
 Well @ 7665.00usft

# Archer

**PROJECT DETAILS: Mesa County, CO**

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

**REFERENCE INFORMATION**

Co-ordinate (N/E) Reference: Well Bruton 30-10E, True North  
 Vertical (TVD) Reference: Well @ 7665.00usft  
 Section (VS) Reference: Slot - (0.00N, 0.00E)  
 Measured Depth Reference: Well @ 7665.00usft  
 Calculation Method: Minimum Curvature

**WELL DETAILS: Bruton 30-10E**

+N/-S	+E/-W	Northing	Ground Level:	7643.00	Latitude	Longitude	Slot
0.00	0.00	1523578.899	Easting	2346200.184	39° 14' 53.311 N	107° 48' 32.080 W	

**WELLBORE TARGET DETAILS (MAP CO-ORDINATES AND LAT/LONG)**

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
Bruton 30-10E tgt	7783.00	198.20	989.57	1523751.890	2347194.469	39° 14' 55.270 N	107° 48' 19.500 W	Circle (Radius: 50.00)

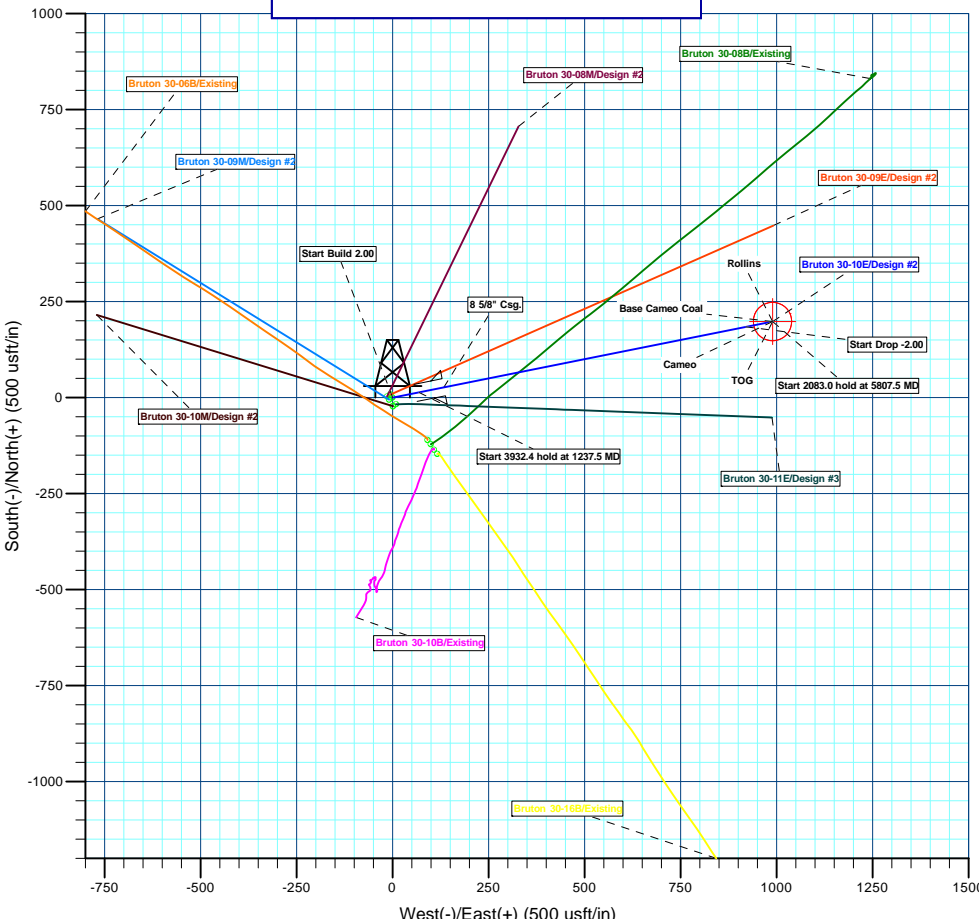
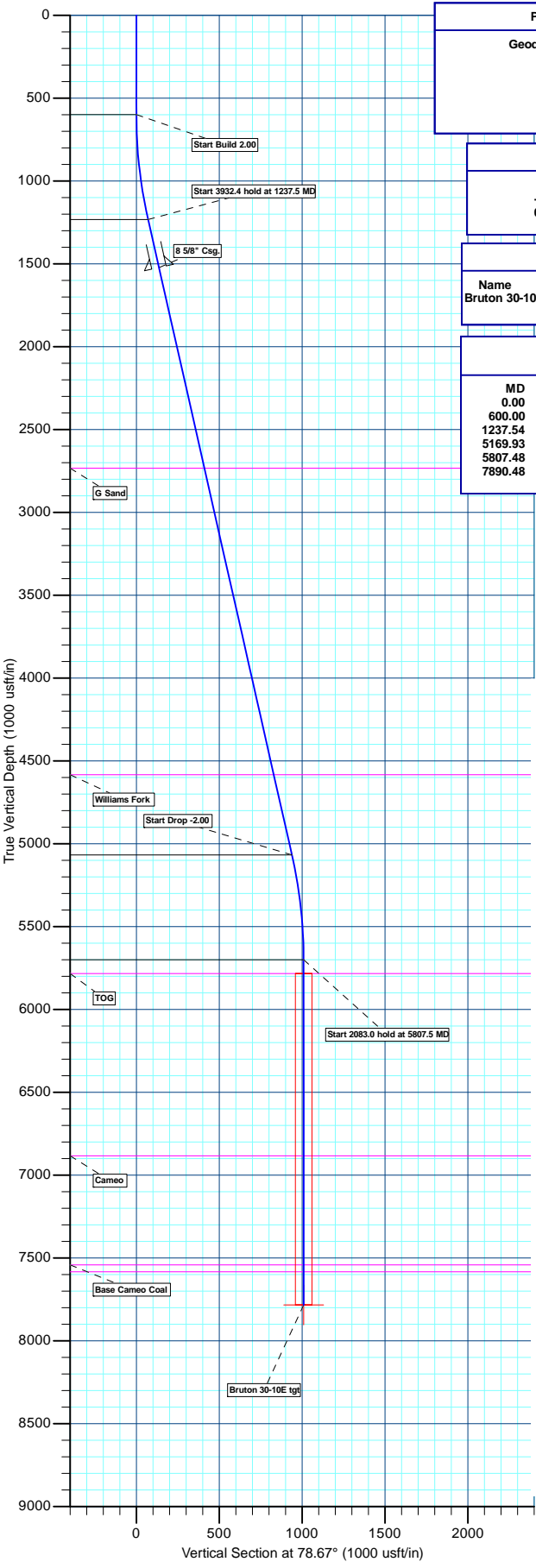
**SECTION DETAILS**

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	V Sect	Annotation
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Start Build 2.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	Start 3932.4 hold at 1237.5 MD
1237.54	12.75	78.67	1232.29	13.87	69.27	2.00	78.67	70.65	Start 2083.0 hold at 5807.5 MD
5169.93	12.75	78.67	5067.71	184.33	920.29	0.00	0.00	938.57	Start Drop -2.00
5807.48	0.00	0.00	5700.00	198.20	989.57	2.00	180.00	1009.22	Start 2083.0 hold at 5807.5 MD
7890.48	0.00	0.00	7783.00	198.20	989.57	0.00	0.00	1009.22	TD at 7890.5

**Azimuths to True North**  
 Magnetic North: 9.72°  
 Magnetic Field Strength: 51724.0snT  
 Dip Angle: 65.46°  
 Date: 06/09/2015  
 Model: IGRF2010

**FORMATION TOP DETAILS**

TVDPATH	MDPATH	FORMATION
2733.00	2776.19	G Sand
4583.00	4672.97	Williams Fork
5783.00	5890.48	TOG
6883.00	6990.48	Cameo
7541.00	7648.48	Base Cameo Coal
7583.00	7690.48	Rollins





# Archer

## Planning Report

<b>Database:</b>	EDMDBBW	<b>Local Co-ordinate Reference:</b>	Well Bruton 30-10E
<b>Company:</b>	Piceance Energy, LLC	<b>TVD Reference:</b>	Well @ 7665.00usft
<b>Project:</b>	Mesa County, CO	<b>MD Reference:</b>	Well @ 7665.00usft
<b>Site:</b>	Bruton 30-10 Pad	<b>North Reference:</b>	True
<b>Well:</b>	Bruton 30-10E	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Slot B-7		
<b>Design:</b>	Design #2		

<b>Project</b>	Mesa County, CO		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	Colorado Central Zone		

<b>Site</b>	Bruton 30-10 Pad				
<b>Site Position:</b>		<b>Northing:</b>	1,523,574.982 usft	<b>Latitude:</b>	39° 14' 53.270 N
<b>From:</b>	Lat/Long	<b>Easting:</b>	2,346,190.611 usft	<b>Longitude:</b>	107° 48' 32.200 W
<b>Position Uncertainty:</b>	0.00 usft	<b>Slot Radius:</b>	13-3/16"	<b>Grid Convergence:</b>	-1.46 °

<b>Well</b>	Bruton 30-10E					
<b>Well Position</b>	<b>+N/-S</b>	4.16 usft	<b>Northing:</b>	1,523,578.899 usft	<b>Latitude:</b>	39° 14' 53.311 N
	<b>+E/-W</b>	9.47 usft	<b>Easting:</b>	2,346,200.184 usft	<b>Longitude:</b>	107° 48' 32.080 W
<b>Position Uncertainty</b>		0.00 usft	<b>Wellhead Elevation:</b>	0.00 usft	<b>Ground Level:</b>	7,643.00 usft

<b>Wellbore</b>	Slot B-7				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2010	2015/06/09	9.72	65.46	51,724

<b>Design</b>	Design #2			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PLAN	<b>Tie On Depth:</b>	0.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>
	0.00	0.00	0.00	78.67

<b>Plan Sections</b>										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,237.54	12.75	78.67	1,232.29	13.87	69.27	2.00	2.00	0.00	78.67	
5,169.93	12.75	78.67	5,067.71	184.33	920.29	0.00	0.00	0.00	0.00	
5,807.48	0.00	0.00	5,700.00	198.20	989.57	2.00	-2.00	0.00	180.00	
7,890.48	0.00	0.00	7,783.00	198.20	989.57	0.00	0.00	0.00	0.00	Bruton 30-10E tgt



# Archer

## Planning Report

<b>Database:</b>	EDMDBBW	<b>Local Co-ordinate Reference:</b>	Well Bruton 30-10E
<b>Company:</b>	Piceance Energy, LLC	<b>TVD Reference:</b>	Well @ 7665.00usft
<b>Project:</b>	Mesa County, CO	<b>MD Reference:</b>	Well @ 7665.00usft
<b>Site:</b>	Bruton 30-10 Pad	<b>North Reference:</b>	True
<b>Well:</b>	Bruton 30-10E	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Slot B-7		
<b>Design:</b>	Design #2		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Start Build 2.00</b>										
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	2.00	78.67	699.98	0.34	1.71	1.75	2.00	2.00	2.00	0.00
800.00	4.00	78.67	799.84	1.37	6.84	6.98	2.00	2.00	2.00	0.00
900.00	6.00	78.67	899.45	3.08	15.39	15.69	2.00	2.00	2.00	0.00
1,000.00	8.00	78.67	998.70	5.48	27.34	27.88	2.00	2.00	2.00	0.00
1,100.00	10.00	78.67	1,097.47	8.55	42.68	43.52	2.00	2.00	2.00	0.00
1,200.00	12.00	78.67	1,195.62	12.29	61.38	62.60	2.00	2.00	2.00	0.00
<b>Start 3932.4 hold at 1237.5 MD</b>										
1,237.54	12.75	78.67	1,232.29	13.87	69.27	70.65	2.00	2.00	2.00	0.00
1,300.00	12.75	78.67	1,293.21	16.58	82.79	84.43	0.00	0.00	0.00	0.00
1,400.00	12.75	78.67	1,390.74	20.92	104.43	106.50	0.00	0.00	0.00	0.00
1,500.00	12.75	78.67	1,488.28	25.25	126.07	128.58	0.00	0.00	0.00	0.00
<b>8 5/8" Csg.</b>										
1,534.57	12.75	78.67	1,522.00	26.75	133.55	136.21	0.00	0.00	0.00	0.00
1,600.00	12.75	78.67	1,585.81	29.59	147.71	150.65	0.00	0.00	0.00	0.00
1,700.00	12.75	78.67	1,683.35	33.92	169.35	172.72	0.00	0.00	0.00	0.00
1,800.00	12.75	78.67	1,780.88	38.25	191.00	194.79	0.00	0.00	0.00	0.00
1,900.00	12.75	78.67	1,878.41	42.59	212.64	216.86	0.00	0.00	0.00	0.00
2,000.00	12.75	78.67	1,975.95	46.92	234.28	238.93	0.00	0.00	0.00	0.00
2,100.00	12.75	78.67	2,073.48	51.26	255.92	261.00	0.00	0.00	0.00	0.00
2,200.00	12.75	78.67	2,171.02	55.59	277.56	283.07	0.00	0.00	0.00	0.00
2,300.00	12.75	78.67	2,268.55	59.93	299.20	305.15	0.00	0.00	0.00	0.00
2,400.00	12.75	78.67	2,366.08	64.26	320.84	327.22	0.00	0.00	0.00	0.00
2,500.00	12.75	78.67	2,463.62	68.60	342.49	349.29	0.00	0.00	0.00	0.00
2,600.00	12.75	78.67	2,561.15	72.93	364.13	371.36	0.00	0.00	0.00	0.00
2,700.00	12.75	78.67	2,658.69	77.27	385.77	393.43	0.00	0.00	0.00	0.00
<b>G Sand</b>										
2,776.19	12.75	78.67	2,733.00	80.57	402.26	410.25	0.00	0.00	0.00	0.00
2,800.00	12.75	78.67	2,756.22	81.60	407.41	415.50	0.00	0.00	0.00	0.00
2,900.00	12.75	78.67	2,853.75	85.94	429.05	437.57	0.00	0.00	0.00	0.00
3,000.00	12.75	78.67	2,951.29	90.27	450.69	459.64	0.00	0.00	0.00	0.00
3,100.00	12.75	78.67	3,048.82	94.60	472.33	481.71	0.00	0.00	0.00	0.00
3,200.00	12.75	78.67	3,146.35	98.94	493.97	503.79	0.00	0.00	0.00	0.00
3,300.00	12.75	78.67	3,243.89	103.27	515.62	525.86	0.00	0.00	0.00	0.00
3,400.00	12.75	78.67	3,341.42	107.61	537.26	547.93	0.00	0.00	0.00	0.00
3,500.00	12.75	78.67	3,438.96	111.94	558.90	570.00	0.00	0.00	0.00	0.00
3,600.00	12.75	78.67	3,536.49	116.28	580.54	592.07	0.00	0.00	0.00	0.00
3,700.00	12.75	78.67	3,634.02	120.61	602.18	614.14	0.00	0.00	0.00	0.00
3,800.00	12.75	78.67	3,731.56	124.95	623.82	636.21	0.00	0.00	0.00	0.00
3,900.00	12.75	78.67	3,829.09	129.28	645.46	658.28	0.00	0.00	0.00	0.00
4,000.00	12.75	78.67	3,926.63	133.62	667.11	680.35	0.00	0.00	0.00	0.00
4,100.00	12.75	78.67	4,024.16	137.95	688.75	702.43	0.00	0.00	0.00	0.00
4,200.00	12.75	78.67	4,121.69	142.29	710.39	724.50	0.00	0.00	0.00	0.00
4,300.00	12.75	78.67	4,219.23	146.62	732.03	746.57	0.00	0.00	0.00	0.00
4,400.00	12.75	78.67	4,316.76	150.95	753.67	768.64	0.00	0.00	0.00	0.00
4,500.00	12.75	78.67	4,414.30	155.29	775.31	790.71	0.00	0.00	0.00	0.00
4,600.00	12.75	78.67	4,511.83	159.62	796.95	812.78	0.00	0.00	0.00	0.00



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<b>Company:</b>	Piceance Energy, LLC	<b>TVD Reference:</b>	Well @ 7665.00usft
<b>Project:</b>	Mesa County, CO	<b>MD Reference:</b>	Well @ 7665.00usft
<b>Site:</b>	Bruton 30-10 Pad	<b>North Reference:</b>	True
<b>Well:</b>	Bruton 30-10E	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Slot B-7		
<b>Design:</b>	Design #2		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
<b>Williams Fork</b>									
4,672.97	12.75	78.67	4,583.00	162.79	812.75	828.89	0.00	0.00	0.00
4,700.00	12.75	78.67	4,609.36	163.96	818.59	834.85	0.00	0.00	0.00
4,800.00	12.75	78.67	4,706.90	168.29	840.24	856.92	0.00	0.00	0.00
4,900.00	12.75	78.67	4,804.43	172.63	861.88	879.00	0.00	0.00	0.00
5,000.00	12.75	78.67	4,901.96	176.96	883.52	901.07	0.00	0.00	0.00
5,100.00	12.75	78.67	4,999.50	181.30	905.16	923.14	0.00	0.00	0.00
<b>Start Drop -2.00</b>									
5,169.93	12.75	78.67	5,067.71	184.33	920.29	938.57	0.00	0.00	0.00
5,200.00	12.15	78.67	5,097.07	185.60	926.65	945.05	2.00	-2.00	0.00
5,300.00	10.15	78.67	5,195.17	189.40	945.61	964.39	2.00	-2.00	0.00
5,400.00	8.15	78.67	5,293.90	192.52	961.20	980.29	2.00	-2.00	0.00
5,500.00	6.15	78.67	5,393.11	194.96	973.40	992.74	2.00	-2.00	0.00
5,600.00	4.15	78.67	5,492.71	196.73	982.20	1,001.71	2.00	-2.00	0.00
5,700.00	2.15	78.67	5,592.55	197.81	987.59	1,007.21	2.00	-2.00	0.00
<b>Start 2083.0 hold at 5807.5 MD</b>									
5,807.48	0.00	0.00	5,700.00	198.20	989.57	1,009.22	2.00	-2.00	0.00
<b>TOG</b>									
5,890.48	0.00	0.00	5,783.00	198.20	989.57	1,009.22	0.00	0.00	0.00
5,900.00	0.00	0.00	5,792.52	198.20	989.57	1,009.22	0.00	0.00	0.00
6,000.00	0.00	0.00	5,892.52	198.20	989.57	1,009.22	0.00	0.00	0.00
6,100.00	0.00	0.00	5,992.52	198.20	989.57	1,009.22	0.00	0.00	0.00
6,200.00	0.00	0.00	6,092.52	198.20	989.57	1,009.22	0.00	0.00	0.00
6,300.00	0.00	0.00	6,192.52	198.20	989.57	1,009.22	0.00	0.00	0.00
6,400.00	0.00	0.00	6,292.52	198.20	989.57	1,009.22	0.00	0.00	0.00
6,500.00	0.00	0.00	6,392.52	198.20	989.57	1,009.22	0.00	0.00	0.00
6,600.00	0.00	0.00	6,492.52	198.20	989.57	1,009.22	0.00	0.00	0.00
6,700.00	0.00	0.00	6,592.52	198.20	989.57	1,009.22	0.00	0.00	0.00
6,800.00	0.00	0.00	6,692.52	198.20	989.57	1,009.22	0.00	0.00	0.00
6,900.00	0.00	0.00	6,792.52	198.20	989.57	1,009.22	0.00	0.00	0.00
<b>Cameo</b>									
6,990.48	0.00	0.00	6,883.00	198.20	989.57	1,009.22	0.00	0.00	0.00
7,000.00	0.00	0.00	6,892.52	198.20	989.57	1,009.22	0.00	0.00	0.00
7,100.00	0.00	0.00	6,992.52	198.20	989.57	1,009.22	0.00	0.00	0.00
7,200.00	0.00	0.00	7,092.52	198.20	989.57	1,009.22	0.00	0.00	0.00
7,300.00	0.00	0.00	7,192.52	198.20	989.57	1,009.22	0.00	0.00	0.00
7,400.00	0.00	0.00	7,292.52	198.20	989.57	1,009.22	0.00	0.00	0.00
7,500.00	0.00	0.00	7,392.52	198.20	989.57	1,009.22	0.00	0.00	0.00
7,600.00	0.00	0.00	7,492.52	198.20	989.57	1,009.22	0.00	0.00	0.00
<b>Base Cameo Coal</b>									
7,648.48	0.00	0.00	7,541.00	198.20	989.57	1,009.22	0.00	0.00	0.00
<b>Rollins</b>									
7,690.48	0.00	0.00	7,583.00	198.20	989.57	1,009.22	0.00	0.00	0.00
7,700.00	0.00	0.00	7,592.52	198.20	989.57	1,009.22	0.00	0.00	0.00
7,800.00	0.00	0.00	7,692.52	198.20	989.57	1,009.22	0.00	0.00	0.00
<b>TD at 7890.5</b>									
7,890.48	0.00	0.00	7,783.00	198.20	989.57	1,009.22	0.00	0.00	0.00



# Archer

## Planning Report

<b>Database:</b>	EDMDBBW	<b>Local Co-ordinate Reference:</b>	Well Bruton 30-10E
<b>Company:</b>	Piceance Energy, LLC	<b>TVD Reference:</b>	Well @ 7665.00usft
<b>Project:</b>	Mesa County, CO	<b>MD Reference:</b>	Well @ 7665.00usft
<b>Site:</b>	Bruton 30-10 Pad	<b>North Reference:</b>	True
<b>Well:</b>	Bruton 30-10E	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Slot B-7		
<b>Design:</b>	Design #2		

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
Bruton 30-10E tgt - hit/miss target - Shape - Circle (radius 50.00)	0.00	0.00	7,783.00	198.20	989.57	1,523,751.890	2,347,194.469	39° 14' 55.270 N	107° 48' 19.500 W

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
1,534.57	1,522.00	8 5/8" Csg.	8-5/8	12-1/4	

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
2,776.19	2,733.00	G Sand		0.00		
4,672.97	4,583.00	Williams Fork		0.00		
5,890.48	5,783.00	TOG		0.00		
6,990.48	6,883.00	Cameo		0.00		
7,648.48	7,541.00	Base Cameo Coal		0.00		
7,690.48	7,583.00	Rollins		0.00		

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
600.00	600.00	0.00	0.00	Start Build 2.00	
1,237.54	1,232.29	13.87	69.27	Start 3932.4 hold at 1237.5 MD	
5,169.93	5,067.71	184.33	920.29	Start Drop -2.00	
5,807.48	5,700.00	198.20	989.57	Start 2083.0 hold at 5807.5 MD	
7,890.48	7,783.00	198.20	989.57	TD at 7890.5	



# **Piceance Energy, LLC**

**Mesa County, CO  
Bruton 30-10 Pad  
Bruton 30-10E**

**Slot B-7  
Design #2**

## **Anticollision Report**

**09 July, 2015**



# Archer

## Anticollision Report

<b>Company:</b>	Piceance Energy, LLC	<b>Local Co-ordinate Reference:</b>	Well Bruton 30-10E
<b>Project:</b>	Mesa County, CO	<b>TVD Reference:</b>	Well @ 7665.00usft
<b>Reference Site:</b>	Bruton 30-10 Pad	<b>MD Reference:</b>	Well @ 7665.00usft
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Bruton 30-10E	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Slot B-7	<b>Database:</b>	EDMDBBW
<b>Reference Design:</b>	Design #2	<b>Offset TVD Reference:</b>	Reference Datum

<b>Reference</b>	Design #2		
<b>Filter type:</b>	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
<b>Interpolation Method:</b>	MD Interval 100.00usft	<b>Error Model:</b>	ISCWSA
<b>Depth Range:</b>	Unlimited	<b>Scan Method:</b>	Closest Approach 3D
<b>Results Limited by:</b>	Maximum center-center distance of 1,000.00 usft	<b>Error Surface:</b>	Elliptical Conic
<b>Warning Levels Evaluated at:</b>	2.00 Sigma	<b>Casing Method:</b>	Not applied

<b>Survey Tool Program</b>	Date	2015/07/09		
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
0.00	7,890.00	Design #2 (Slot B-7)	MWD	MWD - Standard

Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
<b>Offset Well - Wellbore - Design</b>						
Bruton 30-10 Pad						
Bruton 30-06B - Existing - Existing	971.46	964.12	59.33	54.53	12.346	CC, ES
Bruton 30-06B - Existing - Existing	1,000.00	991.00	60.17	55.13	11.955	SF
Bruton 30-08B - Existing - Existing	1,701.89	1,667.78	136.70	128.28	16.240	CC, ES
Bruton 30-08B - Existing - Existing	3,800.00	3,740.89	350.13	325.85	14.422	SF
Bruton 30-08M - Slot A-8 - Design #2	443.09	443.14	14.01	12.29	8.136	CC, ES
Bruton 30-08M - Slot A-8 - Design #2	500.00	499.92	14.42	12.44	7.280	SF
Bruton 30-09E - Slot B-8 - Design #2	205.63	205.65	9.62	8.97	14.791	CC, ES
Bruton 30-09E - Slot B-8 - Design #2	7,890.48	7,895.01	249.90	199.31	4.939	SF
Bruton 30-09M - Slot A-7 - Design #2	600.00	600.00	10.15	7.73	4.190	CC, ES, SF
Bruton 30-10B - Existing - Existing	421.04	403.09	170.11	168.57	110.817	CC
Bruton 30-10B - Existing - Existing	500.00	481.26	170.26	168.38	90.493	ES
Bruton 30-10B - Existing - Existing	1,700.00	1,650.81	265.06	257.04	33.080	SF
Bruton 30-10M - Slot A-6 - Design #2	412.50	412.70	20.82	19.24	13.170	CC, ES
Bruton 30-10M - Slot A-6 - Design #2	500.00	499.73	22.24	20.25	11.176	SF
Bruton 30-11E - Slot B-6 - Design #3	500.00	500.00	19.82	17.85	10.045	CC, ES
Bruton 30-11E - Slot B-6 - Design #3	7,852.82	7,844.09	249.90	199.82	4.990	SF
Bruton 30-16B - Existing - Existing	100.00	81.87	187.45	187.27	1,034.109	CC
Bruton 30-16B - Existing - Existing	200.00	181.30	187.62	187.06	330.639	ES
Bruton 30-16B - Existing - Existing	3,300.00	3,026.88	992.51	969.98	44.053	SF

Offset Design													Offset Site Error:	0.00 usft		
Survey Program: 98-MWD													Offset Well Error:		0.00 usft	
Reference		Offset		Semi Major Axis			Distance						Warning			
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor				
0.00	0.00	0.00	18.00	0.00	0.00	140.33	-110.14	91.33	144.21							
100.00	100.00	82.65	100.65	0.09	0.09	140.24	-109.84	91.39	142.89	142.71	0.18	788.797				
200.00	200.00	186.03	204.01	0.31	0.31	139.89	-108.08	91.06	141.38	140.76	0.62	227.968				
300.00	300.00	289.71	307.60	0.54	0.55	139.74	-104.55	88.55	137.22	136.14	1.08	126.928				
400.00	400.00	393.42	411.03	0.76	0.80	140.37	-99.81	82.66	130.06	128.50	1.56	83.389				
500.00	500.00	495.51	512.62	0.99	1.07	141.82	-94.40	74.22	120.75	118.69	2.05	58.786				
600.00	600.00	597.86	614.17	1.21	1.38	143.89	-87.26	63.65	108.93	106.36	2.57	42.414				
700.00	699.98	698.62	713.79	1.43	1.72	69.58	-78.77	51.21	94.34	91.35	2.98	31.613				
800.00	799.84	798.07	811.66	1.64	2.08	79.82	-70.03	35.89	77.98	74.46	3.52	22.147				

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



# Archer

## Anticollision Report

<b>Company:</b>	Piceance Energy, LLC	<b>Local Co-ordinate Reference:</b>	Well Bruton 30-10E
<b>Project:</b>	Mesa County, CO	<b>TVD Reference:</b>	Well @ 7665.00usft
<b>Reference Site:</b>	Bruton 30-10 Pad	<b>MD Reference:</b>	Well @ 7665.00usft
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Bruton 30-10E	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Slot B-7	<b>Database:</b>	EDMDBBW
<b>Reference Design:</b>	Design #2	<b>Offset TVD Reference:</b>	Reference Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 98-MWD													Offset Well Error:	0.00 usft
Reference				Offset		Semi Major Axis			Distance				Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
900.00	899.45	895.73	907.31	1.87	2.48	98.80	-59.95	18.94	63.62	59.41	4.21	15.119		
971.46	970.42	964.12	974.06	2.06	2.78	118.39	-51.95	6.40	59.33	54.53	4.81	12.346	CC, ES	
1,000.00	998.70	991.00	1,000.21	2.13	2.91	127.06	-48.66	1.12	60.17	55.13	5.03	11.955	SF	
1,100.00	1,097.47	1,083.41	1,089.71	2.42	3.36	154.09	-36.62	-18.50	76.44	70.77	5.67	13.487		
1,200.00	1,195.62	1,173.80	1,176.69	2.76	3.85	171.21	-23.58	-39.33	108.58	102.47	6.11	17.777		
1,300.00	1,293.21	1,262.79	1,261.98	3.15	4.34	-178.91	-9.49	-60.43	148.88	142.37	6.51	22.855		
1,400.00	1,390.74	1,350.43	1,345.77	3.56	4.85	-172.97	5.18	-81.55	191.99	185.04	6.94	27.645		
1,500.00	1,488.28	1,436.67	1,427.99	3.99	5.36	-169.16	19.76	-103.10	237.03	229.62	7.41	32.003		
1,600.00	1,585.81	1,522.26	1,509.47	4.42	5.86	-166.69	33.66	-125.29	283.50	275.61	7.89	35.933		
1,700.00	1,683.35	1,609.41	1,592.37	4.86	6.37	-165.00	47.14	-148.54	330.92	322.53	8.39	39.455		
1,800.00	1,780.88	1,700.26	1,678.85	5.31	6.89	-163.56	61.89	-172.16	377.96	369.05	8.90	42.461		
1,900.00	1,878.41	1,787.87	1,762.23	5.77	7.42	-162.41	76.58	-194.68	424.93	415.50	9.43	45.067		
2,000.00	1,975.95	1,875.58	1,845.52	6.23	7.96	-161.32	92.46	-217.10	472.05	462.07	9.98	47.319		
2,100.00	2,073.48	1,960.31	1,925.78	6.69	8.50	-160.34	108.66	-238.92	519.59	509.06	10.53	49.350		
2,200.00	2,171.02	2,045.02	2,005.87	7.15	9.06	-159.51	125.03	-261.14	567.71	556.62	11.09	51.176		
2,300.00	2,268.55	2,129.06	2,085.23	7.61	9.61	-158.84	141.07	-283.64	616.36	604.70	11.65	52.894		
2,400.00	2,366.08	2,216.51	2,167.85	8.08	10.15	-158.32	157.08	-307.45	665.33	653.12	12.21	54.479		
2,500.00	2,463.62	2,304.85	2,251.37	8.54	10.67	-157.87	173.16	-331.32	714.14	701.37	12.77	55.907		
2,600.00	2,561.15	2,395.24	2,336.86	9.01	11.22	-157.46	189.70	-355.55	762.81	749.47	13.34	57.163		
2,700.00	2,658.69	2,485.46	2,422.35	9.48	11.75	-157.11	206.06	-379.29	811.03	797.11	13.92	58.279		
2,800.00	2,756.22	2,573.26	2,505.59	9.95	12.28	-156.82	221.77	-402.36	859.18	844.69	14.49	59.309		
2,900.00	2,853.75	2,664.67	2,592.23	10.42	12.84	-156.51	238.59	-426.17	907.25	892.17	15.07	60.194		
3,000.00	2,951.29	2,756.83	2,679.91	10.89	13.39	-156.30	254.46	-449.71	954.64	938.98	15.66	60.966		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



# Archer

## Anticollision Report

<b>Company:</b>	Piceance Energy, LLC	<b>Local Co-ordinate Reference:</b>	Well Bruton 30-10E
<b>Project:</b>	Mesa County, CO	<b>TVD Reference:</b>	Well @ 7665.00usft
<b>Reference Site:</b>	Bruton 30-10 Pad	<b>MD Reference:</b>	Well @ 7665.00usft
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Bruton 30-10E	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Slot B-7	<b>Database:</b>	EDMDBBW
<b>Reference Design:</b>	Design #2	<b>Offset TVD Reference:</b>	Reference Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 128-MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
0.00	0.00	0.00	18.00	0.00	0.00	140.49	-121.07	99.83	157.94					
100.00	100.00	82.10	100.10	0.09	0.09	140.51	-121.07	99.78	156.89	156.71	0.18	871.546		
165.59	165.59	147.59	165.59	0.24	0.18	140.53	-121.08	99.70	156.84	156.42	0.42	374.783		
200.00	200.00	181.73	199.73	0.31	0.25	140.52	-121.08	99.75	156.87	156.31	0.56	277.784		
300.00	300.00	281.54	299.54	0.54	0.46	140.39	-121.04	100.17	157.11	156.12	0.99	158.115		
400.00	400.00	380.80	398.79	0.76	0.67	139.96	-120.75	101.46	157.72	156.29	1.44	109.892		
500.00	500.00	481.28	499.18	0.99	0.90	138.44	-118.29	104.89	158.10	156.21	1.89	83.711		
600.00	600.00	578.44	595.98	1.21	1.14	135.56	-114.03	111.82	159.76	157.41	2.34	68.145		
700.00	699.98	677.80	694.62	1.43	1.41	53.23	-107.67	121.95	161.72	158.89	2.83	57.157		
800.00	799.84	777.13	792.68	1.64	1.73	49.21	-98.26	134.58	162.16	158.80	3.36	48.243		
900.00	899.45	875.31	888.95	1.87	2.09	44.85	-86.26	149.64	161.61	157.67	3.94	41.040		
1,000.00	998.70	973.16	984.28	2.13	2.48	40.31	-72.38	166.80	160.38	155.84	4.53	35.390		
1,100.00	1,097.47	1,072.92	1,081.39	2.42	2.89	36.33	-58.30	184.75	157.83	152.68	5.15	30.626		
1,200.00	1,195.62	1,172.92	1,178.26	2.76	3.34	32.00	-41.66	203.17	152.69	146.89	5.80	26.330		
1,300.00	1,293.21	1,271.38	1,273.42	3.15	3.82	27.51	-24.25	221.52	145.96	139.53	6.43	22.709		
1,400.00	1,390.74	1,369.17	1,367.62	3.56	4.32	22.33	-6.33	240.65	140.83	133.82	7.01	20.104		
1,500.00	1,488.28	1,466.74	1,461.52	3.99	4.81	17.00	11.09	260.61	137.91	130.39	7.52	18.338		
1,600.00	1,585.81	1,565.82	1,556.92	4.42	5.30	11.82	27.78	281.54	136.92	128.93	7.98	17.147		
1,700.00	1,683.35	1,665.89	1,653.39	4.86	5.78	6.64	44.44	302.31	136.70	128.29	8.41	16.255		
1,701.89	1,685.19	1,667.78	1,655.21	4.87	5.78	6.54	44.75	302.70	136.70	128.28	8.42	16.240 CC, ES		
1,800.00	1,780.88	1,763.76	1,747.76	5.31	6.26	1.69	60.49	322.68	137.59	128.77	8.83	15.587		
1,900.00	1,878.41	1,861.23	1,841.34	5.77	6.79	-3.45	77.53	343.92	140.81	131.55	9.26	15.205		
2,000.00	1,975.95	1,957.83	1,933.59	6.23	7.35	-8.77	96.01	365.84	146.67	136.95	9.72	15.084		
2,100.00	2,073.48	2,057.14	2,028.22	6.69	7.91	-13.74	115.23	389.05	154.48	144.24	10.24	15.093		
2,200.00	2,171.02	2,158.06	2,124.65	7.15	8.45	-18.27	134.27	411.92	162.46	151.66	10.80	15.043		
2,300.00	2,268.55	2,254.74	2,217.00	7.61	8.99	-22.22	152.69	433.84	171.43	160.01	11.42	15.006		
2,400.00	2,366.08	2,355.51	2,313.26	8.08	9.56	-25.89	171.79	456.73	181.15	169.03	12.12	14.947		
2,500.00	2,463.62	2,453.04	2,406.40	8.54	10.10	-28.94	189.97	479.23	191.58	178.73	12.85	14.914		
2,600.00	2,561.15	2,554.29	2,503.22	9.01	10.67	-31.62	208.11	502.60	202.00	188.38	13.62	14.833		
2,700.00	2,658.69	2,651.65	2,596.33	9.48	11.22	-33.84	225.27	525.30	212.75	198.35	14.40	14.774		
2,800.00	2,756.22	2,748.76	2,688.91	9.95	11.78	-36.01	243.59	548.18	224.92	209.70	15.22	14.774		
2,900.00	2,853.75	2,848.67	2,784.25	10.42	12.35	-38.03	262.29	571.47	237.10	221.02	16.08	14.748		
3,000.00	2,951.29	2,945.97	2,876.95	10.89	12.90	-39.97	281.46	593.98	250.22	233.27	16.95	14.763		
3,100.00	3,048.82	3,047.03	2,973.41	11.36	13.48	-41.74	300.74	617.17	262.98	245.13	17.85	14.735		
3,200.00	3,146.35	3,147.06	3,068.95	11.83	14.03	-43.40	319.86	639.74	275.77	257.01	18.75	14.705		
3,300.00	3,243.89	3,247.85	3,165.56	12.31	14.59	-45.02	338.58	661.57	287.76	268.08	19.68	14.619		
3,400.00	3,341.42	3,345.01	3,258.62	12.78	15.13	-46.41	356.64	682.88	300.13	279.53	20.60	14.569		
3,500.00	3,438.96	3,444.72	3,353.97	13.25	15.69	-47.71	375.55	705.05	313.17	291.63	21.54	14.539		
3,600.00	3,536.49	3,546.20	3,451.18	13.72	16.25	-48.78	393.63	727.90	325.45	302.98	22.46	14.489		
3,700.00	3,634.02	3,645.18	3,546.10	14.20	16.79	-49.78	411.07	749.91	337.52	314.14	23.38	14.437		
3,800.00	3,731.56	3,740.89	3,637.70	14.67	17.33	-50.58	428.02	771.89	350.13	325.85	24.28	14.422 SF		
3,900.00	3,829.09	3,840.91	3,733.20	15.14	17.90	-51.35	446.35	795.23	363.53	338.34	25.19	14.429		
4,000.00	3,926.63	3,937.63	3,825.72	15.62	18.44	-52.13	464.06	817.15	376.68	350.57	26.11	14.427		
4,100.00	4,024.16	4,038.36	3,921.91	16.09	19.01	-52.85	482.88	840.38	390.42	363.38	27.04	14.438		
4,200.00	4,121.69	4,134.62	4,013.94	16.57	19.56	-53.53	500.70	862.31	403.92	375.97	27.95	14.449		
4,300.00	4,219.23	4,235.83	4,110.55	17.04	20.14	-54.15	519.68	885.76	417.87	388.98	28.89	14.466		
4,400.00	4,316.76	4,336.72	4,207.14	17.51	20.69	-54.84	538.28	908.18	431.18	401.35	29.83	14.456		
4,500.00	4,414.30	4,430.50	4,296.85	17.99	21.21	-55.45	555.90	929.05	444.88	414.14	30.74	14.473		
4,600.00	4,511.83	4,531.09	4,392.97	18.46	21.78	-56.10	575.39	951.37	459.17	427.48	31.69	14.488		
4,700.00	4,609.36	4,630.52	4,488.09	18.94	22.34	-56.72	594.39	973.25	473.18	440.54	32.64	14.497		
4,800.00	4,706.90	4,736.52	4,589.73	19.41	22.92	-57.31	613.62	996.40	486.24	452.63	33.61	14.466		
4,900.00	4,804.43	4,826.62	4,676.05	19.89	23.41	-57.82	630.42	1,015.99	499.81	465.30	34.51	14.482		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



# Archer

## Anticollision Report

<b>Company:</b>	Piceance Energy, LLC	<b>Local Co-ordinate Reference:</b>	Well Bruton 30-10E
<b>Project:</b>	Mesa County, CO	<b>TVD Reference:</b>	Well @ 7665.00usft
<b>Reference Site:</b>	Bruton 30-10 Pad	<b>MD Reference:</b>	Well @ 7665.00usft
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Bruton 30-10E	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Slot B-7	<b>Database:</b>	EDMDBBW
<b>Reference Design:</b>	Design #2	<b>Offset TVD Reference:</b>	Reference Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 128-MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
5,000.00	4,901.97	4,929.61	4,774.46	20.36	24.00	-58.27	649.76	1,039.39	513.90	478.44	35.46	14.492		
5,100.00	4,999.50	5,036.12	4,876.64	20.84	24.58	-58.75	668.63	1,062.77	526.72	490.29	36.43	14.459		
5,200.00	5,097.07	5,134.20	4,971.05	21.30	25.09	-59.34	685.77	1,083.14	539.02	501.66	37.36	14.428		
5,300.00	5,195.17	5,228.91	5,061.94	21.63	25.60	-59.79	702.89	1,103.51	553.50	515.40	38.10	14.528		
5,400.00	5,293.90	5,326.32	5,155.52	21.92	26.13	-60.04	720.73	1,123.85	569.75	531.00	38.75	14.703		
5,500.00	5,393.11	5,418.62	5,243.90	22.17	26.63	-60.05	738.73	1,143.43	588.94	549.67	39.27	14.997		
5,600.00	5,492.71	5,532.31	5,353.21	22.38	27.23	-59.83	760.26	1,166.05	608.95	569.22	39.73	15.326		
5,700.00	5,592.55	5,646.77	5,464.20	22.54	27.78	-59.39	779.07	1,186.75	627.70	587.64	40.06	15.670		
5,800.00	5,692.52	5,775.47	5,590.02	22.66	28.32	-58.71	797.06	1,206.88	645.26	605.00	40.27	16.024		
5,900.00	5,792.52	5,880.85	5,693.73	22.77	28.71	20.76	809.19	1,221.13	660.82	620.43	40.40	16.358		
6,000.00	5,892.52	6,010.68	5,822.21	22.89	29.11	21.46	821.78	1,234.66	673.69	633.10	40.59	16.598		
6,100.00	5,992.52	6,136.68	5,947.67	23.02	29.40	21.88	829.60	1,243.17	681.90	641.08	40.82	16.704		
6,200.00	6,092.52	6,260.53	6,071.36	23.14	29.60	22.03	834.49	1,246.97	686.71	645.61	41.11	16.706		
6,300.00	6,192.52	6,371.57	6,182.37	23.26	29.73	21.98	836.92	1,247.32	688.84	647.44	41.40	16.638		
6,400.00	6,292.52	6,470.24	6,281.02	23.39	29.84	21.88	838.59	1,246.75	690.20	648.50	41.70	16.553		
6,500.00	6,392.52	6,566.69	6,377.45	23.52	29.95	21.88	840.64	1,247.59	692.48	650.52	41.97	16.501		
6,600.00	6,492.52	6,675.50	6,486.23	23.64	30.08	22.04	841.22	1,249.90	693.75	651.53	42.22	16.432		
6,700.00	6,592.52	6,778.05	6,588.77	23.77	30.20	22.15	841.48	1,251.49	694.57	652.09	42.48	16.351		
6,800.00	6,692.52	6,873.08	6,683.79	23.91	30.31	22.22	841.69	1,252.43	695.16	652.42	42.74	16.265		
6,900.00	6,792.52	6,968.75	6,779.44	24.04	30.43	22.32	842.89	1,254.23	697.02	654.03	43.00	16.211		
7,000.00	6,892.52	7,070.63	6,881.30	24.17	30.56	22.39	844.14	1,255.68	698.69	655.42	43.28	16.145		
7,100.00	6,992.52	7,174.71	6,985.36	24.31	30.69	22.49	845.02	1,257.40	700.11	656.56	43.55	16.076		
7,200.00	7,092.52	7,282.51	7,093.16	24.45	30.81	22.57	845.15	1,258.47	700.61	656.77	43.84	15.982		
7,300.00	7,192.52	7,389.19	7,199.83	24.58	30.91	22.62	844.32	1,258.84	700.02	655.90	44.12	15.865		
7,400.00	7,292.52	7,496.94	7,307.57	24.72	31.00	22.63	842.70	1,258.27	698.43	654.01	44.42	15.722		
7,500.00	7,392.52	7,604.61	7,415.19	24.86	31.07	22.56	840.28	1,256.35	695.66	650.93	44.74	15.551		
7,600.00	7,492.52	7,707.52	7,518.02	25.01	31.12	22.43	837.59	1,253.47	692.18	647.12	45.05	15.363		
7,700.00	7,592.52	7,808.67	7,619.08	25.15	31.16	22.24	834.88	1,249.91	688.36	642.98	45.38	15.168		
7,800.00	7,692.52	7,907.45	7,717.74	25.29	31.20	22.02	832.42	1,246.01	684.57	638.85	45.72	14.974		
7,887.70	7,780.23	7,970.00	7,780.23	25.36	31.23	21.86	831.00	1,243.43	681.82	635.92	45.90	14.854		
7,890.48	7,783.00	7,970.00	7,780.23	25.36	31.23	21.86	831.00	1,243.43	681.82	635.92	45.90	14.854		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



# Archer

## Anticollision Report

<b>Company:</b>	Piceance Energy, LLC	<b>Local Co-ordinate Reference:</b>	Well Bruton 30-10E
<b>Project:</b>	Mesa County, CO	<b>TVD Reference:</b>	Well @ 7665.00usft
<b>Reference Site:</b>	Bruton 30-10 Pad	<b>MD Reference:</b>	Well @ 7665.00usft
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Bruton 30-10E	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Slot B-7	<b>Database:</b>	EDMDBBW
<b>Reference Design:</b>	Design #2	<b>Offset TVD Reference:</b>	Reference Datum

Offset Design													Offset Site Error:	0.00 usft	
Survey Program: 0-MWD													Offset Well Error:		0.00 usft
Reference		Offset		Semi Major Axis			Distance						Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor			
0.00	0.00	0.00	0.00	0.00	0.00	-78.37	2.91	-14.16	14.46						
100.00	100.00	100.00	100.00	0.09	0.09	-78.37	2.91	-14.16	14.46	14.28	0.18	82.458			
200.00	200.00	200.00	200.00	0.31	0.31	-78.37	2.91	-14.16	14.46	13.83	0.62	23.136			
300.00	300.00	300.00	300.00	0.54	0.54	-78.37	2.91	-14.16	14.46	13.38	1.07	13.456			
400.00	400.00	400.08	400.06	0.76	0.76	-71.49	4.49	-13.39	14.13	12.60	1.52	9.264			
443.09	443.09	443.14	443.09	0.86	0.86	-64.05	6.13	-12.60	14.01	12.29	1.72	8.136 CC, ES			
500.00	500.00	499.92	499.76	0.99	1.00	-50.42	9.18	-11.11	14.42	12.44	1.98	7.280 SF			
600.00	600.00	599.28	598.74	1.21	1.23	-23.36	16.96	-7.33	18.52	16.08	2.44	7.587			
700.00	699.98	698.05	696.77	1.43	1.50	-86.32	27.74	-2.08	27.84	24.93	2.91	9.571			
800.00	799.84	796.77	794.35	1.64	1.81	-81.57	41.19	4.47	40.27	36.89	3.38	11.921			
900.00	899.45	895.98	892.35	1.87	2.13	-82.46	55.11	11.24	52.67	48.81	3.87	13.621			
1,000.00	998.70	995.17	990.32	2.13	2.46	-86.01	69.03	18.01	64.78	60.37	4.40	14.709			
1,100.00	1,097.47	1,094.20	1,088.14	2.42	2.80	-90.96	82.92	24.77	77.06	72.06	5.00	15.410			
1,200.00	1,195.62	1,192.96	1,185.69	2.76	3.14	-96.66	96.78	31.51	90.16	84.49	5.67	15.912			
1,300.00	1,293.21	1,291.42	1,282.94	3.15	3.49	-102.48	110.59	38.24	104.54	98.15	6.39	16.365			
1,400.00	1,390.74	1,389.84	1,380.16	3.56	3.83	-107.06	124.40	44.96	119.83	112.70	7.12	16.824			
1,500.00	1,488.28	1,488.27	1,477.38	3.99	4.18	-110.59	138.21	51.68	135.70	127.84	7.86	17.265			
1,600.00	1,585.81	1,586.69	1,574.59	4.42	4.53	-113.38	152.02	58.39	151.97	143.37	8.60	17.678			
1,700.00	1,683.35	1,685.12	1,671.81	4.86	4.88	-115.63	165.83	65.11	168.52	159.19	9.33	18.058			
1,800.00	1,780.88	1,783.54	1,769.03	5.31	5.23	-117.48	179.64	71.83	185.28	175.21	10.07	18.404			
1,900.00	1,878.41	1,881.97	1,866.25	5.77	5.58	-119.01	193.45	78.55	202.20	191.40	10.80	18.720			
2,000.00	1,975.95	1,980.39	1,963.47	6.23	5.94	-120.32	207.26	85.27	219.24	207.70	11.53	19.006			
2,100.00	2,073.48	2,078.82	2,060.69	6.69	6.29	-121.43	221.07	91.99	236.37	224.10	12.27	19.267			
2,200.00	2,171.02	2,177.24	2,157.91	7.15	6.64	-122.39	234.88	98.71	253.58	240.58	13.00	19.505			
2,300.00	2,268.55	2,275.67	2,255.13	7.61	6.99	-123.23	248.69	105.43	270.84	257.11	13.73	19.722			
2,400.00	2,366.08	2,374.09	2,352.35	8.08	7.35	-123.97	262.49	112.15	288.16	273.70	14.47	19.921			
2,500.00	2,463.62	2,472.52	2,449.57	8.54	7.70	-124.63	276.30	118.87	305.52	290.32	15.20	20.104			
2,600.00	2,561.15	2,570.94	2,546.79	9.01	8.06	-125.21	290.11	125.59	322.91	306.99	15.93	20.272			
2,700.00	2,658.69	2,669.37	2,644.01	9.48	8.41	-125.74	303.92	132.31	340.34	323.68	16.66	20.428			
2,800.00	2,756.22	2,767.79	2,741.23	9.95	8.76	-126.21	317.73	139.03	357.79	340.39	17.39	20.571			
2,900.00	2,853.75	2,866.22	2,838.45	10.42	9.12	-126.64	331.54	145.75	375.25	357.13	18.12	20.705			
3,000.00	2,951.29	2,964.64	2,935.67	10.89	9.47	-127.03	345.35	152.47	392.74	373.89	18.86	20.829			
3,100.00	3,048.82	3,063.07	3,032.89	11.36	9.83	-127.39	359.16	159.19	410.25	390.66	19.59	20.945			
3,200.00	3,146.35	3,161.49	3,130.11	11.83	10.18	-127.72	372.97	165.91	427.77	407.45	20.32	21.053			
3,300.00	3,243.89	3,259.91	3,227.32	12.31	10.54	-128.02	386.78	172.63	445.30	424.25	21.05	21.154			
3,400.00	3,341.42	3,358.34	3,324.54	12.78	10.89	-128.31	400.59	179.35	462.84	441.06	21.78	21.249			
3,500.00	3,438.96	3,456.76	3,421.76	13.25	11.25	-128.56	414.40	186.07	480.39	457.88	22.51	21.338			
3,600.00	3,536.49	3,555.19	3,518.98	13.72	11.60	-128.81	428.21	192.79	497.95	474.71	23.25	21.422			
3,700.00	3,634.02	3,653.61	3,616.20	14.20	11.95	-129.03	442.02	199.51	515.52	491.55	23.98	21.501			
3,800.00	3,731.56	3,752.04	3,713.42	14.67	12.31	-129.24	455.83	206.23	533.10	508.39	24.71	21.576			
3,900.00	3,829.09	3,850.46	3,810.64	15.14	12.67	-129.44	469.64	212.95	550.68	525.24	25.44	21.646			
4,000.00	3,926.63	3,948.89	3,907.86	15.62	13.02	-129.62	483.45	219.67	568.27	542.10	26.17	21.713			
4,100.00	4,024.16	4,047.31	4,005.08	16.09	13.38	-129.80	497.26	226.39	585.87	558.96	26.90	21.777			
4,200.00	4,121.69	4,145.74	4,102.30	16.57	13.73	-129.96	511.06	233.11	603.47	575.83	27.63	21.837			
4,300.00	4,219.23	4,244.16	4,199.52	17.04	14.09	-130.11	524.87	239.83	621.07	592.70	28.37	21.894			
4,400.00	4,316.76	4,342.59	4,296.74	17.51	14.44	-130.26	538.68	246.54	638.68	609.58	29.10	21.949			
4,500.00	4,414.30	4,441.01	4,393.96	17.99	14.80	-130.40	552.49	253.26	656.29	626.46	29.83	22.001			
4,600.00	4,511.83	4,539.44	4,491.18	18.46	15.15	-130.53	566.30	259.98	673.91	643.35	30.56	22.051			
4,700.00	4,609.36	4,637.86	4,588.40	18.94	15.51	-130.65	580.11	266.70	691.53	660.23	31.29	22.098			
4,800.00	4,706.90	4,736.29	4,685.62	19.41	15.86	-130.77	593.92	273.42	709.15	677.12	32.03	22.143			
4,900.00	4,804.43	4,834.71	4,782.84	19.89	16.22	-130.88	607.73	280.14	726.77	694.01	32.76	22.187			
5,000.00	4,901.97	4,933.14	4,880.06	20.36	16.57	-130.99	621.54	286.86	744.40	710.91	33.49	22.228			

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



# Archer

## Anticollision Report

<b>Company:</b>	Piceance Energy, LLC	<b>Local Co-ordinate Reference:</b>	Well Bruton 30-10E
<b>Project:</b>	Mesa County, CO	<b>TVD Reference:</b>	Well @ 7665.00usft
<b>Reference Site:</b>	Bruton 30-10 Pad	<b>MD Reference:</b>	Well @ 7665.00usft
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Bruton 30-10E	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Slot B-7	<b>Database:</b>	EDMDBBW
<b>Reference Design:</b>	Design #2	<b>Offset TVD Reference:</b>	Reference Datum

Offset Design													Offset Site Error:	0.00 usft		
Survey Program: 0-MWD													Bruton 30-10 Pad - Bruton 30-08M - Slot A-8 - Design #2		Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance						Warning			
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor				
5,100.00	4,999.50	5,031.56	4,977.27	20.84	16.93	-131.09	635.35	293.58	762.03	727.81	34.22	22.268				
5,200.00	5,097.07	5,130.01	5,074.51	21.30	17.28	-131.26	649.16	300.30	779.56	744.60	34.95	22.303				
5,300.00	5,195.17	5,228.74	5,172.04	21.63	17.64	-131.44	663.01	307.04	795.37	759.73	35.64	22.316				
5,400.00	5,293.90	5,328.73	5,270.81	21.92	17.99	-131.40	676.99	313.85	808.90	772.59	36.30	22.282				
5,500.00	5,393.11	5,433.84	5,375.00	22.17	18.29	-131.29	689.43	319.90	819.69	782.82	36.87	22.229				
5,600.00	5,492.71	5,539.46	5,480.14	22.38	18.53	-131.22	698.47	324.30	827.49	790.16	37.33	22.166				
5,700.00	5,592.55	5,645.44	5,585.93	22.54	18.72	-131.18	704.02	327.00	832.27	794.58	37.70	22.077				
5,800.00	5,692.52	5,751.60	5,692.06	22.66	18.87	-131.16	706.06	327.99	834.02	796.04	37.98	21.960				
5,900.00	5,792.52	5,852.07	5,792.52	22.77	19.01	-52.49	706.07	327.99	834.03	795.78	38.25	21.807				
6,000.00	5,892.52	5,952.07	5,892.52	22.89	19.16	-52.49	706.07	327.99	834.03	795.50	38.53	21.647				
6,100.00	5,992.52	6,052.07	5,992.52	23.02	19.30	-52.49	706.07	327.99	834.03	795.22	38.81	21.488				
6,200.00	6,092.52	6,152.07	6,092.52	23.14	19.45	-52.49	706.07	327.99	834.03	794.93	39.10	21.330				
6,300.00	6,192.52	6,252.07	6,192.52	23.26	19.60	-52.49	706.07	327.99	834.03	794.64	39.39	21.173				
6,400.00	6,292.52	6,352.07	6,292.52	23.39	19.75	-52.49	706.07	327.99	834.03	794.34	39.69	21.016				
6,500.00	6,392.52	6,452.07	6,392.52	23.52	19.90	-52.49	706.07	327.99	834.03	794.05	39.98	20.860				
6,600.00	6,492.52	6,552.07	6,492.52	23.64	20.05	-52.49	706.07	327.99	834.03	793.75	40.28	20.705				
6,700.00	6,592.52	6,652.07	6,592.52	23.77	20.21	-52.49	706.07	327.99	834.03	793.45	40.58	20.550				
6,800.00	6,692.52	6,752.07	6,692.52	23.91	20.36	-52.49	706.07	327.99	834.03	793.14	40.89	20.397				
6,900.00	6,792.52	6,852.07	6,792.52	24.04	20.52	-52.49	706.07	327.99	834.03	792.83	41.20	20.245				
7,000.00	6,892.52	6,952.07	6,892.52	24.17	20.68	-52.49	706.07	327.99	834.03	792.52	41.51	20.093				
7,100.00	6,992.52	7,052.07	6,992.52	24.31	20.84	-52.49	706.07	327.99	834.03	792.21	41.82	19.943				
7,200.00	7,092.52	7,152.07	7,092.52	24.45	21.00	-52.49	706.07	327.99	834.03	791.89	42.14	19.794				
7,300.00	7,192.52	7,252.07	7,192.52	24.58	21.16	-52.49	706.07	327.99	834.03	791.58	42.45	19.645				
7,400.00	7,292.52	7,352.07	7,292.52	24.72	21.32	-52.49	706.07	327.99	834.03	791.26	42.77	19.498				
7,500.00	7,392.52	7,452.07	7,392.52	24.86	21.49	-52.49	706.07	327.99	834.03	790.93	43.10	19.353				
7,600.00	7,492.52	7,552.07	7,492.52	25.01	21.65	-52.49	706.07	327.99	834.03	790.61	43.42	19.208				
7,700.00	7,592.52	7,652.07	7,592.52	25.15	21.82	-52.49	706.07	327.99	834.03	790.28	43.75	19.064				
7,800.00	7,692.52	7,752.07	7,692.52	25.29	21.99	-52.49	706.07	327.99	834.03	789.95	44.08	18.922				
7,890.48	7,783.00	7,842.54	7,783.00	25.36	22.14	-52.49	706.07	327.99	834.03	789.73	44.30	18.825				

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



# Archer

## Anticollision Report

<b>Company:</b>	Piceance Energy, LLC	<b>Local Co-ordinate Reference:</b>	Well Bruton 30-10E
<b>Project:</b>	Mesa County, CO	<b>TVD Reference:</b>	Well @ 7665.00usft
<b>Reference Site:</b>	Bruton 30-10 Pad	<b>MD Reference:</b>	Well @ 7665.00usft
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Bruton 30-10E	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Slot B-7	<b>Database:</b>	EDMDBBW
<b>Reference Design:</b>	Design #2	<b>Offset TVD Reference:</b>	Reference Datum

Offset Design													Offset Site Error:	0.00 usft	
Survey Program: 0-MWD													Offset Well Error:		0.00 usft
Reference		Offset		Semi Major Axis			Distance						Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor			
0.00	0.00	0.00	0.00	0.00	0.00	-35.25	8.01	-5.66	9.81						
100.00	100.00	100.00	100.00	0.09	0.09	-35.25	8.01	-5.66	9.81	9.64	0.18	55.969			
200.00	200.00	200.03	200.01	0.31	0.31	-25.01	8.72	-4.07	9.62	8.99	0.62	15.409			
205.63	205.63	205.65	205.63	0.33	0.33	-23.80	8.80	-3.88	9.62	8.97	0.65	14.791 CC, ES			
300.00	300.00	299.81	299.65	0.54	0.55	3.75	10.82	0.71	10.85	9.77	1.08	10.032			
400.00	400.00	399.11	398.57	0.76	0.80	31.03	14.31	8.61	16.76	15.20	1.56	10.761			
500.00	500.00	497.70	496.42	0.99	1.09	45.61	19.14	19.55	27.59	25.52	2.08	13.295			
600.00	600.00	595.34	592.88	1.21	1.42	52.92	25.25	33.42	42.49	39.85	2.63	16.126			
700.00	699.98	692.17	687.96	1.43	1.80	-22.22	32.63	50.13	59.43	56.46	2.97	20.029			
800.00	799.84	790.46	784.04	1.64	2.22	-20.89	41.00	69.11	75.47	72.03	3.44	21.912			
900.00	899.45	889.62	880.96	1.87	2.66	-20.79	49.47	88.30	88.37	84.43	3.94	22.441			
1,000.00	998.70	989.14	978.23	2.13	3.10	-21.44	57.96	107.56	98.03	93.58	4.46	22.003			
1,100.00	1,097.47	1,088.90	1,075.73	2.42	3.55	-22.70	66.48	126.87	104.49	99.49	5.00	20.908			
1,200.00	1,195.62	1,188.78	1,173.34	2.76	4.00	-24.58	75.01	146.21	107.82	102.25	5.57	19.361			
1,300.00	1,293.21	1,288.67	1,270.97	3.15	4.45	-27.02	83.54	165.54	108.75	102.58	6.17	17.637			
1,400.00	1,390.74	1,388.55	1,368.59	3.56	4.90	-29.48	92.07	184.88	109.66	102.87	6.79	16.148			
1,500.00	1,488.28	1,488.44	1,466.22	3.99	5.35	-31.90	100.60	204.21	110.77	103.31	7.46	14.857			
1,600.00	1,585.81	1,588.32	1,563.84	4.42	5.81	-34.27	109.13	223.55	112.07	103.91	8.16	13.735			
1,700.00	1,683.35	1,688.21	1,661.47	4.86	6.26	-36.58	117.66	242.88	113.56	104.66	8.90	12.759			
1,800.00	1,780.88	1,788.10	1,759.09	5.31	6.72	-38.82	126.19	262.22	115.24	105.56	9.68	11.909			
1,900.00	1,878.41	1,887.98	1,856.72	5.77	7.17	-41.00	134.72	281.55	117.08	106.59	10.48	11.167			
2,000.00	1,975.95	1,987.87	1,954.34	6.23	7.63	-43.11	143.25	300.89	119.09	107.76	11.32	10.518			
2,100.00	2,073.48	2,087.75	2,051.96	6.69	8.08	-45.15	151.78	320.22	121.25	109.06	12.19	9.951			
2,200.00	2,171.02	2,187.64	2,149.59	7.15	8.54	-47.11	160.31	339.56	123.56	110.49	13.07	9.453			
2,300.00	2,268.55	2,287.52	2,247.21	7.61	8.99	-49.00	168.84	358.89	126.01	112.03	13.98	9.015			
2,400.00	2,366.08	2,387.41	2,344.84	8.08	9.45	-50.81	177.36	378.22	128.59	113.69	14.90	8.629			
2,500.00	2,463.62	2,487.29	2,442.46	8.54	9.91	-52.55	185.89	397.56	131.30	115.46	15.84	8.288			
2,600.00	2,561.15	2,587.18	2,540.09	9.01	10.36	-54.22	194.42	416.89	134.12	117.33	16.79	7.986			
2,700.00	2,658.69	2,687.06	2,637.71	9.48	10.82	-55.82	202.95	436.23	137.05	119.30	17.76	7.719			
2,800.00	2,756.22	2,786.95	2,735.33	9.95	11.28	-57.35	211.48	455.56	140.09	121.36	18.73	7.480			
2,900.00	2,853.75	2,886.83	2,832.96	10.42	11.73	-58.82	220.01	474.90	143.22	123.51	19.71	7.268			
3,000.00	2,951.29	2,986.72	2,930.58	10.89	12.19	-60.22	228.54	494.23	146.44	125.75	20.69	7.078			
3,100.00	3,048.82	3,086.60	3,028.21	11.36	12.64	-61.56	237.07	513.57	149.74	128.06	21.68	6.908			
3,200.00	3,146.35	3,186.49	3,125.83	11.83	13.10	-62.84	245.60	532.90	153.12	130.45	22.67	6.755			
3,300.00	3,243.89	3,286.37	3,223.46	12.31	13.56	-64.07	254.13	552.24	156.58	132.91	23.66	6.617			
3,400.00	3,341.42	3,386.26	3,321.08	12.78	14.02	-65.24	262.66	571.57	160.10	135.44	24.66	6.493			
3,500.00	3,438.96	3,486.15	3,418.70	13.25	14.47	-66.36	271.19	590.91	163.69	138.03	25.65	6.381			
3,600.00	3,536.49	3,586.03	3,516.33	13.72	14.93	-67.44	279.72	610.24	167.34	140.69	26.65	6.279			
3,700.00	3,634.02	3,685.92	3,613.95	14.20	15.39	-68.47	288.25	629.58	171.04	143.39	27.65	6.186			
3,800.00	3,731.56	3,785.80	3,711.58	14.67	15.84	-69.45	296.78	648.91	174.80	146.15	28.64	6.102			
3,900.00	3,829.09	3,885.69	3,809.20	15.14	16.30	-70.39	305.31	668.24	178.61	148.97	29.64	6.026			
4,000.00	3,926.63	3,985.57	3,906.83	15.62	16.76	-71.29	313.84	687.58	182.46	151.82	30.63	5.956			
4,100.00	4,024.16	4,085.46	4,004.45	16.09	17.21	-72.16	322.37	706.91	186.35	154.73	31.63	5.892			
4,200.00	4,121.69	4,185.34	4,102.07	16.57	17.67	-72.99	330.90	726.25	190.29	157.67	32.62	5.834			
4,300.00	4,219.23	4,285.23	4,199.70	17.04	18.13	-73.78	339.43	745.58	194.27	160.66	33.61	5.780			
4,400.00	4,316.76	4,385.11	4,297.32	17.51	18.58	-74.55	347.95	764.92	198.28	163.68	34.60	5.731			
4,500.00	4,414.30	4,485.00	4,394.95	17.99	19.04	-75.28	356.48	784.25	202.32	166.74	35.58	5.686			
4,600.00	4,511.83	4,584.88	4,492.57	18.46	19.50	-75.99	365.01	803.59	206.40	169.83	36.57	5.644			
4,700.00	4,609.36	4,684.77	4,590.19	18.94	19.96	-76.66	373.54	822.92	210.50	172.95	37.55	5.605			
4,800.00	4,706.90	4,784.65	4,687.82	19.41	20.41	-77.31	382.07	842.26	214.64	176.10	38.54	5.570			
4,900.00	4,804.43	4,884.54	4,785.44	19.89	20.87	-77.94	390.60	861.59	218.80	179.29	39.52	5.537			
5,000.00	4,901.97	4,984.43	4,883.07	20.36	21.33	-78.54	399.13	880.93	222.99	182.49	40.49	5.507			

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



# Archer

## Anticollision Report

<b>Company:</b>	Piceance Energy, LLC	<b>Local Co-ordinate Reference:</b>	Well Bruton 30-10E
<b>Project:</b>	Mesa County, CO	<b>TVD Reference:</b>	Well @ 7665.00usft
<b>Reference Site:</b>	Bruton 30-10 Pad	<b>MD Reference:</b>	Well @ 7665.00usft
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Bruton 30-10E	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Slot B-7	<b>Database:</b>	EDMDBBW
<b>Reference Design:</b>	Design #2	<b>Offset TVD Reference:</b>	Reference Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-MWD													Offset Well Error:	0.00 usft
Reference				Offset			Semi Major Axis			Distance			Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
5,100.00	4,999.50	5,084.31	4,980.69	20.84	21.78	-79.13	407.66	900.26	227.20	185.73	41.47	5.478		
5,200.00	5,097.07	5,184.20	5,078.32	21.30	22.24	-79.67	416.19	919.60	231.46	189.03	42.42	5.456		
5,300.00	5,195.17	5,285.15	5,177.03	21.63	22.68	-79.68	424.73	938.96	236.13	192.96	43.17	5.470		
5,400.00	5,293.90	5,388.37	5,278.51	21.92	23.02	-79.46	432.33	956.18	240.35	196.61	43.74	5.495		
5,500.00	5,393.11	5,491.72	5,380.74	22.17	23.31	-79.22	438.45	970.05	243.82	199.60	44.22	5.514		
5,600.00	5,492.71	5,595.19	5,483.56	22.38	23.54	-78.93	443.08	980.56	246.53	201.93	44.60	5.527		
5,700.00	5,592.55	5,698.75	5,586.83	22.54	23.74	-78.62	446.22	987.66	248.48	203.58	44.90	5.534		
5,800.00	5,692.52	5,802.40	5,690.39	22.66	23.88	-78.26	447.85	991.35	249.66	204.55	45.11	5.535		
5,900.00	5,792.52	5,904.54	5,792.52	22.77	23.99	0.54	448.10	991.92	249.90	204.59	45.31	5.515		
6,000.00	5,892.52	6,004.54	5,892.52	22.89	24.11	0.54	448.10	991.92	249.90	204.35	45.55	5.486		
6,100.00	5,992.52	6,104.54	5,992.52	23.02	24.22	0.54	448.10	991.92	249.90	204.10	45.80	5.456		
6,200.00	6,092.52	6,204.54	6,092.52	23.14	24.34	0.54	448.10	991.92	249.90	203.86	46.05	5.427		
6,300.00	6,192.52	6,304.54	6,192.52	23.26	24.46	0.54	448.10	991.92	249.90	203.61	46.30	5.398		
6,400.00	6,292.52	6,404.54	6,292.52	23.39	24.58	0.54	448.10	991.92	249.90	203.35	46.55	5.368		
6,500.00	6,392.52	6,504.54	6,392.52	23.52	24.70	0.54	448.10	991.92	249.90	203.09	46.81	5.339		
6,600.00	6,492.52	6,604.54	6,492.52	23.64	24.82	0.54	448.10	991.92	249.90	202.83	47.07	5.309		
6,700.00	6,592.52	6,704.54	6,592.52	23.77	24.95	0.54	448.10	991.92	249.90	202.57	47.33	5.280		
6,800.00	6,692.52	6,804.54	6,692.52	23.91	25.07	0.54	448.10	991.92	249.90	202.31	47.60	5.250		
6,900.00	6,792.52	6,904.54	6,792.52	24.04	25.20	0.54	448.10	991.92	249.90	202.04	47.87	5.221		
7,000.00	6,892.52	7,004.54	6,892.52	24.17	25.33	0.54	448.10	991.92	249.90	201.77	48.14	5.191		
7,100.00	6,992.52	7,104.54	6,992.52	24.31	25.46	0.54	448.10	991.92	249.90	201.49	48.41	5.162		
7,200.00	7,092.52	7,204.54	7,092.52	24.45	25.59	0.54	448.10	991.92	249.90	201.22	48.69	5.133		
7,300.00	7,192.52	7,304.54	7,192.52	24.58	25.72	0.54	448.10	991.92	249.90	200.94	48.97	5.104		
7,400.00	7,292.52	7,404.54	7,292.52	24.72	25.86	0.54	448.10	991.92	249.90	200.66	49.25	5.074		
7,500.00	7,392.52	7,504.54	7,392.52	24.86	25.99	0.54	448.10	991.92	249.90	200.37	49.53	5.045		
7,600.00	7,492.52	7,604.54	7,492.52	25.01	26.13	0.54	448.10	991.92	249.90	200.09	49.82	5.016		
7,700.00	7,592.52	7,704.54	7,592.52	25.15	26.26	0.54	448.10	991.92	249.90	199.80	50.11	4.987		
7,800.00	7,692.52	7,804.54	7,692.52	25.29	26.40	0.54	448.10	991.92	249.90	199.51	50.40	4.959		
7,890.48	7,783.00	7,895.01	7,783.00	25.36	26.53	0.54	448.10	991.92	249.90	199.31	50.60	4.939 SF		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



# Archer

## Anticollision Report

<b>Company:</b>	Piceance Energy, LLC	<b>Local Co-ordinate Reference:</b>	Well Bruton 30-10E
<b>Project:</b>	Mesa County, CO	<b>TVD Reference:</b>	Well @ 7665.00usft
<b>Reference Site:</b>	Bruton 30-10 Pad	<b>MD Reference:</b>	Well @ 7665.00usft
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Bruton 30-10E	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Slot B-7	<b>Database:</b>	EDMDBBW
<b>Reference Design:</b>	Design #2	<b>Offset TVD Reference:</b>	Reference Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.00	-120.15	-5.10	-8.78	10.15					
100.00	100.00	100.00	100.00	0.09	0.09	-120.15	-5.10	-8.78	10.15	9.98	0.18	57.909		
200.00	200.00	200.00	200.00	0.31	0.31	-120.15	-5.10	-8.78	10.15	9.53	0.62	16.248		
300.00	300.00	300.00	300.00	0.54	0.54	-120.15	-5.10	-8.78	10.15	9.08	1.07	9.450		
400.00	400.00	400.00	400.00	0.76	0.76	-120.15	-5.10	-8.78	10.15	8.63	1.52	6.662		
500.00	500.00	500.00	500.00	0.99	0.99	-120.15	-5.10	-8.78	10.15	8.18	1.97	5.145		
600.00	600.00	600.00	600.00	1.21	1.21	-120.15	-5.10	-8.78	10.15	7.73	2.42	4.190	CC, ES, SF	
700.00	699.98	699.73	699.71	1.43	1.43	170.59	-4.19	-10.25	12.80	9.93	2.87	4.463		
800.00	799.84	798.83	798.67	1.64	1.65	-176.18	-1.47	-14.64	21.70	18.38	3.32	6.529		
900.00	899.45	896.70	896.17	1.87	1.88	-168.66	2.98	-21.83	37.36	33.57	3.80	9.843		
1,000.00	998.70	992.75	991.52	2.13	2.13	-164.81	9.05	-31.63	59.51	55.24	4.28	13.916		
1,100.00	1,097.47	1,086.47	1,084.13	2.42	2.40	-162.66	16.59	-43.81	87.88	83.11	4.76	18.444		
1,200.00	1,195.62	1,178.16	1,174.26	2.76	2.70	-161.33	25.46	-58.15	122.14	116.87	5.26	23.208		
1,300.00	1,293.21	1,270.84	1,265.19	3.15	3.04	-160.81	34.88	-73.36	159.69	153.96	5.73	27.864		
1,400.00	1,390.74	1,363.42	1,356.04	3.56	3.38	-160.57	44.29	-88.56	197.47	191.28	6.20	31.869		
1,500.00	1,488.28	1,456.01	1,446.88	3.99	3.74	-160.41	53.70	-103.76	235.25	228.58	6.67	35.248		
1,600.00	1,585.81	1,548.60	1,537.73	4.42	4.10	-160.29	63.11	-118.95	273.03	265.86	7.17	38.082		
1,700.00	1,683.35	1,641.19	1,628.57	4.86	4.47	-160.21	72.52	-134.15	310.81	303.15	7.67	40.549		
1,800.00	1,780.88	1,733.77	1,719.42	5.31	4.84	-160.14	81.93	-149.35	348.60	340.43	8.17	42.664		
1,900.00	1,878.41	1,826.36	1,810.26	5.77	5.22	-160.08	91.34	-164.55	386.38	377.70	8.68	44.502		
2,000.00	1,975.95	1,918.95	1,901.11	6.23	5.60	-160.04	100.75	-179.75	424.16	414.96	9.20	46.111		
2,100.00	2,073.48	2,011.53	1,991.96	6.69	5.98	-160.00	110.15	-194.94	461.94	452.23	9.72	47.530		
2,200.00	2,171.02	2,104.12	2,082.80	7.15	6.36	-159.97	119.56	-210.14	499.73	489.48	10.24	48.787		
2,300.00	2,268.55	2,196.71	2,173.65	7.61	6.75	-159.94	128.97	-225.34	537.51	526.74	10.77	49.908		
2,400.00	2,366.08	2,289.30	2,264.49	8.08	7.13	-159.91	138.38	-240.54	575.29	563.99	11.30	50.913		
2,500.00	2,463.62	2,381.88	2,355.34	8.54	7.52	-159.89	147.79	-255.73	613.08	601.25	11.83	51.819		
2,600.00	2,561.15	2,474.47	2,446.18	9.01	7.91	-159.87	157.20	-270.93	650.86	638.50	12.36	52.639		
2,700.00	2,658.69	2,567.06	2,537.03	9.48	8.30	-159.86	166.61	-286.13	688.64	675.74	12.90	53.384		
2,800.00	2,756.22	2,659.64	2,627.87	9.95	8.69	-159.84	176.02	-301.33	726.43	712.99	13.44	54.065		
2,900.00	2,853.75	2,752.23	2,718.72	10.42	9.08	-159.83	185.43	-316.53	764.21	750.24	13.97	54.688		
3,000.00	2,951.29	2,844.82	2,809.56	10.89	9.47	-159.82	194.83	-331.72	801.99	787.48	14.51	55.260		
3,100.00	3,048.82	2,937.41	2,900.41	11.36	9.86	-159.81	204.24	-346.92	839.78	824.72	15.05	55.788		
3,200.00	3,146.35	3,029.99	2,991.25	11.83	10.25	-159.80	213.65	-362.12	877.56	861.97	15.59	56.276		
3,300.00	3,243.89	3,122.58	3,082.10	12.31	10.64	-159.79	223.06	-377.32	915.34	899.21	16.14	56.728		
3,400.00	3,341.42	3,215.17	3,172.94	12.78	11.04	-159.78	232.47	-392.52	953.13	936.45	16.68	57.149		
3,500.00	3,438.96	3,307.75	3,263.79	13.25	11.43	-159.77	241.88	-407.71	990.91	973.69	17.22	57.541		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



# Archer

## Anticollision Report

<b>Company:</b>	Piceance Energy, LLC	<b>Local Co-ordinate Reference:</b>	Well Bruton 30-10E
<b>Project:</b>	Mesa County, CO	<b>TVD Reference:</b>	Well @ 7665.00usft
<b>Reference Site:</b>	Bruton 30-10 Pad	<b>MD Reference:</b>	Well @ 7665.00usft
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Bruton 30-10E	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Slot B-7	<b>Database:</b>	EDMDBBW
<b>Reference Design:</b>	Design #2	<b>Offset TVD Reference:</b>	Reference Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 130-MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
0.00	0.00	0.00	18.00	0.00	0.00	141.39	-135.63	108.32	174.51					
100.00	100.00	83.21	101.21	0.09	0.10	141.29	-135.22	108.38	173.29	173.11	0.18	950.441		
200.00	200.00	184.25	202.23	0.31	0.26	140.96	-133.78	108.47	172.24	171.67	0.58	299.159		
300.00	300.00	284.00	301.98	0.54	0.47	141.00	-132.78	107.51	170.86	169.85	1.01	169.109		
400.00	400.00	382.18	400.14	0.76	0.68	141.66	-133.43	105.53	170.12	168.67	1.44	117.920		
421.04	421.04	403.09	421.03	0.81	0.73	141.86	-133.80	105.05	170.11	168.57	1.54	110.817	CC	
500.00	500.00	481.26	499.14	0.99	0.90	142.88	-135.77	102.74	170.26	168.38	1.88	90.493	ES	
600.00	600.00	578.84	596.59	1.21	1.12	144.52	-139.62	99.50	171.48	169.16	2.32	73.913		
700.00	699.98	676.33	693.91	1.43	1.34	68.03	-144.79	96.85	173.64	170.87	2.77	62.682		
800.00	799.84	774.86	792.20	1.64	1.58	71.45	-151.07	94.00	175.76	172.55	3.22	54.612		
900.00	899.45	872.49	889.47	1.87	1.83	76.21	-158.39	90.20	178.24	174.56	3.68	48.383		
1,000.00	998.70	969.74	986.34	2.13	2.07	81.77	-166.38	86.82	182.28	178.12	4.16	43.827		
1,100.00	1,097.47	1,068.87	1,085.13	2.42	2.29	87.85	-174.18	84.34	187.82	183.17	4.65	40.366		
1,200.00	1,195.62	1,167.54	1,183.56	2.76	2.51	94.30	-180.75	82.28	194.55	189.37	5.18	37.533		
1,300.00	1,293.21	1,263.66	1,279.45	3.15	2.74	100.96	-187.02	80.09	204.08	198.33	5.76	35.442		
1,400.00	1,390.74	1,360.01	1,375.54	3.56	2.97	107.21	-193.60	77.49	216.73	210.39	6.34	34.177		
1,500.00	1,488.28	1,457.59	1,472.88	3.99	3.20	112.71	-200.01	75.33	231.42	224.51	6.91	33.480		
1,600.00	1,585.81	1,555.28	1,570.37	4.42	3.42	117.60	-205.92	73.09	247.53	240.07	7.47	33.147		
1,700.00	1,683.35	1,650.81	1,665.71	4.86	3.64	121.83	-211.49	70.79	265.06	257.04	8.01	33.080	SF	
1,800.00	1,780.88	1,747.45	1,762.12	5.31	3.87	125.55	-217.62	68.40	284.35	275.80	8.55	33.260		
1,900.00	1,878.41	1,844.76	1,859.23	5.77	4.10	128.76	-223.63	66.47	304.31	295.24	9.08	33.532		
2,000.00	1,975.95	1,942.74	1,957.02	6.23	4.33	131.58	-229.52	64.68	324.88	315.28	9.59	33.862		
2,100.00	2,073.48	2,039.91	2,054.02	6.69	4.55	134.14	-234.77	62.67	345.75	335.64	10.10	34.218		
2,200.00	2,171.02	2,135.57	2,149.52	7.15	4.77	136.39	-239.93	60.51	367.30	356.69	10.61	34.622		
2,300.00	2,268.55	2,232.26	2,246.03	7.61	5.00	138.42	-245.29	58.17	389.56	378.46	11.11	35.066		
2,400.00	2,366.08	2,328.72	2,342.32	8.08	5.23	140.23	-250.60	55.92	412.18	400.57	11.61	35.517		
2,500.00	2,463.62	2,426.19	2,439.62	8.54	5.45	141.85	-256.02	53.72	435.13	423.03	12.10	35.961		
2,600.00	2,561.15	2,523.32	2,536.58	9.01	5.68	143.32	-261.20	51.60	458.18	445.58	12.59	36.387		
2,700.00	2,658.69	2,620.29	2,633.39	9.48	5.90	144.63	-266.41	49.59	481.42	468.34	13.08	36.797		
2,800.00	2,756.22	2,715.09	2,728.04	9.95	6.12	145.82	-271.48	47.46	505.00	491.43	13.57	37.214		
2,900.00	2,853.75	2,806.59	2,819.35	10.42	6.34	146.92	-276.41	44.61	529.41	515.36	14.05	37.684		
3,000.00	2,951.29	2,900.24	2,912.77	10.89	6.57	147.94	-282.09	41.18	554.83	540.29	14.53	38.178		
3,100.00	3,048.82	2,993.75	3,006.00	11.36	6.80	148.79	-288.56	38.03	580.75	565.72	15.02	38.658		
3,200.00	3,146.35	3,092.54	3,104.46	11.83	7.05	149.54	-296.07	35.05	606.96	591.44	15.53	39.091		
3,300.00	3,243.89	3,191.38	3,203.01	12.31	7.29	150.22	-303.27	32.57	632.68	616.65	16.03	39.473		
3,400.00	3,341.42	3,292.90	3,304.27	12.78	7.53	150.91	-309.97	30.09	658.00	641.47	16.53	39.810		
3,500.00	3,438.96	3,388.59	3,399.77	13.25	7.76	151.54	-315.72	27.85	682.97	665.95	17.02	40.133		
3,600.00	3,536.49	3,483.66	3,494.64	13.72	7.98	152.15	-321.35	25.24	708.25	690.75	17.51	40.460		
3,700.00	3,634.02	3,575.49	3,586.23	14.20	8.21	152.66	-327.30	22.70	733.97	715.98	17.99	40.792		
3,800.00	3,731.56	3,667.81	3,678.26	14.67	8.44	153.09	-334.23	20.14	760.34	741.85	18.49	41.121		
3,900.00	3,829.09	3,762.69	3,772.79	15.14	8.68	153.47	-341.86	17.45	787.11	768.12	19.00	41.435		
4,000.00	3,926.63	3,868.00	3,877.74	15.62	8.95	153.86	-350.22	14.90	813.55	794.03	19.52	41.678		
4,100.00	4,024.16	3,963.67	3,973.15	16.09	9.18	154.23	-356.88	12.71	839.33	819.32	20.02	41.931		
4,200.00	4,121.69	4,047.25	4,056.46	16.57	9.39	154.54	-363.10	10.27	865.93	845.43	20.50	42.245		
4,300.00	4,219.23	4,150.33	4,159.13	17.04	9.65	154.86	-371.66	7.02	893.23	872.21	21.02	42.495		
4,400.00	4,316.76	4,267.40	4,275.89	17.51	9.94	155.22	-379.81	4.90	918.71	897.16	21.56	42.616		
4,500.00	4,414.30	4,359.24	4,367.58	17.99	10.15	155.55	-384.99	3.27	943.47	921.43	22.04	42.804		
4,600.00	4,511.83	4,452.92	4,461.09	18.46	10.37	155.90	-390.05	0.99	968.65	946.12	22.53	43.001		
4,700.00	4,609.36	4,545.00	4,552.99	18.94	10.58	156.25	-394.96	-1.91	994.38	971.37	23.01	43.224		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



# Archer

## Anticollision Report

<b>Company:</b>	Piceance Energy, LLC	<b>Local Co-ordinate Reference:</b>	Well Bruton 30-10E
<b>Project:</b>	Mesa County, CO	<b>TVD Reference:</b>	Well @ 7665.00usft
<b>Reference Site:</b>	Bruton 30-10 Pad	<b>MD Reference:</b>	Well @ 7665.00usft
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Bruton 30-10E	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Slot B-7	<b>Database:</b>	EDMDBBW
<b>Reference Design:</b>	Design #2	<b>Offset TVD Reference:</b>	Reference Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.00	176.35	-22.22	1.42	22.26					
100.00	100.00	100.00	100.00	0.09	0.09	176.35	-22.22	1.42	22.26	22.09	0.18	126.983		
200.00	200.00	200.00	200.00	0.31	0.31	176.35	-22.22	1.42	22.26	21.64	0.62	35.628		
300.00	300.00	300.24	300.21	0.54	0.53	-179.31	-21.70	-0.26	21.70	20.63	1.07	20.292		
400.00	400.00	400.23	400.06	0.76	0.76	-165.35	-20.16	-5.27	20.84	19.31	1.52	13.680		
412.50	412.50	412.70	412.50	0.79	0.79	-162.88	-19.89	-6.13	20.82	19.24	1.58	13.170	CC, ES	
500.00	500.00	499.73	499.18	0.99	1.01	-142.41	-17.61	-13.56	22.24	20.25	1.99	11.176	SF	
600.00	600.00	598.51	597.23	1.21	1.29	-119.34	-14.07	-25.03	28.85	26.36	2.49	11.575		
700.00	699.98	696.61	694.17	1.43	1.62	177.60	-9.67	-39.33	42.64	39.68	2.96	14.427		
800.00	799.84	794.48	790.82	1.64	1.96	-174.68	-5.12	-54.11	61.96	58.53	3.42	18.096		
900.00	899.45	891.63	886.75	1.87	2.30	-170.99	-0.60	-68.78	85.20	81.31	3.90	21.868		
1,000.00	998.70	987.94	981.85	2.13	2.65	-169.17	3.88	-83.33	111.95	107.58	4.37	25.607		
1,100.00	1,097.47	1,083.29	1,076.00	2.42	2.99	-168.29	8.32	-97.73	142.04	137.19	4.85	29.289		
1,200.00	1,195.62	1,177.57	1,169.09	2.76	3.34	-167.90	12.70	-111.97	175.37	170.04	5.33	32.915		
1,300.00	1,293.21	1,270.89	1,261.24	3.15	3.68	-167.85	17.04	-126.06	211.29	205.50	5.79	36.506		
1,400.00	1,390.74	1,364.13	1,353.31	3.56	4.02	-167.87	21.38	-140.15	247.43	241.18	6.24	39.638		
1,500.00	1,488.28	1,457.38	1,445.38	3.99	4.37	-167.88	25.71	-154.23	283.57	276.86	6.71	42.288		
1,600.00	1,585.81	1,550.62	1,537.45	4.42	4.71	-167.89	30.05	-168.31	319.70	312.53	7.18	44.554		
1,700.00	1,683.35	1,643.86	1,629.52	4.86	5.06	-167.90	34.39	-182.39	355.84	348.19	7.65	46.507		
1,800.00	1,780.88	1,737.10	1,721.59	5.31	5.40	-167.91	38.73	-196.48	391.98	383.85	8.13	48.206		
1,900.00	1,878.41	1,830.34	1,813.66	5.77	5.75	-167.91	43.06	-210.56	428.12	419.51	8.62	49.694		
2,000.00	1,975.95	1,923.58	1,905.73	6.23	6.09	-167.92	47.40	-224.64	464.26	455.16	9.10	51.006		
2,100.00	2,073.48	2,016.82	1,997.80	6.69	6.44	-167.92	51.74	-238.73	500.40	490.81	9.59	52.172		
2,200.00	2,171.02	2,110.06	2,089.87	7.15	6.79	-167.93	56.07	-252.81	536.54	526.46	10.08	53.213		
2,300.00	2,268.55	2,203.31	2,181.94	7.61	7.13	-167.93	60.41	-266.89	572.68	562.10	10.58	54.147		
2,400.00	2,366.08	2,296.55	2,274.01	8.08	7.48	-167.93	64.75	-280.97	608.82	597.75	11.07	54.990		
2,500.00	2,463.62	2,389.79	2,366.08	8.54	7.83	-167.94	69.08	-295.06	644.96	633.39	11.57	55.754		
2,600.00	2,561.15	2,483.03	2,458.15	9.01	8.17	-167.94	73.42	-309.14	681.10	669.03	12.07	56.450		
2,700.00	2,658.69	2,576.27	2,550.22	9.48	8.52	-167.94	77.76	-323.22	717.24	704.67	12.56	57.086		
2,800.00	2,756.22	2,669.51	2,642.29	9.95	8.87	-167.94	82.09	-337.30	753.38	740.31	13.06	57.669		
2,900.00	2,853.75	2,762.75	2,734.36	10.42	9.21	-167.94	86.43	-351.39	789.52	775.95	13.56	58.206		
3,000.00	2,951.29	2,856.00	2,826.43	10.89	9.56	-167.95	90.77	-365.47	825.66	811.59	14.07	58.701		
3,100.00	3,048.82	2,949.24	2,918.50	11.36	9.91	-167.95	95.10	-379.55	861.80	847.23	14.57	59.160		
3,200.00	3,146.35	3,042.48	3,010.57	11.83	10.26	-167.95	99.44	-393.63	897.94	882.87	15.07	59.586		
3,300.00	3,243.89	3,135.72	3,102.64	12.31	10.60	-167.95	103.78	-407.72	934.07	918.50	15.57	59.983		
3,400.00	3,341.42	3,228.96	3,194.71	12.78	10.95	-167.95	108.11	-421.80	970.21	954.14	16.08	60.353		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



# Archer

## Anticollision Report

<b>Company:</b>	Piceance Energy, LLC	<b>Local Co-ordinate Reference:</b>	Well Bruton 30-10E
<b>Project:</b>	Mesa County, CO	<b>TVD Reference:</b>	Well @ 7665.00usft
<b>Reference Site:</b>	Bruton 30-10 Pad	<b>MD Reference:</b>	Well @ 7665.00usft
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Bruton 30-10E	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Slot B-7	<b>Database:</b>	EDMDBBW
<b>Reference Design:</b>	Design #2	<b>Offset TVD Reference:</b>	Reference Datum

Offset Design													Offset Site Error:	0.00 usft	
Survey Program: 0-MWD													Offset Well Error:		0.00 usft
Reference		Offset		Semi Major Axis		Distance							Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor			
0.00	0.00	0.00	0.00	0.00	0.00	151.87	-17.48	9.35	19.82						
100.00	100.00	100.00	100.00	0.09	0.09	151.87	-17.48	9.35	19.82	19.65	0.18	113.072			
200.00	200.00	200.00	200.00	0.31	0.31	151.87	-17.48	9.35	19.82	19.20	0.62	31.725			
300.00	300.00	300.00	300.00	0.54	0.54	151.87	-17.48	9.35	19.82	18.75	1.07	18.451			
400.00	400.00	400.00	400.00	0.76	0.76	151.87	-17.48	9.35	19.82	18.30	1.52	13.008			
500.00	500.00	500.00	500.00	0.99	0.99	151.87	-17.48	9.35	19.82	17.85	1.97	10.045	CC, ES		
600.00	600.00	599.67	599.65	1.21	1.20	147.51	-17.39	11.08	20.62	18.21	2.41	8.554			
700.00	699.98	699.19	699.03	1.43	1.41	61.47	-17.12	16.26	22.75	19.91	2.84	8.020			
800.00	799.84	798.59	798.05	1.64	1.64	56.18	-16.67	24.87	25.57	22.29	3.28	7.805			
900.00	899.45	897.76	896.48	1.87	1.90	53.10	-16.34	36.87	29.11	25.36	3.74	7.777			
1,000.00	998.70	996.77	994.29	2.13	2.20	52.14	-16.44	52.21	33.44	29.19	4.25	7.876			
1,100.00	1,097.47	1,095.61	1,091.35	2.42	2.54	52.62	-16.96	70.86	38.50	33.70	4.80	8.023			
1,200.00	1,195.62	1,195.39	1,188.94	2.76	2.92	55.18	-17.75	91.63	43.15	37.72	5.43	7.952			
1,300.00	1,293.21	1,295.25	1,286.62	3.15	3.33	60.18	-18.54	112.43	46.42	40.27	6.15	7.548			
1,400.00	1,390.74	1,395.12	1,384.29	3.56	3.75	64.77	-19.33	133.23	49.90	42.96	6.94	7.187			
1,500.00	1,488.28	1,494.98	1,481.96	3.99	4.17	68.74	-20.11	154.03	53.66	45.87	7.79	6.892			
1,600.00	1,585.81	1,594.85	1,579.63	4.42	4.60	72.18	-20.90	174.83	57.64	48.98	8.66	6.654			
1,700.00	1,683.35	1,694.71	1,677.30	4.86	5.04	75.17	-21.69	195.63	61.80	52.24	9.56	6.464			
1,800.00	1,780.88	1,794.58	1,774.97	5.31	5.48	77.77	-22.48	216.43	66.10	55.63	10.47	6.312			
1,900.00	1,878.41	1,894.44	1,872.65	5.77	5.92	80.05	-23.26	237.23	70.53	59.14	11.39	6.190			
2,000.00	1,975.95	1,994.31	1,970.32	6.23	6.36	82.06	-24.05	258.03	75.05	62.73	12.32	6.092			
2,100.00	2,073.48	2,094.18	2,067.99	6.69	6.81	83.84	-24.84	278.83	79.66	66.41	13.25	6.012			
2,200.00	2,171.02	2,194.04	2,165.66	7.15	7.26	85.42	-25.63	299.63	84.33	70.15	14.18	5.946			
2,300.00	2,268.55	2,293.91	2,263.33	7.61	7.71	86.84	-26.41	320.43	89.06	73.95	15.12	5.892			
2,400.00	2,366.08	2,393.77	2,361.01	8.08	8.16	88.11	-27.20	341.23	93.84	77.80	16.05	5.848			
2,500.00	2,463.62	2,493.64	2,458.68	8.54	8.61	89.26	-27.99	362.03	98.67	81.69	16.98	5.810			
2,600.00	2,561.15	2,593.50	2,556.35	9.01	9.06	90.30	-28.78	382.82	103.52	85.61	17.91	5.779			
2,700.00	2,658.69	2,693.37	2,654.02	9.48	9.51	91.25	-29.56	403.62	108.41	89.57	18.84	5.753			
2,800.00	2,756.22	2,793.23	2,751.69	9.95	9.96	92.11	-30.35	424.42	113.33	93.55	19.78	5.731			
2,900.00	2,853.75	2,893.10	2,849.36	10.42	10.41	92.91	-31.14	445.22	118.27	97.56	20.70	5.712			
3,000.00	2,951.29	2,992.96	2,947.04	10.89	10.86	93.64	-31.93	466.02	123.23	101.59	21.63	5.696			
3,100.00	3,048.82	3,092.83	3,044.71	11.36	11.32	94.31	-32.71	486.82	128.21	105.64	22.56	5.682			
3,200.00	3,146.35	3,192.69	3,142.38	11.83	11.77	94.93	-33.50	507.62	133.20	109.71	23.49	5.671			
3,300.00	3,243.89	3,292.56	3,240.05	12.31	12.23	95.51	-34.29	528.42	138.21	113.79	24.42	5.660			
3,400.00	3,341.42	3,392.42	3,337.72	12.78	12.68	96.05	-35.08	549.22	143.23	117.89	25.34	5.652			
3,500.00	3,438.96	3,492.29	3,435.40	13.25	13.13	96.55	-35.86	570.02	148.27	122.00	26.27	5.644			
3,600.00	3,536.49	3,592.15	3,533.07	13.72	13.59	97.02	-36.65	590.82	153.31	126.12	27.19	5.638			
3,700.00	3,634.02	3,692.02	3,630.74	14.20	14.04	97.45	-37.44	611.62	158.37	130.25	28.12	5.632			
3,800.00	3,731.56	3,791.88	3,728.41	14.67	14.50	97.87	-38.23	632.42	163.43	134.39	29.04	5.627			
3,900.00	3,829.09	3,891.75	3,826.08	15.14	14.95	98.25	-39.01	653.22	168.50	138.54	29.97	5.623			
4,000.00	3,926.63	3,991.61	3,923.75	15.62	15.41	98.61	-39.80	674.02	173.58	142.69	30.89	5.620			
4,100.00	4,024.16	4,091.48	4,021.43	16.09	15.86	98.96	-40.59	694.82	178.66	146.85	31.81	5.616			
4,200.00	4,121.69	4,191.34	4,119.10	16.57	16.32	99.28	-41.38	715.62	183.76	151.02	32.73	5.614			
4,300.00	4,219.23	4,291.21	4,216.77	17.04	16.77	99.59	-42.16	736.42	188.85	155.20	33.66	5.611			
4,400.00	4,316.76	4,391.07	4,314.44	17.51	17.23	99.88	-42.95	757.22	193.95	159.38	34.58	5.609			
4,500.00	4,414.30	4,490.94	4,412.11	17.99	17.68	100.15	-43.74	778.02	199.06	163.56	35.50	5.608			
4,600.00	4,511.83	4,590.80	4,509.78	18.46	18.14	100.42	-44.53	798.82	204.17	167.75	36.42	5.606			
4,700.00	4,609.36	4,690.67	4,607.46	18.94	18.59	100.67	-45.32	819.62	209.28	171.95	37.34	5.605			
4,800.00	4,706.90	4,790.53	4,705.13	19.41	19.05	100.90	-46.10	840.42	214.40	176.14	38.26	5.604			
4,900.00	4,804.43	4,890.40	4,802.80	19.89	19.51	101.13	-46.89	861.22	219.52	180.35	39.18	5.603			
5,000.00	4,901.97	4,990.26	4,900.47	20.36	19.96	101.34	-47.68	882.02	224.65	184.55	40.10	5.602			
5,100.00	4,999.50	5,090.13	4,998.14	20.84	20.42	101.55	-48.47	902.82	229.78	188.76	41.02	5.602			

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



# Archer

## Anticollision Report

<b>Company:</b>	Piceance Energy, LLC	<b>Local Co-ordinate Reference:</b>	Well Bruton 30-10E
<b>Project:</b>	Mesa County, CO	<b>TVD Reference:</b>	Well @ 7665.00usft
<b>Reference Site:</b>	Bruton 30-10 Pad	<b>MD Reference:</b>	Well @ 7665.00usft
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Bruton 30-10E	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Slot B-7	<b>Database:</b>	EDMDBBW
<b>Reference Design:</b>	Design #2	<b>Offset TVD Reference:</b>	Reference Datum

Offset Design													Offset Site Error:	0.00 usft		
Survey Program: 0-MWD													Bruton 30-10 Pad - Bruton 30-11E - Slot B-6 - Design #3		Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance						Warning			
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor				
5,200.00	5,097.07	5,190.00	5,095.82	21.30	20.87	101.74	-49.25	923.62	234.88	192.95	41.92	5.603				
5,300.00	5,195.17	5,290.10	5,194.02	21.63	21.21	101.72	-49.99	943.00	239.40	196.81	42.60	5.620				
5,400.00	5,293.90	5,390.26	5,292.90	21.92	21.50	101.71	-50.59	958.95	243.12	199.95	43.18	5.631				
5,500.00	5,393.11	5,490.47	5,392.32	22.17	21.75	101.70	-51.06	971.45	246.04	202.36	43.68	5.633				
5,600.00	5,492.71	5,590.71	5,492.15	22.38	21.96	101.69	-51.41	980.46	248.14	204.05	44.09	5.629				
5,700.00	5,592.55	5,690.98	5,592.26	22.54	22.12	101.69	-51.61	985.98	249.43	205.01	44.41	5.616				
5,800.00	5,692.52	5,791.25	5,692.50	22.66	22.25	101.68	-51.69	987.99	249.90	205.24	44.66	5.596				
5,900.00	5,792.52	5,891.27	5,792.52	22.77	22.36	-179.64	-51.69	988.00	249.90	205.01	44.89	5.567				
6,000.00	5,892.52	5,991.27	5,892.52	22.89	22.48	-179.64	-51.69	988.00	249.90	204.77	45.13	5.537				
6,100.00	5,992.52	6,091.27	5,992.52	23.02	22.61	-179.64	-51.69	988.00	249.90	204.53	45.37	5.508				
6,200.00	6,092.52	6,191.27	6,092.52	23.14	22.73	-179.64	-51.69	988.00	249.90	204.28	45.62	5.478				
6,300.00	6,192.52	6,291.27	6,192.52	23.26	22.85	-179.64	-51.69	988.00	249.90	204.03	45.87	5.448				
6,400.00	6,292.52	6,391.27	6,292.52	23.39	22.98	-179.64	-51.69	988.00	249.90	203.77	46.12	5.418				
6,500.00	6,392.52	6,491.27	6,392.52	23.52	23.11	-179.64	-51.69	988.00	249.90	203.52	46.38	5.388				
6,600.00	6,492.52	6,591.27	6,492.52	23.64	23.24	-179.64	-51.69	988.00	249.90	203.26	46.64	5.358				
6,700.00	6,592.52	6,691.27	6,592.52	23.77	23.37	-179.64	-51.69	988.00	249.90	203.00	46.90	5.328				
6,800.00	6,692.52	6,791.27	6,692.52	23.91	23.50	-179.64	-51.69	988.00	249.90	202.73	47.17	5.298				
6,900.00	6,792.52	6,891.27	6,792.52	24.04	23.63	-179.64	-51.69	988.00	249.90	202.46	47.43	5.268				
7,000.00	6,892.52	6,991.27	6,892.52	24.17	23.77	-179.64	-51.69	988.00	249.90	202.19	47.70	5.239				
7,100.00	6,992.52	7,091.27	6,992.52	24.31	23.90	-179.64	-51.69	988.00	249.90	201.92	47.98	5.209				
7,200.00	7,092.52	7,191.27	7,092.52	24.45	24.04	-179.64	-51.69	988.00	249.90	201.65	48.25	5.179				
7,300.00	7,192.52	7,291.27	7,192.52	24.58	24.18	-179.64	-51.69	988.00	249.90	201.37	48.53	5.149				
7,400.00	7,292.52	7,391.27	7,292.52	24.72	24.32	-179.64	-51.69	988.00	249.90	201.09	48.81	5.120				
7,500.00	7,392.52	7,491.27	7,392.52	24.86	24.46	-179.64	-51.69	988.00	249.90	200.80	49.10	5.090				
7,600.00	7,492.52	7,591.27	7,492.52	25.01	24.60	-179.64	-51.69	988.00	249.90	200.52	49.38	5.061				
7,700.00	7,592.52	7,691.27	7,592.52	25.15	24.75	-179.64	-51.69	988.00	249.90	200.23	49.67	5.031				
7,800.00	7,692.52	7,791.27	7,692.52	25.29	24.89	-179.64	-51.69	988.00	249.90	199.94	49.96	5.002				
7,852.82	7,745.35	7,844.09	7,745.35	25.33	24.97	-179.64	-51.69	988.00	249.90	199.82	50.08	4.990 SF				
7,890.48	7,783.00	7,863.75	7,765.00	25.36	25.00	-179.64	-51.69	988.00	250.55	200.41	50.13	4.998				

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



# Archer

## Anticollision Report

<b>Company:</b>	Piceance Energy, LLC	<b>Local Co-ordinate Reference:</b>	Well Bruton 30-10E
<b>Project:</b>	Mesa County, CO	<b>TVD Reference:</b>	Well @ 7665.00usft
<b>Reference Site:</b>	Bruton 30-10 Pad	<b>MD Reference:</b>	Well @ 7665.00usft
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Bruton 30-10E	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Slot B-7	<b>Database:</b>	EDMDBBW
<b>Reference Design:</b>	Design #2	<b>Offset TVD Reference:</b>	Reference Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 128-MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
0.00	0.00	0.00	18.00	0.00	0.00	141.44	-146.56	116.82	188.28					
100.00	100.00	81.87	99.87	0.09	0.09	141.35	-146.38	117.09	187.45	187.27	0.18	1,034.109	CC	
200.00	200.00	181.30	199.29	0.31	0.25	141.04	-145.89	117.98	187.62	187.06	0.57	330.639	ES	
300.00	300.00	280.00	297.99	0.54	0.46	140.79	-145.92	119.06	188.34	187.34	1.00	188.510		
400.00	400.00	371.00	388.93	0.76	0.67	140.51	-147.63	121.66	191.62	190.19	1.43	134.009		
500.00	500.00	462.00	479.65	0.99	0.90	140.37	-152.73	126.49	199.35	197.47	1.88	106.205		
600.00	600.00	554.00	571.01	1.21	1.15	140.61	-161.58	132.66	211.06	208.71	2.36	89.558		
700.00	699.98	645.00	660.88	1.43	1.45	62.42	-173.47	140.48	225.82	223.05	2.77	81.564		
800.00	799.84	737.00	751.14	1.64	1.80	63.46	-188.09	150.61	242.77	239.55	3.22	75.446		
900.00	899.45	829.00	840.85	1.87	2.20	64.94	-204.77	162.32	261.20	257.52	3.68	70.883		
1,000.00	998.70	914.54	923.67	2.13	2.63	66.59	-222.26	174.66	281.42	277.25	4.17	67.509		
1,100.00	1,097.47	1,010.41	1,015.99	2.42	3.11	68.72	-243.26	189.71	302.77	298.06	4.71	64.279		
1,200.00	1,195.62	1,101.24	1,103.20	2.76	3.59	70.82	-263.55	204.94	324.41	319.12	5.29	61.302		
1,300.00	1,293.21	1,189.80	1,187.73	3.15	4.10	73.23	-284.88	220.48	347.80	341.86	5.94	58.565		
1,400.00	1,390.74	1,283.00	1,276.28	3.56	4.65	75.72	-308.81	237.02	373.36	366.73	6.64	56.246		
1,500.00	1,488.28	1,374.02	1,362.54	3.99	5.20	77.77	-332.45	253.90	400.12	392.76	7.36	54.332		
1,600.00	1,585.81	1,466.14	1,449.54	4.42	5.79	79.59	-357.26	271.28	428.36	420.23	8.13	52.720		
1,700.00	1,683.35	1,559.12	1,537.12	4.86	6.40	81.10	-382.48	289.69	457.44	448.53	8.91	51.331		
1,800.00	1,780.88	1,650.14	1,622.68	5.31	6.99	82.41	-407.61	307.89	487.32	477.62	9.70	50.222		
1,900.00	1,878.41	1,739.28	1,706.33	5.77	7.57	83.69	-433.35	324.79	518.37	507.87	10.50	49.360		
2,000.00	1,975.95	1,826.41	1,787.78	6.23	8.18	84.80	-459.43	341.50	550.72	539.41	11.31	48.689		
2,100.00	2,073.48	1,920.38	1,875.17	6.69	8.82	85.79	-488.26	360.48	584.24	572.09	12.15	48.082		
2,200.00	2,171.02	2,013.09	1,961.63	7.15	9.45	86.68	-516.16	378.96	617.27	604.28	12.99	47.526		
2,300.00	2,268.55	2,102.16	2,044.24	7.61	10.07	87.37	-543.69	397.67	651.43	637.60	13.82	47.122		
2,400.00	2,366.08	2,202.35	2,137.09	8.08	10.77	87.98	-574.25	419.67	685.50	670.79	14.71	46.599		
2,500.00	2,463.62	2,303.79	2,231.59	8.54	11.42	88.57	-604.06	441.41	718.40	702.81	15.59	46.082		
2,600.00	2,561.15	2,396.91	2,318.62	9.01	12.03	89.14	-631.24	460.33	750.95	734.51	16.45	45.662		
2,700.00	2,658.69	2,485.46	2,401.19	9.48	12.64	89.62	-657.50	478.58	784.10	766.80	17.30	45.329		
2,800.00	2,756.22	2,574.79	2,484.32	9.95	13.28	90.10	-684.68	496.77	817.99	799.83	18.16	45.037		
2,900.00	2,853.75	2,664.63	2,567.75	10.42	13.93	90.51	-712.25	515.47	852.27	833.24	19.03	44.786		
3,000.00	2,951.29	2,754.15	2,650.70	10.89	14.57	90.90	-740.34	534.01	887.25	867.36	19.90	44.592		
3,100.00	3,048.82	2,851.96	2,741.43	11.36	15.25	91.30	-770.81	554.17	922.02	901.23	20.79	44.339		
3,200.00	3,146.35	2,941.02	2,823.85	11.83	15.89	91.57	-798.38	573.61	956.83	935.17	21.66	44.172		
3,300.00	3,243.89	3,026.88	2,902.94	12.31	16.54	91.77	-825.62	593.02	992.51	969.98	22.53	44.053	SF	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



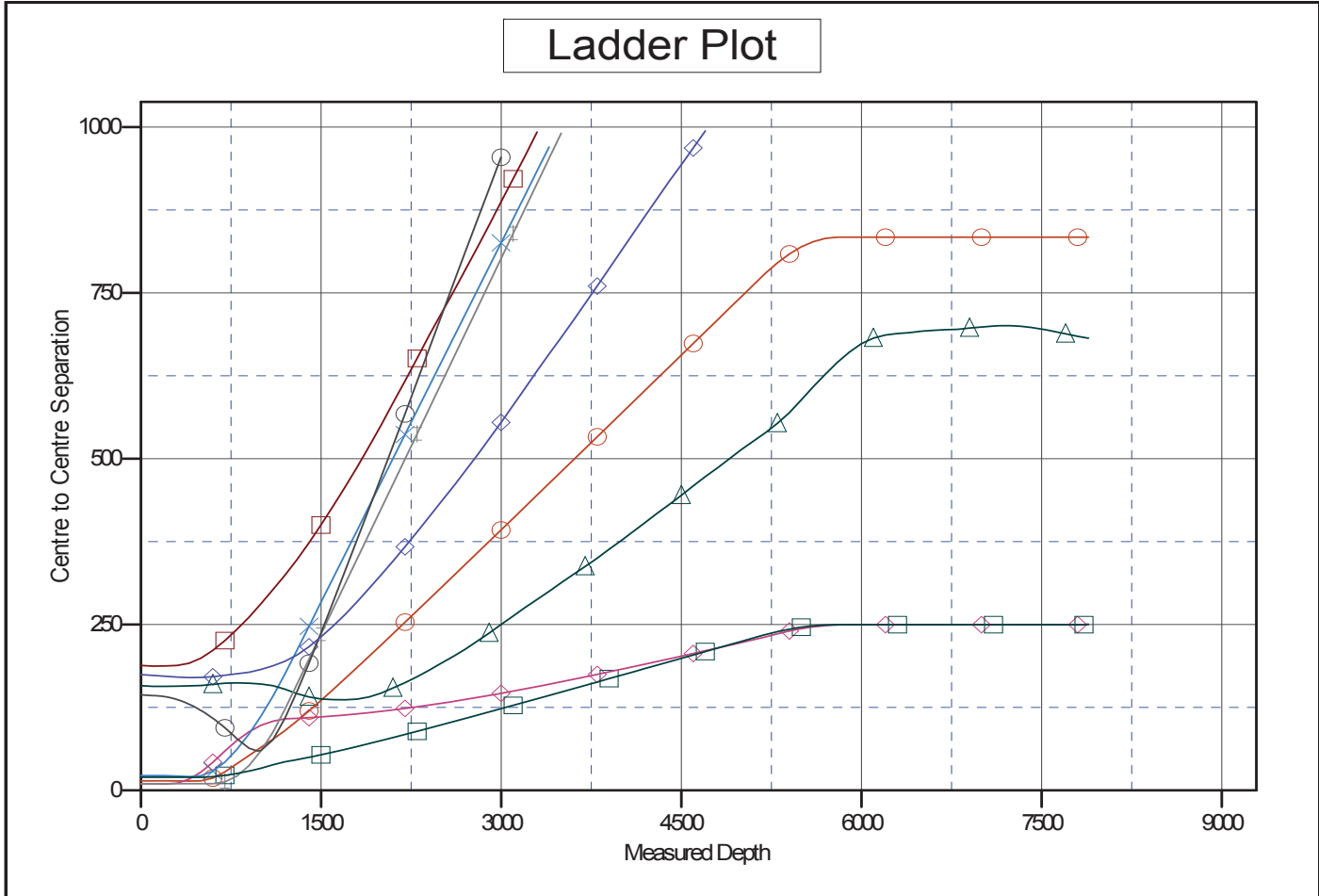
# Archer

## Anticollision Report

<b>Company:</b>	Piceance Energy, LLC	<b>Local Co-ordinate Reference:</b>	Well Bruton 30-10E
<b>Project:</b>	Mesa County, CO	<b>TVD Reference:</b>	Well @ 7665.00usft
<b>Reference Site:</b>	Bruton 30-10 Pad	<b>MD Reference:</b>	Well @ 7665.00usft
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Bruton 30-10E	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Slot B-7	<b>Database:</b>	EDMDBBW
<b>Reference Design:</b>	Design #2	<b>Offset TVD Reference:</b>	Reference Datum

Reference Depths are relative to Well @ 7665.00usft  
 Offset Depths are relative to Offset Datum  
 Central Meridian is 105° 30' 0.000 W

Coordinates are relative to: Bruton 30-10E  
 Coordinate System is US State Plane 1983, Colorado Central Zone  
 Grid Convergence at Surface is: -1.46°



### LEGEND

- Bruton 30-16B, Existing, Existing V0
- ✕ Bruton 30-10M, SlotA-6, Design #2 V0
- Bruton 30-11E, SlotB-6, Design #3 V0
- Bruton 30-08M, SlotA-8, Design #2 V0
- ▲ Bruton 30-08B, Existing, Existing V0
- Bruton 30-06B, Existing, Existing V0
- ◆ Bruton 30-09E, SlotB-8, Design #2 V0
- Bruton 30-09M, SlotA-7, Design #2 V0
- ◆ Bruton 30-10B, Existing, Existing V0

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



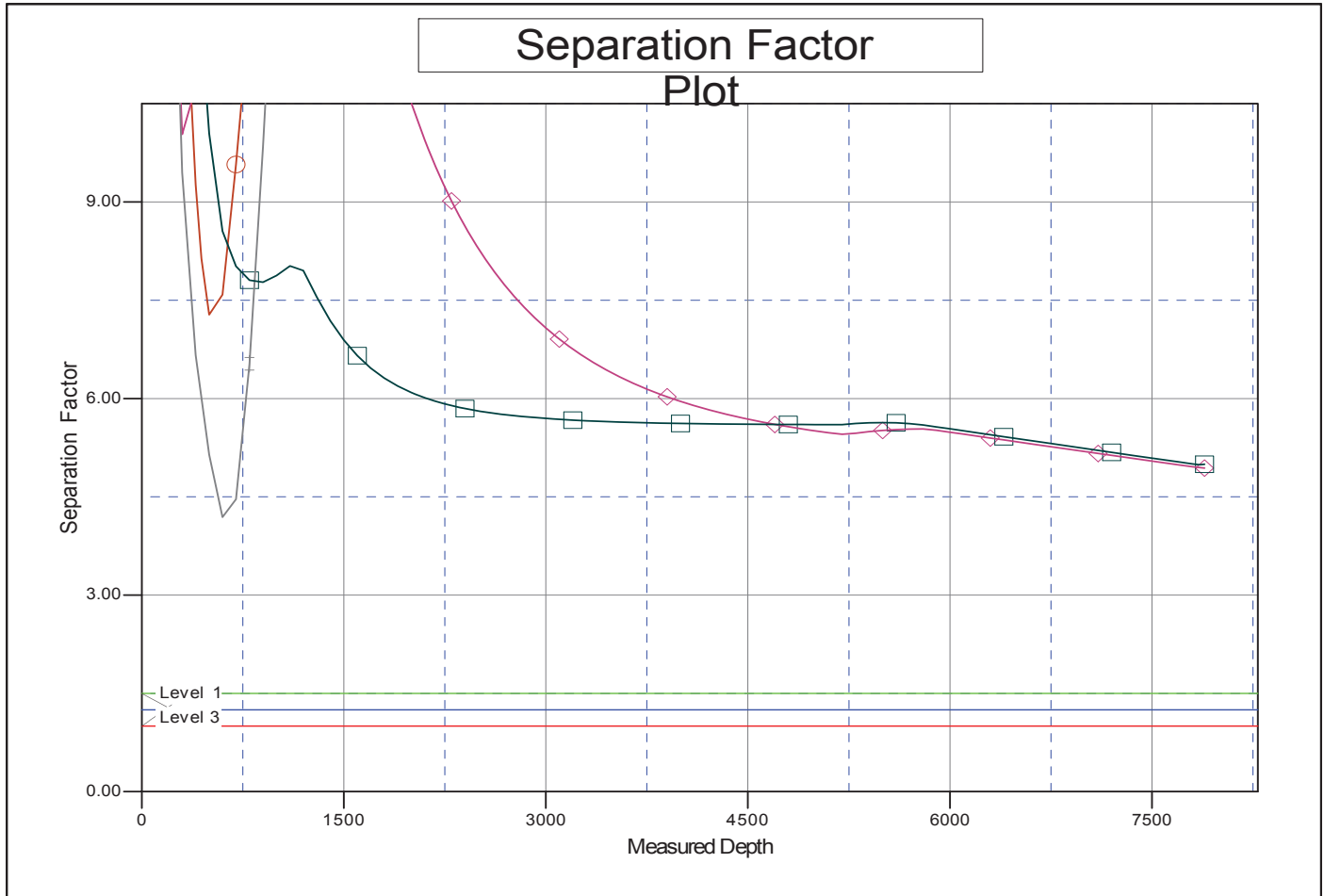
# Archer

## Anticollision Report

<b>Company:</b>	Piceance Energy, LLC	<b>Local Co-ordinate Reference:</b>	Well Bruton 30-10E
<b>Project:</b>	Mesa County, CO	<b>TVD Reference:</b>	Well @ 7665.00usft
<b>Reference Site:</b>	Bruton 30-10 Pad	<b>MD Reference:</b>	Well @ 7665.00usft
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Bruton 30-10E	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Slot B-7	<b>Database:</b>	EDMDBBW
<b>Reference Design:</b>	Design #2	<b>Offset TVD Reference:</b>	Reference Datum

Reference Depths are relative to Well @ 7665.00usft  
 Offset Depths are relative to Offset Datum  
 Central Meridian is 105° 30' 0.000 W

Coordinates are relative to: Bruton 30-10E  
 Coordinate System is US State Plane 1983, Colorado Central Zone  
 Grid Convergence at Surface is: -1.46°



### LEGEND

- Bruton 30-16B, Existing, Existing V0    
 ✕ Bruton 30-10M, SlotA-6, Design #2 V0    
 ■ Bruton 30-11E, SlotB-6, Design #3 V0
- Bruton 30-08M, SlotA-8, Design #2 V0    
 ▲ Bruton 30-08B, Existing, Existing V0    
 ● Bruton 30-06B, Existing, Existing V0
- ◆ Bruton 30-09E, SlotB-8, Design #2 V0    
 ⊕ Bruton 30-09M, SlotA-7, Design #2 V0    
 ◆ Bruton 30-10B, Existing, Existing V0