



# **Piceance Energy, LLC**

**Mesa County, CO  
Gunderson  
Gunderson 29-09E**

**Wellbore #1**

**Plan: Design #1**

## **Standard Planning Report**

**03 October, 2014**

# **Archer**



Project: Mesa County, CO  
Site: Gunderson  
Well: Gunderson 29-09E  
Wellbore: Wellbore #1  
Design: Design #1  
Latitude: 39.248841  
Longitude: -107.787800  
Ground Level: 7536.00  
WELL @ 7560.00usft (Original Well Elev)

# 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 Gunderson 29-09E, True North  
Vertical (TVD) Reference: WELL @ 7560.00usft (Original Well Elev)  
Section (VS) Reference: Slot - (0.00N, 0.00E)  
Measured Depth Reference: WELL @ 7560.00usft (Original Well Elev)  
Calculation Method: Minimum Curvature

### WELL DETAILS: Gunderson 29-09E

+N/-S	+E/-W	North	Ground Level	Latitude	Longitude	Slot
0.00	0.00	1523682.022	7536.00	39.248841	-107.787800	
		2352183.276				

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

Name	TVD	+N/-S	+E/-W	North	Easting	Latitude	Longitude	Shape
Gunderson 29-09E tgt	7680.00	250.35	287.96	1523925.041	2352477.450	39.249528	-107.786783	Circle (Radius: 50.00)

### SECTION DETAILS

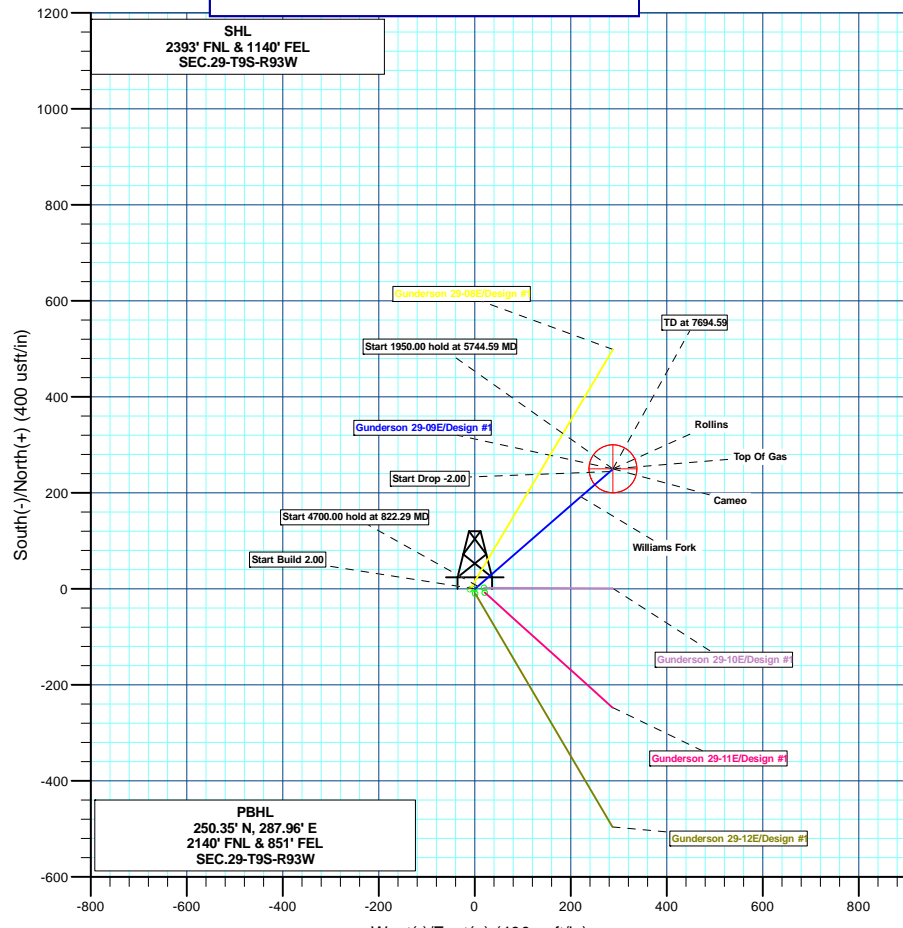
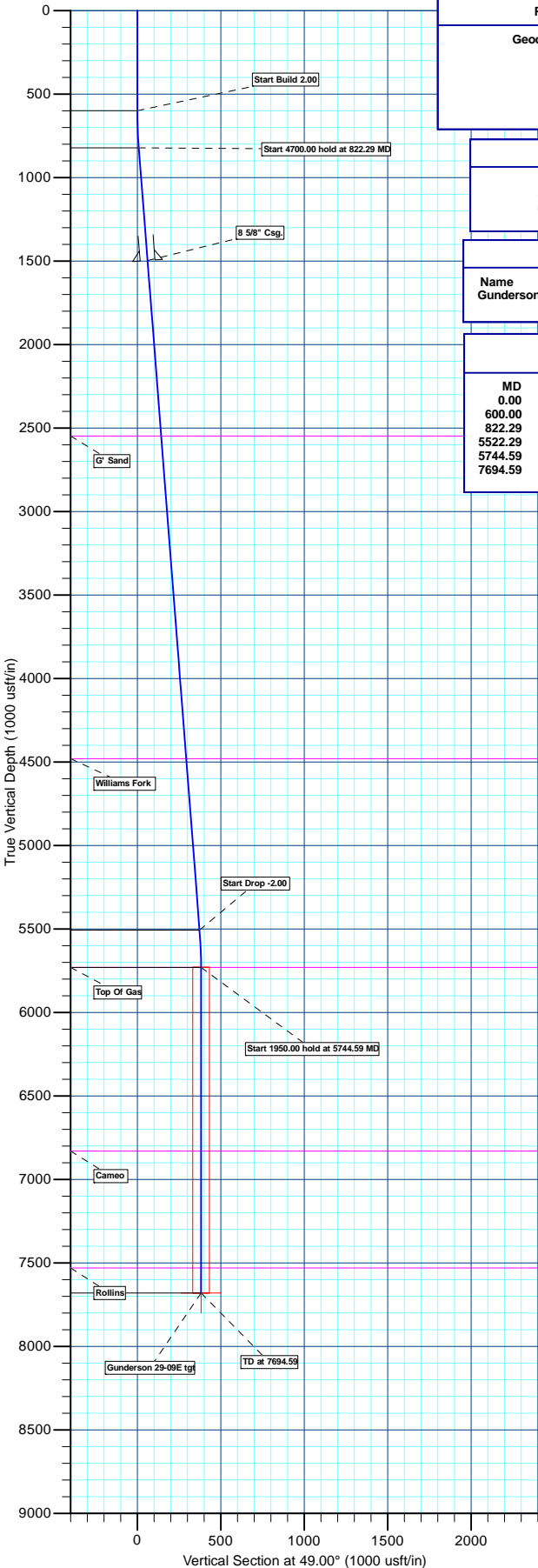
MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	Annotation
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	Start Build 2.00
822.29	4.45	49.00	822.07	5.66	6.51	2.00	49.00	8.62	Start 4700.00 hold at 822.29 MD
5522.29	4.45	49.00	5507.93	244.69	281.46	0.00	0.00	372.95	Start Drop -2.00
5744.59	0.00	0.00	5730.00	250.35	287.96	2.00	180.00	381.57	Start 1950.00 hold at 5744.59 MD
7694.59	0.00	0.00	7680.00	250.35	287.96	0.00	0.00	381.57	TD at 7694.59



Azimuths to True North  
Magnetic North: 9.80°  
Magnetic Field  
Strength: 51797.5snT  
Dip Angle: 65.48°  
Date: 09/30/2014  
Model: IGRF2010

### FORMATION TOP DETAILS

TVDPATH	MDPATH	Formation
2548.00	2553.43	G' Sand
4480.00	4491.26	Williams Fork
5730.00	5744.59	Top Of Gas
6830.00	6844.59	Cameo
7530.00	7544.59	Rollins



Plan: Design #1 (Gunderson 29-09E/Wellbore #1)

Created By: Ricky Osburn Date: 6:43, October 03 2014



<b>Database:</b>	EDMDBBW	<b>Local Co-ordinate Reference:</b>	Well Gunderson 29-09E
<b>Company:</b>	Piceance Energy, LLC	<b>TVD Reference:</b>	WELL @ 7560.00usft (Original Well Elev)
<b>Project:</b>	Mesa County, CO	<b>MD Reference:</b>	WELL @ 7560.00usft (Original Well Elev)
<b>Site:</b>	Gunderson	<b>North Reference:</b>	True
<b>Well:</b>	Gunderson 29-09E	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #1		

<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>	Gunderson			
<b>Site Position:</b>		<b>Northing:</b>	1,523,671.416 usft	<b>Latitude:</b> 39.248803
<b>From:</b>	Lat/Long	<b>Easting:</b>	2,352,063.747 usft	<b>Longitude:</b> -107.788221
<b>Position Uncertainty:</b>	0.00 usft	<b>Slot Radius:</b>	13-3/16"	<b>Grid Convergence:</b> -1.44 °

Well	Gunderson 29-09E					
Well Position	+N/-S	13.61 usft	Northing:	1,523,682.022 usft	Latitude:	39.248841
	+E/-W	119.22 usft	Easting:	2,352,183.276 usft	Longitude:	-107.787800
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	7,536.00 usft

<b>Wellbore</b>	Wellbore #1				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2010	09/30/14	9.80	65.48	51,797

<b>Design</b>	Design #1			
<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	49.00

<b>Plan Sections</b>										
<b>Measured Depth (usft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Dogleg Rate (°/100usft)</b>	<b>Build Rate (°/100usft)</b>	<b>Turn Rate (°/100usft)</b>	<b>TFO (°)</b>	<b>Target</b>
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	
822.29	4.45	49.00	822.07	5.66	6.51	2.00	2.00	0.00	49.00	
5,522.29	4.45	49.00	5,507.93	244.69	281.46	0.00	0.00	0.00	0.00	
5,744.59	0.00	0.00	5,730.00	250.35	287.96	2.00	-2.00	0.00	180.00	
7,694.59	0.00	0.00	7,680.00	250.35	287.96	0.00	0.00	0.00	0.00	Gunderson 29-09E tg



Database:	EDMDBBW	Local Co-ordinate Reference:	Well Gunderson 29-09E
Company:	Piceance Energy, LLC	TVD Reference:	WELL @ 7560.00usft (Original Well Elev)
Project:	Mesa County, CO	MD Reference:	WELL @ 7560.00usft (Original Well Elev)
Site:	Gunderson	North Reference:	True
Well:	Gunderson 29-09E	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

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
100.00	0.00	0.00	100.00	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
300.00	0.00	0.00	300.00	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
500.00	0.00	0.00	500.00	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	0.00
700.00	2.00	49.00	699.98	1.14	1.32	1.75	2.00	2.00	0.00
800.00	4.00	49.00	799.84	4.58	5.27	6.98	2.00	2.00	0.00
Start 4700.00 hold at 822.29 MD									
822.29	4.45	49.00	822.07	5.66	6.51	8.62	2.00	2.00	0.00
900.00	4.45	49.00	899.54	9.61	11.05	14.64	0.00	0.00	0.00
1,000.00	4.45	49.00	999.24	14.69	16.90	22.40	0.00	0.00	0.00
1,100.00	4.45	49.00	1,098.94	19.78	22.75	30.15	0.00	0.00	0.00
1,200.00	4.45	49.00	1,198.64	24.87	28.60	37.90	0.00	0.00	0.00
1,300.00	4.45	49.00	1,298.34	29.95	34.45	45.65	0.00	0.00	0.00
1,400.00	4.45	49.00	1,398.04	35.04	40.30	53.40	0.00	0.00	0.00
8 5/8" Csg.									
1,500.00	4.45	49.00	1,497.74	40.12	46.15	61.15	0.00	0.00	0.00
1,600.00	4.45	49.00	1,597.44	45.21	52.00	68.91	0.00	0.00	0.00
1,700.00	4.45	49.00	1,697.14	50.30	57.85	76.66	0.00	0.00	0.00
1,800.00	4.45	49.00	1,796.84	55.38	63.70	84.41	0.00	0.00	0.00
1,900.00	4.45	49.00	1,896.53	60.47	69.55	92.16	0.00	0.00	0.00
2,000.00	4.45	49.00	1,996.23	65.55	75.40	99.91	0.00	0.00	0.00
2,100.00	4.45	49.00	2,095.93	70.64	81.25	107.66	0.00	0.00	0.00
2,200.00	4.45	49.00	2,195.63	75.72	87.10	115.42	0.00	0.00	0.00
2,300.00	4.45	49.00	2,295.33	80.81	92.95	123.17	0.00	0.00	0.00
2,400.00	4.45	49.00	2,395.03	85.90	98.80	130.92	0.00	0.00	0.00
2,500.00	4.45	49.00	2,494.73	90.98	104.65	138.67	0.00	0.00	0.00
G' Sand									
2,553.43	4.45	49.00	2,548.00	93.70	107.78	142.81	0.00	0.00	0.00
2,600.00	4.45	49.00	2,594.43	96.07	110.50	146.42	0.00	0.00	0.00
2,700.00	4.45	49.00	2,694.13	101.15	116.35	154.18	0.00	0.00	0.00
2,800.00	4.45	49.00	2,793.83	106.24	122.20	161.93	0.00	0.00	0.00
2,900.00	4.45	49.00	2,893.53	111.33	128.05	169.68	0.00	0.00	0.00
3,000.00	4.45	49.00	2,993.22	116.41	133.90	177.43	0.00	0.00	0.00
3,100.00	4.45	49.00	3,092.92	121.50	139.75	185.18	0.00	0.00	0.00
3,200.00	4.45	49.00	3,192.62	126.58	145.60	192.93	0.00	0.00	0.00
3,300.00	4.45	49.00	3,292.32	131.67	151.45	200.69	0.00	0.00	0.00
3,400.00	4.45	49.00	3,392.02	136.76	157.30	208.44	0.00	0.00	0.00
3,500.00	4.45	49.00	3,491.72	141.84	163.15	216.19	0.00	0.00	0.00
3,600.00	4.45	49.00	3,591.42	146.93	169.00	223.94	0.00	0.00	0.00
3,700.00	4.45	49.00	3,691.12	152.01	174.85	231.69	0.00	0.00	0.00
3,800.00	4.45	49.00	3,790.82	157.10	180.70	239.44	0.00	0.00	0.00
3,900.00	4.45	49.00	3,890.52	162.19	186.55	247.20	0.00	0.00	0.00
4,000.00	4.45	49.00	3,990.22	167.27	192.40	254.95	0.00	0.00	0.00
4,100.00	4.45	49.00	4,089.91	172.36	198.25	262.70	0.00	0.00	0.00
4,200.00	4.45	49.00	4,189.61	177.44	204.10	270.45	0.00	0.00	0.00
4,300.00	4.45	49.00	4,289.31	182.53	209.95	278.20	0.00	0.00	0.00
4,400.00	4.45	49.00	4,389.01	187.62	215.80	285.95	0.00	0.00	0.00
Williams Fork									
4,491.26	4.45	49.00	4,480.00	192.26	221.14	293.03	0.00	0.00	0.00
4,500.00	4.45	49.00	4,488.71	192.70	221.65	293.71	0.00	0.00	0.00



Database:	EDMDBBW	Local Co-ordinate Reference:	Well Gunderson 29-09E
Company:	Piceance Energy, LLC	TVD Reference:	WELL @ 7560.00usft (Original Well Elev)
Project:	Mesa County, CO	MD Reference:	WELL @ 7560.00usft (Original Well Elev)
Site:	Gunderson	North Reference:	True
Well:	Gunderson 29-09E	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

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)
4,600.00	4.45	49.00	4,588.41	197.79	227.50	301.46	0.00	0.00	0.00
4,700.00	4.45	49.00	4,688.11	202.87	233.35	309.21	0.00	0.00	0.00
4,800.00	4.45	49.00	4,787.81	207.96	239.20	316.96	0.00	0.00	0.00
4,900.00	4.45	49.00	4,887.51	213.05	245.05	324.71	0.00	0.00	0.00
5,000.00	4.45	49.00	4,987.21	218.13	250.90	332.47	0.00	0.00	0.00
5,100.00	4.45	49.00	5,086.91	223.22	256.75	340.22	0.00	0.00	0.00
5,200.00	4.45	49.00	5,186.60	228.30	262.60	347.97	0.00	0.00	0.00
5,300.00	4.45	49.00	5,286.30	233.39	268.45	355.72	0.00	0.00	0.00
5,400.00	4.45	49.00	5,386.00	238.47	274.30	363.47	0.00	0.00	0.00
5,500.00	4.45	49.00	5,485.70	243.56	280.15	371.22	0.00	0.00	0.00
Start Drop -2.00									
5,522.29	4.45	49.00	5,507.93	244.69	281.46	372.95	0.00	0.00	0.00
5,600.00	2.89	49.00	5,585.47	247.96	285.21	377.92	2.00	-2.00	0.00
5,700.00	0.89	49.00	5,685.41	250.12	287.70	381.23	2.00	-2.00	0.00
Start 1950.00 hold at 5744.59 MD - Top Of Gas									
5,744.59	0.00	0.00	5,730.00	250.35	287.96	381.57	2.00	-2.00	0.00
5,800.00	0.00	0.00	5,785.41	250.35	287.96	381.57	0.00	0.00	0.00
5,900.00	0.00	0.00	5,885.41	250.35	287.96	381.57	0.00	0.00	0.00
6,000.00	0.00	0.00	5,985.41	250.35	287.96	381.57	0.00	0.00	0.00
6,100.00	0.00	0.00	6,085.41	250.35	287.96	381.57	0.00	0.00	0.00
6,200.00	0.00	0.00	6,185.41	250.35	287.96	381.57	0.00	0.00	0.00
6,300.00	0.00	0.00	6,285.41	250.35	287.96	381.57	0.00	0.00	0.00
6,400.00	0.00	0.00	6,385.41	250.35	287.96	381.57	0.00	0.00	0.00
6,500.00	0.00	0.00	6,485.41	250.35	287.96	381.57	0.00	0.00	0.00
6,600.00	0.00	0.00	6,585.41	250.35	287.96	381.57	0.00	0.00	0.00
6,700.00	0.00	0.00	6,685.41	250.35	287.96	381.57	0.00	0.00	0.00
6,800.00	0.00	0.00	6,785.41	250.35	287.96	381.57	0.00	0.00	0.00
Cameo									
6,844.59	0.00	0.00	6,830.00	250.35	287.96	381.57	0.00	0.00	0.00
6,900.00	0.00	0.00	6,885.41	250.35	287.96	381.57	0.00	0.00	0.00
7,000.00	0.00	0.00	6,985.41	250.35	287.96	381.57	0.00	0.00	0.00
7,100.00	0.00	0.00	7,085.41	250.35	287.96	381.57	0.00	0.00	0.00
7,200.00	0.00	0.00	7,185.41	250.35	287.96	381.57	0.00	0.00	0.00
7,300.00	0.00	0.00	7,285.41	250.35	287.96	381.57	0.00	0.00	0.00
7,400.00	0.00	0.00	7,385.41	250.35	287.96	381.57	0.00	0.00	0.00
7,500.00	0.00	0.00	7,485.41	250.35	287.96	381.57	0.00	0.00	0.00
Rollins									
7,544.59	0.00	0.00	7,530.00	250.35	287.96	381.57	0.00	0.00	0.00
7,600.00	0.00	0.00	7,585.41	250.35	287.96	381.57	0.00	0.00	0.00
TD at 7694.59									
7,694.59	0.00	0.00	7,680.00	250.35	287.96	381.57	0.00	0.00	0.00

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
Gunderson 29-09E tgt	0.00	0.00	7,680.00	250.35	287.96	1,523,925.041	2,352,477.450	39.249528	-107.786783
- plan hits target center									
- Circle (radius 50.00)									



Database:	EDMDBBW	Local Co-ordinate Reference:	Well Gunderson 29-09E
Company:	Piceance Energy, LLC	TVD Reference:	WELL @ 7560.00usft (Original Well Elev)
Project:	Mesa County, CO	MD Reference:	WELL @ 7560.00usft (Original Well Elev)
Site:	Gunderson	North Reference:	True
Well:	Gunderson 29-09E	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
1,500.00	1,497.74	8 5/8" Csg.	8-5/8	12-1/4	

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
2,553.43	2,548.00	G' Sand		0.00	
4,491.26	4,480.00	Williams Fork		0.00	
5,744.59	5,730.00	Top Of Gas		0.00	
6,844.59	6,830.00	Cameo		0.00	
7,544.59	7,530.00	Rollins		0.00	

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
600.00	600.00	0.00	0.00	Start Build 2.00	
822.29	822.07	5.66	6.51	Start 4700.00 hold at 822.29 MD	
5,522.29	5,507.93	244.69	281.46	Start Drop -2.00	
5,744.59	5,730.00	250.35	287.96	Start 1950.00 hold at 5744.59 MD	
7,694.59	7,680.00	250.35	287.96	TD at 7694.59	



# **Piceance Energy, LLC**

**Mesa County, CO**

**Gunderson**

**Gunderson 29-09E**

**Wellbore #1**

**Design #1**

## **Anticollision Report**

**03 October, 2014**

# **Archer**



Archer  
Anticollision Report

# Archer

Company:	Piceance Energy, LLC	Local Co-ordinate Reference:	Well Gunderson 29-09E
Project:	Mesa County, CO	TVD Reference:	WELL @ 7560.00usft (Original Well Elev)
Reference Site:	Gunderson	MD Reference:	WELL @ 7560.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Gunderson 29-09E	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDMDBBW
Reference Design:	Design #1	Offset TVD Reference:	Reference Datum

Reference	Design #1		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	MD Interval 30.00usft	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 9,999.98 usft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma	Casing Method:	Not applied

Survey Tool Program	Date	10/03/14		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.00	7,694.59	Design #1 (Wellbore #1)	MWD	MWD - Standard

Summary						
Site Name	Reference	Offset	Distance		Separation	Warning
	Measured	Measured	Between	Between		
Offset Well - Wellbore - Design	Depth	Depth	Centres	Ellipses	Factor	
(usft) (usft) (usft) (usft)						
Gunderson						
Gunderson 29-08E - Wellbore #1 - Design #1	486.22	486.35	7.96	6.05	4.167	CC, ES
Gunderson 29-08E - Wellbore #1 - Design #1	510.00	510.07	8.13	6.11	4.029	SF
Gunderson 29-10E - Wellbore #1 - Design #1	300.00	300.00	20.01	18.94	18.705	CC, ES
Gunderson 29-10E - Wellbore #1 - Design #1	7,694.59	7,686.72	248.76	213.61	7.078	SF
Gunderson 29-11E - Wellbore #1 - Design #1	450.00	450.00	22.36	20.62	12.821	CC, ES
Gunderson 29-11E - Wellbore #1 - Design #1	600.00	598.79	26.02	23.65	10.974	SF
Gunderson 29-12E - Wellbore #1 - Design #1	300.00	300.00	9.97	8.90	9.320	CC, ES
Gunderson 29-12E - Wellbore #1 - Design #1	390.00	389.69	11.27	9.82	7.755	SF

Offset Design      Gunderson - Gunderson 29-08E - Wellbore #1 - Design #1													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)	Azimuth from North (°)	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	-96.48	-1.13	-9.94	10.00					
30.00	30.00	30.00	30.00	0.01	0.03	-96.48	-1.13	-9.94	10.00	9.97	0.03	309.085		
60.00	60.00	60.00	60.00	0.04	0.05	-96.48	-1.13	-9.94	10.00	9.91	0.09	109.089		
90.00	90.00	90.00	90.00	0.07	0.08	-96.48	-1.13	-9.94	10.00	9.85	0.15	66.232		
120.00	120.00	120.00	120.00	0.13	0.13	-96.48	-1.13	-9.94	10.00	9.74	0.26	38.369		
150.00	150.00	150.00	150.00	0.20	0.20	-96.48	-1.13	-9.94	10.00	9.61	0.40	25.289		
180.00	180.00	180.00	180.00	0.27	0.27	-96.48	-1.13	-9.94	10.00	9.47	0.53	18.859		
210.00	210.00	210.00	210.00	0.33	0.33	-96.48	-1.13	-9.94	10.00	9.34	0.67	15.037		
240.00	240.00	240.00	240.00	0.40	0.40	-96.48	-1.13	-9.94	10.00	9.20	0.80	12.502		
270.00	270.00	270.00	270.00	0.47	0.47	-96.48	-1.13	-9.94	10.00	9.07	0.94	10.699		
300.00	300.00	300.00	300.00	0.53	0.53	-96.48	-1.13	-9.94	10.00	8.93	1.07	9.350		
330.00	330.00	330.06	330.06	0.60	0.60	-95.75	-0.99	-9.86	9.91	8.70	1.20	8.225		
360.00	360.00	360.12	360.11	0.67	0.67	-93.49	-0.59	-9.62	9.64	8.30	1.34	7.192		
390.00	390.00	390.16	390.15	0.74	0.74	-89.44	0.09	-9.21	9.22	7.74	1.47	6.248		
420.00	420.00	420.18	420.15	0.80	0.81	-83.17	1.04	-8.65	8.71	7.10	1.61	5.408		
450.00	450.00	450.18	450.11	0.87	0.88	-74.14	2.25	-7.93	8.24	6.49	1.75	4.716		
480.00	480.00	480.14	480.03	0.94	0.95	-62.06	3.73	-7.04	7.97	6.09	1.88	4.235		
486.22	486.22	486.35	486.22	0.95	0.96	-59.20	4.08	-6.84	7.96	6.05	1.91	4.167	CC, ES	
510.00	510.00	510.07	509.88	1.01	1.02	-47.57	5.48	-6.00	8.13	6.11	2.02	4.029	SF	
540.00	540.00	539.95	539.67	1.07	1.09	-32.62	7.50	-4.80	8.91	6.75	2.16	4.130		

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





Archer  
Anticollision Report

# Archer

Company:	Piceance Energy, LLC	Local Co-ordinate Reference:	Well Gunderson 29-09E
Project:	Mesa County, CO	TVD Reference:	WELL @ 7560.00usft (Original Well Elev)
Reference Site:	Gunderson	MD Reference:	WELL @ 7560.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Gunderson 29-09E	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDMDBBW
Reference Design:	Design #1	Offset TVD Reference:	Reference Datum

Offset Design Gunderson - Gunderson 29-08E - Wellbore #1 - Design #1													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)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
570.00	570.00	569.77	569.37	1.14	1.16	-19.40	9.77	-3.44	10.38	8.08	2.30	4.519		
600.00	600.00	599.54	598.99	1.21	1.23	-8.91	12.31	-1.93	12.50	10.06	2.44	5.127		
630.00	630.00	629.28	628.55	1.28	1.31	-1.46	15.11	-0.26	15.08	12.50	2.58	5.840		
660.00	660.00	659.13	658.21	1.34	1.39	3.24	18.01	1.47	17.72	15.00	2.72	6.522		
690.00	689.99	689.01	687.90	1.41	1.47	6.10	20.92	3.20	20.22	17.37	2.85	7.093		
720.00	719.96	718.91	717.61	1.48	1.55	7.81	23.83	4.94	22.52	19.53	2.98	7.544		
750.00	749.93	748.84	747.35	1.54	1.63	8.73	26.75	6.68	24.59	21.47	3.12	7.882		
780.00	779.88	778.78	777.10	1.61	1.72	9.08	29.66	8.41	26.43	23.18	3.26	8.120		
810.00	809.81	808.74	806.86	1.68	1.80	8.97	32.58	10.15	28.03	24.64	3.39	8.264		
840.00	839.72	838.71	836.63	1.75	1.89	8.55	35.50	11.89	29.43	25.90	3.53	8.333		
870.00	869.63	868.67	866.41	1.82	1.98	8.13	38.42	13.63	30.81	27.14	3.67	8.387		
900.00	899.54	898.64	896.18	1.88	2.06	7.75	41.34	15.37	32.20	28.38	3.82	8.437		
930.00	929.45	928.61	925.96	1.96	2.15	7.40	44.25	17.11	33.58	29.62	3.96	8.480		
960.00	959.36	958.58	955.73	2.03	2.24	7.08	47.17	18.85	34.97	30.86	4.10	8.520		
990.00	989.27	988.54	985.50	2.10	2.32	6.79	50.09	20.59	36.35	32.11	4.25	8.558		
1,020.00	1,019.18	1,018.51	1,015.28	2.17	2.41	6.51	53.01	22.33	37.74	33.35	4.39	8.591		
1,050.00	1,049.09	1,048.48	1,045.05	2.25	2.50	6.26	55.93	24.07	39.13	34.59	4.54	8.621		
1,080.00	1,079.00	1,078.45	1,074.83	2.32	2.59	6.02	58.84	25.81	40.52	35.83	4.68	8.649		
1,110.00	1,108.91	1,108.41	1,104.60	2.39	2.67	5.80	61.76	27.55	41.91	37.08	4.83	8.676		
1,140.00	1,138.82	1,138.38	1,134.37	2.47	2.76	5.59	64.68	29.28	43.30	38.32	4.98	8.698		
1,170.00	1,168.73	1,168.35	1,164.15	2.54	2.85	5.39	67.60	31.02	44.69	39.57	5.12	8.720		
1,200.00	1,198.64	1,198.32	1,193.92	2.62	2.94	5.21	70.52	32.76	46.08	40.81	5.27	8.741		
1,230.00	1,228.55	1,228.28	1,223.70	2.69	3.03	5.04	73.43	34.50	47.47	42.05	5.42	8.758		
1,260.00	1,258.46	1,258.25	1,253.47	2.77	3.12	4.87	76.35	36.24	48.87	43.30	5.57	8.776		
1,290.00	1,288.37	1,288.22	1,283.25	2.84	3.21	4.72	79.27	37.98	50.26	44.54	5.72	8.793		
1,320.00	1,318.28	1,318.19	1,313.02	2.92	3.30	4.58	82.19	39.72	51.65	45.79	5.86	8.808		
1,350.00	1,348.19	1,348.15	1,342.79	2.99	3.39	4.44	85.11	41.46	53.05	47.03	6.01	8.822		
1,380.00	1,378.10	1,378.12	1,372.57	3.07	3.48	4.31	88.02	43.20	54.44	48.28	6.16	8.835		
1,410.00	1,408.01	1,408.09	1,402.34	3.15	3.56	4.18	90.94	44.94	55.83	49.52	6.31	8.847		
1,440.00	1,437.92	1,438.05	1,432.12	3.22	3.65	4.07	93.86	46.68	57.23	50.77	6.46	8.858		
1,470.00	1,467.83	1,468.02	1,461.89	3.30	3.74	3.95	96.78	48.42	58.62	52.01	6.61	8.869		
1,500.00	1,497.74	1,497.99	1,491.67	3.38	3.83	3.85	99.70	50.16	60.02	53.26	6.76	8.879		
1,530.00	1,527.65	1,527.96	1,521.44	3.45	3.92	3.74	102.61	51.90	61.41	54.50	6.91	8.888		
1,560.00	1,557.56	1,557.92	1,551.21	3.53	4.01	3.65	105.53	53.64	62.81	55.75	7.06	8.897		
1,590.00	1,587.47	1,587.89	1,580.99	3.61	4.10	3.55	108.45	55.37	64.20	56.99	7.21	8.906		
1,620.00	1,617.38	1,617.86	1,610.76	3.68	4.19	3.46	111.37	57.11	65.60	58.24	7.36	8.913		
1,650.00	1,647.29	1,647.83	1,640.54	3.76	4.28	3.38	114.29	58.85	66.99	59.48	7.51	8.921		
1,680.00	1,677.20	1,677.79	1,670.31	3.84	4.37	3.30	117.20	60.59	68.39	60.73	7.66	8.928		
1,710.00	1,707.11	1,707.76	1,700.08	3.92	4.46	3.22	120.12	62.33	69.78	61.97	7.81	8.935		
1,740.00	1,737.02	1,737.73	1,729.86	3.99	4.55	3.14	123.04	64.07	71.18	63.22	7.96	8.941		
1,770.00	1,766.93	1,767.70	1,759.63	4.07	4.64	3.07	125.96	65.81	72.57	64.46	8.11	8.947		
1,800.00	1,796.84	1,797.66	1,789.41	4.15	4.73	3.00	128.88	67.55	73.97	65.71	8.26	8.953		
1,830.00	1,826.74	1,827.63	1,819.18	4.23	4.82	2.93	131.80	69.29	75.37	66.95	8.41	8.958		
1,860.00	1,856.65	1,857.60	1,848.96	4.30	4.91	2.86	134.71	71.03	76.76	68.20	8.56	8.963		
1,890.00	1,886.56	1,887.56	1,878.73	4.38	5.00	2.80	137.63	72.77	78.16	69.44	8.72	8.968		
1,920.00	1,916.47	1,917.53	1,908.50	4.46	5.09	2.74	140.55	74.51	79.56	70.69	8.87	8.973		
1,950.00	1,946.38	1,947.50	1,938.28	4.54	5.18	2.68	143.47	76.25	80.95	71.93	9.02	8.977		
1,980.00	1,976.29	1,977.47	1,968.05	4.62	5.27	2.63	146.39	77.99	82.35	73.18	9.17	8.981		
2,010.00	2,006.20	2,007.43	1,997.83	4.69	5.36	2.57	149.30	79.72	83.75	74.43	9.32	8.986		
2,040.00	2,036.11	2,037.40	2,027.60	4.77	5.46	2.52	152.22	81.46	85.14	75.67	9.47	8.989		
2,070.00	2,066.02	2,067.37	2,057.37	4.85	5.55	2.47	155.14	83.20	86.54	76.92	9.62	8.993		
2,100.00	2,095.93	2,097.34	2,087.15	4.93	5.64	2.42	158.06	84.94	87.94	78.16	9.77	8.997		

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 Gunderson 29-09E
<b>Project:</b>	Mesa County, CO	<b>TVD Reference:</b>	WELL @ 7560.00usft (Original Well Elev)
<b>Reference Site:</b>	Gunderson	<b>MD Reference:</b>	WELL @ 7560.00usft (Original Well Elev)
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Gunderson 29-09E	<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>	Wellbore #1	<b>Database:</b>	EDMDBBW
<b>Reference Design:</b>	Design #1	<b>Offset TVD Reference:</b>	Reference Datum

Offset Design Gunderson - Gunderson 29-08E - Wellbore #1 - Design #1													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)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
2,130.00	2,125.84	2,127.30	2,116.92	5.01	5.73	2.37	160.98	86.68	89.33	79.41	9.93	9.000		
2,160.00	2,155.75	2,157.27	2,146.70	5.08	5.82	2.32	163.89	88.42	90.73	80.65	10.08	9.003		
2,190.00	2,185.66	2,187.24	2,176.47	5.16	5.91	2.28	166.81	90.16	92.13	81.90	10.23	9.007		
2,220.00	2,215.57	2,217.21	2,206.25	5.24	6.00	2.23	169.73	91.90	93.52	83.14	10.38	9.010		
2,250.00	2,245.48	2,247.17	2,236.02	5.32	6.09	2.19	172.65	93.64	94.92	84.39	10.53	9.012		
2,280.00	2,275.39	2,277.14	2,265.79	5.40	6.18	2.15	175.57	95.38	96.32	85.64	10.68	9.015		
2,310.00	2,305.30	2,307.11	2,295.57	5.48	6.27	2.11	178.48	97.12	97.72	86.88	10.84	9.018		
2,340.00	2,335.21	2,337.08	2,325.34	5.55	6.36	2.07	181.40	98.86	99.11	88.13	10.99	9.020		
2,370.00	2,365.12	2,367.04	2,355.12	5.63	6.45	2.03	184.32	100.60	100.51	89.37	11.14	9.023		
2,400.00	2,395.03	2,397.01	2,384.89	5.71	6.54	2.00	187.24	102.34	101.91	90.62	11.29	9.025		
2,430.00	2,424.94	2,426.98	2,414.67	5.79	6.63	1.96	190.16	104.07	103.31	91.86	11.44	9.028		
2,460.00	2,454.85	2,456.94	2,444.44	5.87	6.72	1.93	193.07	105.81	104.70	93.11	11.60	9.030		
2,490.00	2,484.76	2,486.91	2,474.21	5.95	6.81	1.89	195.99	107.55	106.10	94.35	11.75	9.032		
2,520.00	2,514.67	2,516.88	2,503.99	6.02	6.90	1.86	198.91	109.29	107.50	95.60	11.90	9.034		
2,550.00	2,544.58	2,546.85	2,533.76	6.10	6.99	1.83	201.83	111.03	108.90	96.85	12.05	9.036		
2,580.00	2,574.49	2,576.81	2,563.54	6.18	7.08	1.80	204.75	112.77	110.29	98.09	12.20	9.038		
2,610.00	2,604.40	2,606.78	2,593.31	6.26	7.17	1.77	207.67	114.51	111.69	99.34	12.36	9.040		
2,640.00	2,634.31	2,636.75	2,623.08	6.34	7.27	1.74	210.58	116.25	113.09	100.58	12.51	9.042		
2,670.00	2,664.22	2,666.72	2,652.86	6.42	7.36	1.71	213.50	117.99	114.49	101.83	12.66	9.043		
2,700.00	2,694.13	2,696.68	2,682.63	6.50	7.45	1.68	216.42	119.73	115.89	103.07	12.81	9.045		
2,730.00	2,724.04	2,726.65	2,712.41	6.57	7.54	1.65	219.34	121.47	117.28	104.32	12.96	9.047		
2,760.00	2,753.95	2,756.62	2,742.18	6.65	7.63	1.62	222.26	123.21	118.68	105.56	13.12	9.048		
2,790.00	2,783.86	2,786.59	2,771.96	6.73	7.72	1.60	225.17	124.95	120.08	106.81	13.27	9.050		
2,820.00	2,813.77	2,816.55	2,801.73	6.81	7.81	1.57	228.09	126.69	121.48	108.06	13.42	9.051		
2,850.00	2,843.68	2,846.52	2,831.50	6.89	7.90	1.55	231.01	128.42	122.87	109.30	13.57	9.053		
2,880.00	2,873.59	2,876.49	2,861.28	6.97	7.99	1.52	233.93	130.16	124.27	110.55	13.73	9.054		
2,910.00	2,903.50	2,906.46	2,891.05	7.05	8.08	1.50	236.85	131.90	125.67	111.79	13.88	9.056		
2,940.00	2,933.40	2,936.42	2,920.83	7.13	8.17	1.47	239.76	133.64	127.07	113.04	14.03	9.057		
2,970.00	2,963.31	2,966.39	2,950.60	7.20	8.26	1.45	242.68	135.38	128.47	114.28	14.18	9.058		
3,000.00	2,993.22	2,996.36	2,980.38	7.28	8.35	1.43	245.60	137.12	129.86	115.53	14.33	9.059		
3,030.00	3,023.13	3,026.32	3,010.15	7.36	8.44	1.41	248.52	138.86	131.26	116.78	14.49	9.061		
3,060.00	3,053.04	3,056.29	3,039.92	7.44	8.53	1.38	251.44	140.60	132.66	118.02	14.64	9.062		
3,090.00	3,082.95	3,086.26	3,069.70	7.52	8.63	1.36	254.35	142.34	134.06	119.27	14.79	9.063		
3,120.00	3,112.86	3,116.23	3,099.47	7.60	8.72	1.34	257.27	144.08	135.46	120.51	14.94	9.064		
3,150.00	3,142.77	3,146.19	3,129.25	7.68	8.81	1.32	260.19	145.82	136.86	121.76	15.10	9.065		
3,180.00	3,172.68	3,176.16	3,159.02	7.76	8.90	1.30	263.11	147.56	138.25	123.00	15.25	9.066		
3,210.00	3,202.59	3,206.13	3,188.79	7.83	8.99	1.28	266.03	149.30	139.65	124.25	15.40	9.067		
3,240.00	3,232.50	3,236.10	3,218.57	7.91	9.08	1.26	268.94	151.04	141.05	125.50	15.55	9.068		
3,270.00	3,262.41	3,266.06	3,248.34	7.99	9.17	1.24	271.86	152.77	142.45	126.74	15.71	9.069		
3,300.00	3,292.32	3,296.03	3,278.12	8.07	9.26	1.23	274.78	154.51	143.85	127.99	15.86	9.070		
3,330.00	3,322.23	3,326.00	3,307.89	8.15	9.35	1.21	277.70	156.25	145.24	129.23	16.01	9.071		
3,360.00	3,352.14	3,355.97	3,337.67	8.23	9.44	1.19	280.62	157.99	146.64	130.48	16.16	9.072		
3,390.00	3,382.05	3,385.93	3,367.44	8.31	9.53	1.17	283.53	159.73	148.04	131.72	16.32	9.073		
3,420.00	3,411.96	3,415.90	3,397.21	8.39	9.62	1.16	286.45	161.47	149.44	132.97	16.47	9.073		
3,450.00	3,441.87	3,445.87	3,426.99	8.47	9.71	1.14	289.37	163.21	150.84	134.21	16.62	9.074		
3,480.00	3,471.78	3,475.84	3,456.76	8.54	9.80	1.12	292.29	164.95	152.24	135.46	16.78	9.075		
3,510.00	3,501.69	3,505.80	3,486.54	8.62	9.90	1.11	295.21	166.69	153.63	136.71	16.93	9.076		
3,540.00	3,531.60	3,535.77	3,516.31	8.70	9.99	1.09	298.13	168.43	155.03	137.95	17.08	9.077		
3,570.00	3,561.51	3,565.74	3,546.08	8.78	10.08	1.08	301.04	170.17	156.43	139.20	17.23	9.077		
3,600.00	3,591.42	3,595.70	3,575.86	8.86	10.17	1.06	303.96	171.91	157.83	140.44	17.39	9.078		
3,630.00	3,621.33	3,625.67	3,605.63	8.94	10.26	1.04	306.88	173.65	159.23	141.69	17.54	9.079		
3,660.00	3,651.24	3,655.64	3,635.41	9.02	10.35	1.03	309.80	175.39	160.63	142.93	17.69	9.080		

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



Archer  
Anticollision Report

# Archer

Company:	Piceance Energy, LLC	Local Co-ordinate Reference:	Well Gunderson 29-09E
Project:	Mesa County, CO	TVD Reference:	WELL @ 7560.00usft (Original Well Elev)
Reference Site:	Gunderson	MD Reference:	WELL @ 7560.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Gunderson 29-09E	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDMDBBW
Reference Design:	Design #1	Offset TVD Reference:	Reference Datum

Offset Design Gunderson - Gunderson 29-08E - Wellbore #1 - Design #1													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)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
3,690.00	3,681.15	3,685.61	3,665.18	9.10	10.44	1.02	312.72	177.12	162.02	144.18	17.84	9.080		
3,720.00	3,711.06	3,715.57	3,694.96	9.18	10.53	1.00	315.63	178.86	163.42	145.43	18.00	9.081		
3,750.00	3,740.97	3,745.54	3,724.73	9.25	10.62	0.99	318.55	180.60	164.82	146.67	18.15	9.082		
3,780.00	3,770.88	3,775.51	3,754.50	9.33	10.71	0.97	321.47	182.34	166.22	147.92	18.30	9.082		
3,810.00	3,800.79	3,805.48	3,784.28	9.41	10.80	0.96	324.39	184.08	167.62	149.16	18.45	9.083		
3,840.00	3,830.70	3,835.44	3,814.05	9.49	10.89	0.95	327.31	185.82	169.02	150.41	18.61	9.083		
3,870.00	3,860.61	3,865.41	3,843.83	9.57	10.99	0.93	330.22	187.56	170.41	151.65	18.76	9.084		
3,900.00	3,890.52	3,895.38	3,873.60	9.65	11.08	0.92	333.14	189.30	171.81	152.90	18.91	9.085		
3,930.00	3,920.43	3,925.35	3,903.38	9.73	11.17	0.91	336.06	191.04	173.21	154.15	19.07	9.085		
3,960.00	3,950.34	3,955.31	3,933.15	9.81	11.26	0.90	338.98	192.78	174.61	155.39	19.22	9.086		
3,990.00	3,980.25	3,985.28	3,962.92	9.89	11.35	0.88	341.90	194.52	176.01	156.64	19.37	9.086		
4,020.00	4,010.16	4,015.25	3,992.70	9.97	11.44	0.87	344.81	196.26	177.41	157.88	19.52	9.087		
4,050.00	4,040.06	4,045.22	4,022.47	10.04	11.53	0.86	347.73	198.00	178.81	159.13	19.68	9.087		
4,080.00	4,069.97	4,075.18	4,052.25	10.12	11.62	0.85	350.65	199.74	180.20	160.37	19.83	9.088		
4,110.00	4,099.88	4,105.15	4,082.02	10.20	11.71	0.84	353.57	201.48	181.60	161.62	19.98	9.088		
4,140.00	4,129.79	4,135.12	4,111.79	10.28	11.80	0.83	356.49	203.21	183.00	162.87	20.13	9.089		
4,170.00	4,159.70	4,165.08	4,141.57	10.36	11.89	0.81	359.40	204.95	184.40	164.11	20.29	9.089		
4,200.00	4,189.61	4,195.05	4,171.34	10.44	11.98	0.80	362.32	206.69	185.80	165.36	20.44	9.090		
4,230.00	4,219.52	4,225.02	4,201.12	10.52	12.07	0.79	365.24	208.43	187.20	166.60	20.59	9.090		
4,260.00	4,249.43	4,254.99	4,230.89	10.60	12.17	0.78	368.16	210.17	188.59	167.85	20.75	9.091		
4,290.00	4,279.34	4,284.95	4,260.67	10.68	12.26	0.77	371.08	211.91	189.99	169.09	20.90	9.091		
4,320.00	4,309.25	4,314.92	4,290.44	10.76	12.35	0.76	373.99	213.65	191.39	170.34	21.05	9.092		
4,350.00	4,339.16	4,344.89	4,320.21	10.83	12.44	0.75	376.91	215.39	192.79	171.59	21.20	9.092		
4,380.00	4,369.07	4,374.86	4,349.99	10.91	12.53	0.74	379.83	217.13	194.19	172.83	21.36	9.092		
4,410.00	4,398.98	4,404.82	4,379.76	10.99	12.62	0.73	382.75	218.87	195.59	174.08	21.51	9.093		
4,440.00	4,428.89	4,434.79	4,409.54	11.07	12.71	0.72	385.67	220.61	196.99	175.32	21.66	9.093		
4,470.00	4,458.80	4,464.76	4,439.31	11.15	12.80	0.71	388.59	222.35	198.38	176.57	21.82	9.094		
4,500.00	4,488.71	4,494.73	4,469.08	11.23	12.89	0.70	391.50	224.09	199.78	177.81	21.97	9.094		
4,530.00	4,518.62	4,524.69	4,498.86	11.31	12.98	0.69	394.42	225.83	201.18	179.06	22.12	9.094		
4,560.00	4,548.53	4,554.66	4,528.63	11.39	13.07	0.68	397.34	227.56	202.58	180.31	22.27	9.095		
4,590.00	4,578.44	4,584.63	4,558.41	11.47	13.17	0.67	400.26	229.30	203.98	181.55	22.43	9.095		
4,620.00	4,608.35	4,614.60	4,588.18	11.55	13.26	0.66	403.18	231.04	205.38	182.80	22.58	9.096		
4,650.00	4,638.26	4,644.56	4,617.96	11.62	13.35	0.66	406.09	232.78	206.78	184.04	22.73	9.096		
4,680.00	4,668.17	4,674.53	4,647.73	11.70	13.44	0.65	409.01	234.52	208.17	185.29	22.89	9.096		
4,710.00	4,698.08	4,704.50	4,677.50	11.78	13.53	0.64	411.93	236.26	209.57	186.53	23.04	9.097		
4,740.00	4,727.99	4,734.46	4,707.28	11.86	13.62	0.63	414.85	238.00	210.97	187.78	23.19	9.097		
4,770.00	4,757.90	4,764.43	4,737.05	11.94	13.71	0.62	417.77	239.74	212.37	189.03	23.34	9.097		
4,800.00	4,787.81	4,794.40	4,766.83	12.02	13.80	0.61	420.68	241.48	213.77	190.27	23.50	9.098		
4,830.00	4,817.72	4,824.37	4,796.60	12.10	13.89	0.61	423.60	243.22	215.17	191.52	23.65	9.098		
4,860.00	4,847.63	4,854.33	4,826.38	12.18	13.98	0.60	426.52	244.96	216.57	192.76	23.80	9.098		
4,890.00	4,877.54	4,884.30	4,856.15	12.26	14.07	0.59	429.44	246.70	217.96	194.01	23.96	9.098		
4,920.00	4,907.45	4,914.27	4,885.92	12.34	14.16	0.58	432.36	248.44	219.36	195.25	24.11	9.099		
4,950.00	4,937.36	4,944.24	4,915.70	12.42	14.26	0.57	435.27	250.18	220.76	196.50	24.26	9.099		
4,980.00	4,967.27	4,974.20	4,945.47	12.49	14.35	0.57	438.19	251.91	222.16	197.75	24.41	9.099		
5,010.00	4,997.18	5,004.17	4,975.25	12.57	14.44	0.56	441.11	253.65	223.56	198.99	24.57	9.100		
5,040.00	5,027.09	5,034.14	5,005.02	12.65	14.53	0.55	444.03	255.39	224.96	200.24	24.72	9.100		
5,070.00	5,057.00	5,064.11	5,034.79	12.73	14.62	0.54	446.95	257.13	226.36	201.48	24.87	9.100		
5,100.00	5,086.91	5,094.07	5,064.57	12.81	14.71	0.54	449.86	258.87	227.76	202.73	25.03	9.101		
5,130.00	5,116.82	5,124.04	5,094.34	12.89	14.80	0.53	452.78	260.61	229.15	203.97	25.18	9.101		
5,160.00	5,146.72	5,154.01	5,124.12	12.97	14.89	0.52	455.70	262.35	230.55	205.22	25.33	9.101		
5,190.00	5,176.63	5,183.98	5,153.89	13.05	14.98	0.51	458.62	264.09	231.95	206.47	25.49	9.101		
5,220.00	5,206.54	5,213.94	5,183.67	13.13	15.07	0.51	461.54	265.83	233.35	207.71	25.64	9.102		

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



Archer  
Anticollision Report

Archer

Company:	Piceance Energy, LLC	Local Co-ordinate Reference:	Well Gunderson 29-09E
Project:	Mesa County, CO	TVD Reference:	WELL @ 7560.00usft (Original Well Elev)
Reference Site:	Gunderson	MD Reference:	WELL @ 7560.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Gunderson 29-09E	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDMDBBW
Reference Design:	Design #1	Offset TVD Reference:	Reference Datum

Offset Design Gunderson - Gunderson 29-08E - Wellbore #1 - Design #1													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)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
5,250.00	5,236.45	5,243.91	5,213.44	13.21	15.16	0.50	464.45	267.57	234.75	208.96	25.79	9.102		
5,280.00	5,266.36	5,273.88	5,243.21	13.29	15.25	0.49	467.37	269.31	236.15	210.20	25.94	9.102		
5,310.00	5,296.27	5,303.84	5,272.99	13.37	15.35	0.49	470.29	271.05	237.55	211.45	26.10	9.102		
5,340.00	5,326.18	5,333.81	5,302.76	13.44	15.44	0.48	473.21	272.79	238.94	212.69	26.25	9.103		
5,370.00	5,356.09	5,363.78	5,332.54	13.52	15.53	0.47	476.13	274.53	240.34	213.94	26.40	9.103		
5,400.00	5,386.00	5,393.75	5,362.31	13.60	15.62	0.47	479.05	276.26	241.74	215.19	26.56	9.103		
5,430.00	5,415.91	5,423.71	5,392.08	13.68	15.71	0.46	481.96	278.00	243.14	216.43	26.71	9.103		
5,460.00	5,445.82	5,455.01	5,423.19	13.76	15.80	0.47	484.96	279.79	244.49	217.63	26.86	9.103		
5,490.00	5,475.73	5,487.39	5,455.39	13.84	15.88	0.45	487.78	281.47	245.58	218.57	27.01	9.092		
5,520.00	5,505.64	5,519.77	5,487.65	13.92	15.96	0.38	490.29	282.97	246.38	219.22	27.16	9.072		
5,550.00	5,535.56	5,552.17	5,519.95	13.99	16.02	0.30	492.49	284.28	246.97	219.69	27.29	9.051		
5,580.00	5,565.50	5,584.58	5,552.28	14.06	16.09	0.23	494.38	285.40	247.48	220.07	27.41	9.028		
5,610.00	5,595.46	5,616.98	5,584.63	14.12	16.15	0.18	495.95	286.34	247.91	220.38	27.53	9.005		
5,640.00	5,625.44	5,649.40	5,617.01	14.17	16.20	0.13	497.20	287.09	248.25	220.61	27.64	8.983		
5,670.00	5,655.42	5,681.81	5,649.41	14.22	16.26	0.10	498.14	287.65	248.50	220.76	27.74	8.959		
5,700.00	5,685.41	5,714.23	5,681.82	14.28	16.31	0.07	498.77	288.02	248.67	220.83	27.84	8.933		
5,730.00	5,715.41	5,746.65	5,714.24	14.32	16.36	0.06	499.08	288.21	248.76	220.83	27.93	8.907		
5,760.00	5,745.41	5,777.83	5,745.41	14.37	16.41	0.06	499.12	288.23	248.77	220.74	28.03	8.876		
5,790.00	5,775.41	5,807.83	5,775.41	14.43	16.45	0.06	499.12	288.23	248.77	220.63	28.14	8.842		
5,820.00	5,805.41	5,837.83	5,805.41	14.48	16.50	0.06	499.12	288.23	248.77	220.51	28.25	8.805		
5,850.00	5,835.41	5,867.83	5,835.41	14.54	16.55	0.06	499.12	288.23	248.77	220.39	28.37	8.768		
5,880.00	5,865.41	5,897.83	5,865.41	14.60	16.60	0.06	499.12	288.23	248.77	220.28	28.49	8.732		
5,910.00	5,895.41	5,927.83	5,895.41	14.65	16.66	0.06	499.12	288.23	248.77	220.16	28.61	8.695		
5,940.00	5,925.41	5,957.83	5,925.41	14.71	16.71	0.06	499.12	288.23	248.77	220.04	28.73	8.659		
5,970.00	5,955.41	5,987.83	5,955.41	14.77	16.76	0.06	499.12	288.23	248.77	219.92	28.85	8.623		
6,000.00	5,985.41	6,017.83	5,985.41	14.83	16.81	0.06	499.12	288.23	248.77	219.80	28.97	8.587		
6,030.00	6,015.41	6,047.83	6,015.41	14.88	16.86	0.06	499.12	288.23	248.77	219.68	29.09	8.552		
6,060.00	6,045.41	6,077.83	6,045.41	14.94	16.91	0.06	499.12	288.23	248.77	219.56	29.21	8.517		
6,090.00	6,075.41	6,107.83	6,075.41	15.00	16.96	0.06	499.12	288.23	248.77	219.44	29.33	8.482		
6,120.00	6,105.41	6,137.83	6,105.41	15.06	17.01	0.06	499.12	288.23	248.77	219.32	29.45	8.447		
6,150.00	6,135.41	6,167.83	6,135.41	15.12	17.06	0.06	499.12	288.23	248.77	219.20	29.57	8.413		
6,180.00	6,165.41	6,197.83	6,165.41	15.17	17.12	0.06	499.12	288.23	248.77	219.08	29.69	8.379		
6,210.00	6,195.41	6,227.83	6,195.41	15.23	17.17	0.06	499.12	288.23	248.77	218.95	29.81	8.345		
6,240.00	6,225.41	6,257.83	6,225.41	15.29	17.22	0.06	499.12	288.23	248.77	218.83	29.93	8.311		
6,270.00	6,255.41	6,287.83	6,255.41	15.35	17.27	0.06	499.12	288.23	248.77	218.71	30.05	8.278		
6,300.00	6,285.41	6,317.83	6,285.41	15.41	17.32	0.06	499.12	288.23	248.77	218.59	30.17	8.244		
6,330.00	6,315.41	6,347.83	6,315.41	15.47	17.38	0.06	499.12	288.23	248.77	218.47	30.30	8.211		
6,360.00	6,345.41	6,377.83	6,345.41	15.53	17.43	0.06	499.12	288.23	248.77	218.35	30.42	8.179		
6,390.00	6,375.41	6,407.83	6,375.41	15.58	17.48	0.06	499.12	288.23	248.77	218.23	30.54	8.146		
6,420.00	6,405.41	6,437.83	6,405.41	15.64	17.53	0.06	499.12	288.23	248.77	218.11	30.66	8.114		
6,450.00	6,435.41	6,467.83	6,435.41	15.70	17.58	0.06	499.12	288.23	248.77	217.98	30.78	8.082		
6,480.00	6,465.41	6,497.83	6,465.41	15.76	17.64	0.06	499.12	288.23	248.77	217.86	30.90	8.050		
6,510.00	6,495.41	6,527.83	6,495.41	15.82	17.69	0.06	499.12	288.23	248.77	217.74	31.02	8.018		
6,540.00	6,525.41	6,557.83	6,525.41	15.88	17.74	0.06	499.12	288.23	248.77	217.62	31.15	7.987		
6,570.00	6,555.41	6,587.83	6,555.41	15.94	17.80	0.06	499.12	288.23	248.77	217.50	31.27	7.956		
6,600.00	6,585.41	6,617.83	6,585.41	16.00	17.85	0.06	499.12	288.23	248.77	217.38	31.39	7.925		
6,630.00	6,615.41	6,647.83	6,615.41	16.06	17.90	0.06	499.12	288.23	248.77	217.25	31.51	7.894		
6,660.00	6,645.41	6,677.83	6,645.41	16.12	17.96	0.06	499.12	288.23	248.77	217.13	31.64	7.864		
6,690.00	6,675.41	6,707.83	6,675.41	16.18	18.01	0.06	499.12	288.23	248.77	217.01	31.76	7.833		
6,720.00	6,705.41	6,737.83	6,705.41	16.24	18.06	0.06	499.12	288.23	248.77	216.89	31.88	7.803		
6,750.00	6,735.41	6,767.83	6,735.41	16.29	18.12	0.06	499.12	288.23	248.77	216.76	32.00	7.773		
6,780.00	6,765.41	6,797.83	6,765.41	16.35	18.17	0.06	499.12	288.23	248.77	216.64	32.13	7.744		

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



# Archer

## Anticollision Report

# Archer

<b>Company:</b>	Piceance Energy, LLC	<b>Local Co-ordinate Reference:</b>	Well Gunderson 29-09E
<b>Project:</b>	Mesa County, CO	<b>TVD Reference:</b>	WELL @ 7560.00usft (Original Well Elev)
<b>Reference Site:</b>	Gunderson	<b>MD Reference:</b>	WELL @ 7560.00usft (Original Well Elev)
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Gunderson 29-09E	<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>	Wellbore #1	<b>Database:</b>	EDMDBBW
<b>Reference Design:</b>	Design #1	<b>Offset TVD Reference:</b>	Reference Datum

Offset Design Gunderson - Gunderson 29-08E - Wellbore #1 - Design #1													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)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
6,810.00	6,795.41	6,827.83	6,795.41	16.41	18.22	0.06	499.12	288.23	248.77	216.52	32.25	7.714		
6,840.00	6,825.41	6,857.83	6,825.41	16.47	18.28	0.06	499.12	288.23	248.77	216.39	32.37	7.685		
6,870.00	6,855.41	6,887.83	6,855.41	16.53	18.33	0.06	499.12	288.23	248.77	216.27	32.49	7.656		
6,900.00	6,885.41	6,917.83	6,885.41	16.59	18.39	0.06	499.12	288.23	248.77	216.15	32.62	7.627		
6,930.00	6,915.41	6,947.83	6,915.41	16.65	18.44	0.06	499.12	288.23	248.77	216.02	32.74	7.598		
6,960.00	6,945.41	6,977.83	6,945.41	16.71	18.49	0.06	499.12	288.23	248.77	215.90	32.86	7.570		
6,990.00	6,975.41	7,007.83	6,975.41	16.77	18.55	0.06	499.12	288.23	248.77	215.78	32.99	7.541		
7,020.00	7,005.41	7,037.83	7,005.41	16.83	18.60	0.06	499.12	288.23	248.77	215.65	33.11	7.513		
7,050.00	7,035.41	7,067.83	7,035.41	16.89	18.66	0.06	499.12	288.23	248.77	215.53	33.23	7.485		
7,080.00	7,065.41	7,097.83	7,065.41	16.95	18.71	0.06	499.12	288.23	248.77	215.41	33.36	7.457		
7,110.00	7,095.41	7,127.83	7,095.41	17.01	18.77	0.06	499.12	288.23	248.77	215.28	33.48	7.430		
7,140.00	7,125.41	7,157.83	7,125.41	17.07	18.82	0.06	499.12	288.23	248.77	215.16	33.61	7.402		
7,170.00	7,155.41	7,187.83	7,155.41	17.13	18.87	0.06	499.12	288.23	248.77	215.04	33.73	7.375		
7,200.00	7,185.41	7,217.83	7,185.41	17.20	18.93	0.06	499.12	288.23	248.77	214.91	33.85	7.348		
7,230.00	7,215.41	7,247.83	7,215.41	17.26	18.98	0.06	499.12	288.23	248.77	214.79	33.98	7.321		
7,260.00	7,245.41	7,277.83	7,245.41	17.32	19.04	0.06	499.12	288.23	248.77	214.66	34.10	7.295		
7,290.00	7,275.41	7,307.83	7,275.41	17.38	19.09	0.06	499.12	288.23	248.77	214.54	34.23	7.268		
7,320.00	7,305.41	7,337.83	7,305.41	17.44	19.15	0.06	499.12	288.23	248.77	214.42	34.35	7.242		
7,350.00	7,335.41	7,367.83	7,335.41	17.50	19.21	0.06	499.12	288.23	248.77	214.29	34.47	7.216		
7,380.00	7,365.41	7,397.83	7,365.41	17.56	19.26	0.06	499.12	288.23	248.77	214.17	34.60	7.190		
7,410.00	7,395.41	7,427.83	7,395.41	17.62	19.32	0.06	499.12	288.23	248.77	214.04	34.72	7.164		
7,440.00	7,425.41	7,457.83	7,425.41	17.68	19.37	0.06	499.12	288.23	248.77	213.92	34.85	7.138		
7,470.00	7,455.41	7,487.83	7,455.41	17.74	19.43	0.06	499.12	288.23	248.77	213.79	34.97	7.113		
7,500.00	7,485.41	7,517.83	7,485.41	17.80	19.48	0.06	499.12	288.23	248.77	213.67	35.10	7.088		
7,530.00	7,515.41	7,547.83	7,515.41	17.86	19.54	0.06	499.12	288.23	248.77	213.54	35.22	7.063		
7,560.00	7,545.41	7,577.83	7,545.41	17.92	19.59	0.06	499.12	288.23	248.77	213.42	35.35	7.038		
7,590.00	7,575.41	7,607.83	7,575.41	17.99	19.65	0.06	499.12	288.23	248.77	213.29	35.47	7.013		
7,620.00	7,605.41	7,637.83	7,605.41	18.05	19.71	0.06	499.12	288.23	248.77	213.17	35.60	6.988		
7,650.00	7,635.41	7,667.83	7,635.41	18.11	19.76	0.06	499.12	288.23	248.77	213.04	35.72	6.964		
7,680.00	7,665.41	7,697.83	7,665.41	18.17	19.82	0.06	499.12	288.23	248.77	212.92	35.85	6.939		
7,694.59	7,680.00	7,712.41	7,680.00	18.20	19.85	0.06	499.12	288.23	248.77	212.86	35.91	6.928		



# Archer

## Anticollision Report



<b>Company:</b>	Piceance Energy, LLC	<b>Local Co-ordinate Reference:</b>	Well Gunderson 29-09E
<b>Project:</b>	Mesa County, CO	<b>TVD Reference:</b>	WELL @ 7560.00usft (Original Well Elev)
<b>Reference Site:</b>	Gunderson	<b>MD Reference:</b>	WELL @ 7560.00usft (Original Well Elev)
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Gunderson 29-09E	<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>	Wellbore #1	<b>Database:</b>	EDMDBBW
<b>Reference Design:</b>	Design #1	<b>Offset TVD Reference:</b>	Reference Datum

Offset Design Gunderson - Gunderson 29-10E - Wellbore #1 - Design #1													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)	Azimuth from North (°)	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	83.42	2.29	19.88	20.01					
30.00	30.00	30.00	30.00	0.01	0.03	83.42	2.29	19.88	20.01	19.98	0.03	618.297		
60.00	60.00	60.00	60.00	0.04	0.05	83.42	2.29	19.88	20.01	19.92	0.09	218.222		
90.00	90.00	90.00	90.00	0.07	0.08	83.42	2.29	19.88	20.01	19.86	0.15	132.492		
120.00	120.00	120.00	120.00	0.13	0.13	83.42	2.29	19.88	20.01	19.75	0.26	76.754		
150.00	150.00	150.00	150.00	0.20	0.20	83.42	2.29	19.88	20.01	19.62	0.40	50.588		
180.00	180.00	180.00	180.00	0.27	0.27	83.42	2.29	19.88	20.01	19.48	0.53	37.727		
210.00	210.00	210.00	210.00	0.33	0.33	83.42	2.29	19.88	20.01	19.35	0.67	30.079		
240.00	240.00	240.00	240.00	0.40	0.40	83.42	2.29	19.88	20.01	19.21	0.80	25.010		
270.00	270.00	270.00	270.00	0.47	0.47	83.42	2.29	19.88	20.01	19.08	0.94	21.403		
300.00	300.00	300.00	300.00	0.53	0.53	83.42	2.29	19.88	20.01	18.94	1.07	18.705 CC, ES		
330.00	330.00	329.79	329.79	0.60	0.60	83.47	2.29	20.03	20.17	18.97	1.20	16.791		
360.00	360.00	359.58	359.57	0.67	0.66	83.62	2.29	20.50	20.63	19.30	1.33	15.487		
390.00	390.00	389.35	389.34	0.74	0.73	83.85	2.29	21.27	21.41	19.94	1.46	14.629		
420.00	420.00	419.10	419.07	0.80	0.79	84.16	2.29	22.36	22.49	20.90	1.59	14.105		
450.00	450.00	448.86	448.80	0.87	0.86	84.50	2.28	23.74	23.88	22.16	1.73	13.837		
480.00	480.00	478.83	478.72	0.94	0.92	84.84	2.28	25.26	25.40	23.54	1.86	13.661		
510.00	510.00	508.79	508.64	1.01	0.99	85.14	2.28	26.78	26.91	24.92	1.99	13.506		
540.00	540.00	538.75	538.57	1.07	1.05	85.41	2.27	28.29	28.42	26.29	2.13	13.365		
570.00	570.00	568.71	568.49	1.14	1.12	85.65	2.27	29.81	29.93	27.67	2.26	13.240		
600.00	600.00	598.67	598.41	1.21	1.19	85.87	2.26	31.33	31.45	29.05	2.40	13.130		
630.00	630.00	628.64	628.34	1.28	1.26	86.23	2.26	32.84	32.84	30.32	2.52	13.053		
660.00	660.00	658.61	658.28	1.34	1.33	86.88	2.26	34.36	33.98	31.33	2.65	12.842		
690.00	689.99	688.60	688.22	1.41	1.40	87.82	2.25	35.88	34.88	32.10	2.78	12.563		
720.00	719.96	718.58	718.17	1.48	1.47	89.03	2.25	37.39	35.55	32.64	2.91	12.228		
750.00	749.93	748.56	748.11	1.54	1.54	90.53	2.24	38.91	36.00	32.96	3.04	11.847		
780.00	779.88	778.54	778.05	1.61	1.61	92.32	2.24	40.43	36.24	33.07	3.17	11.435		
810.00	809.81	808.51	807.98	1.68	1.68	94.45	2.24	41.95	36.30	32.99	3.30	10.996		
840.00	839.72	838.47	837.90	1.75	1.75	96.86	2.23	43.46	36.23	32.79	3.43	10.547		
864.82	864.47	863.25	862.66	1.80	1.81	98.89	2.23	44.72	36.20	32.66	3.55	10.208		
870.00	869.63	868.43	867.82	1.82	1.82	99.32	2.23	44.98	36.20	32.63	3.57	10.142		
900.00	899.54	898.39	897.75	1.88	1.89	101.77	2.23	46.50	36.25	32.54	3.71	9.782		
930.00	929.45	928.35	927.67	1.96	1.96	104.21	2.22	48.01	36.36	32.52	3.84	9.460		
960.00	959.36	958.31	957.59	2.03	2.04	106.63	2.22	49.53	36.54	32.55	3.98	9.174		
990.00	989.27	988.27	987.51	2.10	2.11	109.02	2.21	51.04	36.78	32.65	4.12	8.921		
1,020.00	1,019.18	1,018.23	1,017.43	2.17	2.18	111.38	2.21	52.56	37.08	32.81	4.26	8.695		
1,050.00	1,049.09	1,048.19	1,047.35	2.25	2.25	113.70	2.21	54.08	37.44	33.04	4.41	8.496		
1,080.00	1,079.00	1,078.15	1,077.28	2.32	2.32	115.96	2.20	55.59	37.87	33.32	4.55	8.321		
1,110.00	1,108.91	1,108.11	1,107.20	2.39	2.40	118.18	2.20	57.11	38.35	33.66	4.70	8.168		
1,140.00	1,138.82	1,138.07	1,137.12	2.47	2.47	120.33	2.19	58.63	38.89	34.05	4.84	8.032		
1,170.00	1,168.73	1,168.03	1,167.04	2.54	2.54	122.43	2.19	60.14	39.48	34.49	4.99	7.915		
1,200.00	1,198.64	1,197.99	1,196.96	2.62	2.61	124.45	2.19	61.66	40.12	34.99	5.14	7.813		
1,230.00	1,228.55	1,227.95	1,226.88	2.69	2.68	126.42	2.18	63.17	40.82	35.53	5.28	7.724		
1,260.00	1,258.46	1,257.91	1,256.81	2.77	2.76	128.31	2.18	64.69	41.55	36.12	5.43	7.648		
1,290.00	1,288.37	1,287.87	1,286.73	2.84	2.83	130.14	2.17	66.21	42.33	36.75	5.58	7.584		
1,320.00	1,318.28	1,317.83	1,316.65	2.92	2.90	131.90	2.17	67.72	43.16	37.43	5.73	7.530		
1,350.00	1,348.19	1,347.79	1,346.57	2.99	2.97	133.59	2.17	69.24	44.02	38.14	5.88	7.484		
1,380.00	1,378.10	1,377.75	1,376.49	3.07	3.04	135.21	2.16	70.76	44.92	38.89	6.03	7.446		
1,410.00	1,408.01	1,407.71	1,406.41	3.15	3.12	136.77	2.16	72.27	45.85	39.67	6.18	7.416		
1,440.00	1,437.92	1,437.67	1,436.34	3.22	3.19	138.27	2.15	73.79	46.82	40.48	6.33	7.392		
1,470.00	1,467.83	1,467.63	1,466.26	3.30	3.26	139.70	2.15	75.30	47.81	41.33	6.48	7.374		
1,500.00	1,497.74	1,497.59	1,496.18	3.38	3.33	141.08	2.15	76.82	48.84	42.21	6.63	7.361		

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





Archer  
Anticollision Report

# Archer

Company:	Piceance Energy, LLC	Local Co-ordinate Reference:	Well Gunderson 29-09E
Project:	Mesa County, CO	TVD Reference:	WELL @ 7560.00usft (Original Well Elev)
Reference Site:	Gunderson	MD Reference:	WELL @ 7560.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Gunderson 29-09E	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDMDBBW
Reference Design:	Design #1	Offset TVD Reference:	Reference Datum

Offset Design Gunderson - Gunderson 29-10E - Wellbore #1 - Design #1													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)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
1,530.00	1,527.65	1,527.55	1,526.10	3.45	3.41	142.39	2.14	78.34	49.89	43.11	6.79	7.352		
1,560.00	1,557.56	1,557.51	1,556.02	3.53	3.48	143.66	2.14	79.85	50.97	44.03	6.94	7.348		
1,590.00	1,587.47	1,587.47	1,585.94	3.61	3.55	144.87	2.13	81.37	52.07	44.98	7.09	7.347		
1,620.00	1,617.38	1,617.43	1,615.87	3.68	3.62	146.03	2.13	82.89	53.20	45.96	7.24	7.349		
1,650.00	1,647.29	1,647.39	1,645.79	3.76	3.70	147.14	2.13	84.40	54.34	46.95	7.39	7.354		
1,680.00	1,677.20	1,677.35	1,675.71	3.84	3.77	148.20	2.12	85.92	55.50	47.96	7.54	7.362		
1,710.00	1,707.11	1,707.31	1,705.63	3.92	3.84	149.22	2.12	87.43	56.69	49.00	7.69	7.371		
1,740.00	1,737.02	1,737.27	1,735.55	3.99	3.91	150.20	2.11	88.95	57.89	50.05	7.84	7.383		
1,770.00	1,766.93	1,767.23	1,765.47	4.07	3.99	151.14	2.11	90.47	59.10	51.11	7.99	7.396		
1,800.00	1,796.84	1,797.19	1,795.39	4.15	4.06	152.04	2.11	91.98	60.33	52.19	8.14	7.411		
1,830.00	1,826.74	1,827.15	1,825.32	4.23	4.13	152.90	2.10	93.50	61.58	53.29	8.29	7.427		
1,860.00	1,856.65	1,857.11	1,855.24	4.30	4.20	153.73	2.10	95.02	62.84	54.40	8.44	7.444		
1,890.00	1,886.56	1,887.07	1,885.16	4.38	4.28	154.53	2.09	96.53	64.11	55.52	8.59	7.462		
1,920.00	1,916.47	1,917.03	1,915.08	4.46	4.35	155.29	2.09	98.05	65.39	56.65	8.74	7.481		
1,950.00	1,946.38	1,946.99	1,945.00	4.54	4.42	156.03	2.09	99.57	66.69	57.80	8.89	7.501		
1,980.00	1,976.29	1,976.95	1,974.92	4.62	4.49	156.74	2.08	101.08	67.99	58.95	9.04	7.521		
2,010.00	2,006.20	2,006.91	2,004.85	4.69	4.57	157.42	2.08	102.60	69.31	60.12	9.19	7.542		
2,040.00	2,036.11	2,036.87	2,034.77	4.77	4.64	158.07	2.07	104.11	70.63	61.30	9.34	7.563		
2,070.00	2,066.02	2,066.83	2,064.69	4.85	4.71	158.70	2.07	105.63	71.97	62.48	9.49	7.585		
2,100.00	2,095.93	2,096.79	2,094.61	4.93	4.79	159.31	2.07	107.15	73.31	63.67	9.64	7.606		
2,130.00	2,125.84	2,126.75	2,124.53	5.01	4.86	159.90	2.06	108.66	74.66	64.87	9.79	7.628		
2,160.00	2,155.75	2,156.71	2,154.45	5.08	4.93	160.46	2.06	110.18	76.02	66.08	9.94	7.651		
2,190.00	2,185.66	2,186.67	2,184.38	5.16	5.00	161.01	2.05	111.70	77.38	67.30	10.09	7.673		
2,220.00	2,215.57	2,216.63	2,214.30	5.24	5.08	161.54	2.05	113.21	78.76	68.52	10.23	7.695		
2,250.00	2,245.48	2,246.59	2,244.22	5.32	5.15	162.04	2.05	114.73	80.13	69.75	10.38	7.718		
2,280.00	2,275.39	2,276.55	2,274.14	5.40	5.22	162.53	2.04	116.24	81.52	70.99	10.53	7.740		
2,310.00	2,305.30	2,306.51	2,304.06	5.48	5.29	163.01	2.04	117.76	82.91	72.23	10.68	7.762		
2,340.00	2,335.21	2,336.47	2,333.98	5.55	5.37	163.47	2.03	119.28	84.30	73.47	10.83	7.785		
2,370.00	2,365.12	2,366.43	2,363.91	5.63	5.44	163.91	2.03	120.79	85.70	74.73	10.98	7.807		
2,400.00	2,395.03	2,396.39	2,393.83	5.71	5.51	164.34	2.03	122.31	87.11	75.98	11.13	7.829		
2,430.00	2,424.94	2,426.35	2,423.75	5.79	5.59	164.76	2.02	123.83	88.52	77.25	11.27	7.851		
2,460.00	2,454.85	2,456.31	2,453.67	5.87	5.66	165.16	2.02	125.34	89.94	78.51	11.42	7.873		
2,490.00	2,484.76	2,486.27	2,483.59	5.95	5.73	165.55	2.01	126.86	91.36	79.78	11.57	7.895		
2,520.00	2,514.67	2,516.23	2,513.51	6.02	5.80	165.93	2.01	128.37	92.78	81.06	11.72	7.916		
2,550.00	2,544.58	2,546.19	2,543.44	6.10	5.88	166.30	2.01	129.89	94.21	82.34	11.87	7.938		
2,580.00	2,574.49	2,576.15	2,573.36	6.18	5.95	166.65	2.00	131.41	95.64	83.62	12.02	7.959		
2,610.00	2,604.40	2,606.11	2,603.28	6.26	6.02	167.00	2.00	132.92	97.07	84.91	12.16	7.980		
2,640.00	2,634.31	2,636.07	2,633.20	6.34	6.09	167.33	2.00	134.44	98.51	86.20	12.31	8.001		
2,670.00	2,664.22	2,666.03	2,663.12	6.42	6.17	167.66	1.99	135.96	99.95	87.49	12.46	8.021		
2,700.00	2,694.13	2,695.99	2,693.04	6.50	6.24	167.98	1.99	137.47	101.40	88.79	12.61	8.042		
2,730.00	2,724.04	2,725.95	2,722.97	6.57	6.31	168.28	1.98	138.99	102.85	90.09	12.76	8.062		
2,760.00	2,753.95	2,755.91	2,752.89	6.65	6.39	168.58	1.98	140.51	104.30	91.39	12.90	8.082		
2,790.00	2,783.86	2,785.87	2,782.81	6.73	6.46	168.87	1.98	142.02	105.75	92.70	13.05	8.102		
2,820.00	2,813.77	2,815.83	2,812.73	6.81	6.53	169.16	1.97	143.54	107.21	94.00	13.20	8.121		
2,850.00	2,843.68	2,845.79	2,842.65	6.89	6.60	169.43	1.97	145.05	108.66	95.32	13.35	8.140		
2,880.00	2,873.59	2,875.75	2,872.57	6.97	6.68	169.70	1.96	146.57	110.12	96.63	13.50	8.160		
2,910.00	2,903.50	2,905.71	2,902.49	7.05	6.75	169.96	1.96	148.09	111.59	97.94	13.64	8.178		
2,940.00	2,933.40	2,935.67	2,932.42	7.13	6.82	170.22	1.96	149.60	113.05	99.26	13.79	8.197		
2,970.00	2,963.31	2,965.63	2,962.34	7.20	6.89	170.46	1.95	151.12	114.52	100.58	13.94	8.215		
3,000.00	2,993.22	2,995.59	2,992.26	7.28	6.97	170.71	1.95	152.64	115.99	101.90	14.09	8.234		
3,030.00	3,023.13	3,025.55	3,022.18	7.36	7.04	170.94	1.94	154.15	117.46	103.23	14.24	8.252		
3,060.00	3,053.04	3,055.51	3,052.10	7.44	7.11	171.17	1.94	155.67	118.94	104.55	14.38	8.269		

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 Gunderson 29-09E
<b>Project:</b>	Mesa County, CO	<b>TVD Reference:</b>	WELL @ 7560.00usft (Original Well Elev)
<b>Reference Site:</b>	Gunderson	<b>MD Reference:</b>	WELL @ 7560.00usft (Original Well Elev)
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Gunderson 29-09E	<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>	Wellbore #1	<b>Database:</b>	EDMDBBW
<b>Reference Design:</b>	Design #1	<b>Offset TVD Reference:</b>	Reference Datum

Offset Design Gunderson - Gunderson 29-10E - Wellbore #1 - Design #1													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)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
3,090.00	3,082.95	3,085.47	3,082.02	7.52	7.19	171.39	1.94	157.18	120.41	105.88	14.53	8.287		
3,120.00	3,112.86	3,115.43	3,111.95	7.60	7.26	171.61	1.93	158.70	121.89	107.21	14.68	8.304		
3,150.00	3,142.77	3,145.39	3,141.87	7.68	7.33	171.83	1.93	160.22	123.37	108.54	14.83	8.321		
3,180.00	3,172.68	3,175.35	3,171.79	7.76	7.40	172.03	1.92	161.73	124.85	109.88	14.97	8.338		
3,210.00	3,202.59	3,205.31	3,201.71	7.83	7.48	172.24	1.92	163.25	126.33	111.21	15.12	8.355		
3,240.00	3,232.50	3,235.27	3,231.63	7.91	7.55	172.44	1.92	164.77	127.82	112.55	15.27	8.371		
3,270.00	3,262.41	3,265.23	3,261.55	7.99	7.62	172.63	1.91	166.28	129.30	113.89	15.42	8.388		
3,300.00	3,292.32	3,295.19	3,291.48	8.07	7.70	172.82	1.91	167.80	130.79	115.23	15.56	8.404		
3,330.00	3,322.23	3,325.15	3,321.40	8.15	7.77	173.01	1.90	169.31	132.28	116.57	15.71	8.419		
3,360.00	3,352.14	3,355.11	3,351.32	8.23	7.84	173.19	1.90	170.83	133.77	117.91	15.86	8.435		
3,390.00	3,382.05	3,385.07	3,381.24	8.31	7.91	173.36	1.90	172.35	135.26	119.25	16.01	8.451		
3,420.00	3,411.96	3,415.03	3,411.16	8.39	7.99	173.54	1.89	173.86	136.75	120.60	16.15	8.466		
3,450.00	3,441.87	3,444.99	3,441.08	8.47	8.06	173.71	1.89	175.38	138.25	121.95	16.30	8.481		
3,480.00	3,471.78	3,474.95	3,471.01	8.54	8.13	173.87	1.88	176.90	139.74	123.29	16.45	8.496		
3,510.00	3,501.69	3,504.91	3,500.93	8.62	8.21	174.04	1.88	178.41	141.24	124.64	16.60	8.510		
3,540.00	3,531.60	3,534.87	3,530.85	8.70	8.28	174.19	1.88	179.93	142.73	125.99	16.74	8.525		
3,570.00	3,561.51	3,564.83	3,560.77	8.78	8.35	174.35	1.87	181.44	144.23	127.34	16.89	8.539		
3,600.00	3,591.42	3,594.79	3,590.69	8.86	8.42	174.50	1.87	182.96	145.73	128.69	17.04	8.553		
3,630.00	3,621.33	3,624.75	3,620.61	8.94	8.50	174.65	1.86	184.48	147.23	130.05	17.19	8.567		
3,660.00	3,651.24	3,654.71	3,650.54	9.02	8.57	174.80	1.86	185.99	148.73	131.40	17.33	8.581		
3,690.00	3,681.15	3,684.67	3,680.46	9.10	8.64	174.94	1.86	187.51	150.24	132.76	17.48	8.595		
3,720.00	3,711.06	3,714.63	3,710.38	9.18	8.72	175.08	1.85	189.03	151.74	134.11	17.63	8.608		
3,750.00	3,740.97	3,744.59	3,740.30	9.25	8.79	175.22	1.85	190.54	153.24	135.47	17.77	8.621		
3,780.00	3,770.88	3,774.55	3,770.22	9.33	8.86	175.36	1.84	192.06	154.75	136.83	17.92	8.635		
3,810.00	3,800.79	3,804.51	3,800.14	9.41	8.93	175.49	1.84	193.58	156.25	138.18	18.07	8.647		
3,840.00	3,830.70	3,834.47	3,830.07	9.49	9.01	175.62	1.84	195.09	157.76	139.54	18.22	8.660		
3,870.00	3,860.61	3,864.43	3,859.99	9.57	9.08	175.75	1.83	196.61	159.27	140.90	18.36	8.673		
3,900.00	3,890.52	3,894.39	3,889.91	9.65	9.15	175.87	1.83	198.12	160.78	142.26	18.51	8.685		
3,930.00	3,920.43	3,924.35	3,919.83	9.73	9.23	176.00	1.82	199.64	162.28	143.63	18.66	8.698		
3,960.00	3,950.34	3,954.31	3,949.75	9.81	9.30	176.12	1.82	201.16	163.79	144.99	18.81	8.710		
3,990.00	3,980.25	3,984.27	3,979.67	9.89	9.37	176.23	1.82	202.67	165.30	146.35	18.95	8.722		
4,020.00	4,010.16	4,014.23	4,009.60	9.97	9.44	176.35	1.81	204.19	166.82	147.72	19.10	8.734		
4,050.00	4,040.06	4,044.19	4,039.52	10.04	9.52	176.46	1.81	205.71	168.33	149.08	19.25	8.745		
4,080.00	4,069.97	4,074.15	4,069.44	10.12	9.59	176.58	1.80	207.22	169.84	150.44	19.39	8.757		
4,110.00	4,099.88	4,104.11	4,099.36	10.20	9.66	176.69	1.80	208.74	171.35	151.81	19.54	8.768		
4,140.00	4,129.79	4,134.07	4,129.28	10.28	9.74	176.80	1.80	210.25	172.87	153.18	19.69	8.780		
4,170.00	4,159.70	4,164.03	4,159.20	10.36	9.81	176.90	1.79	211.77	174.38	154.54	19.84	8.791		
4,200.00	4,189.61	4,193.99	4,189.12	10.44	9.88	177.01	1.79	213.29	175.90	155.91	19.98	8.802		
4,230.00	4,219.52	4,223.95	4,219.05	10.52	9.95	177.11	1.79	214.80	177.41	157.28	20.13	8.813		
4,260.00	4,249.43	4,253.91	4,249.97	10.60	10.03	177.21	1.78	216.32	178.93	158.65	20.28	8.824		
4,290.00	4,279.34	4,283.87	4,278.89	10.68	10.10	177.31	1.78	217.84	180.44	160.02	20.43	8.834		
4,320.00	4,309.25	4,313.83	4,308.81	10.76	10.17	177.41	1.77	219.35	181.96	161.39	20.57	8.845		
4,350.00	4,339.16	4,343.79	4,338.73	10.83	10.25	177.50	1.77	220.87	183.48	162.76	20.72	8.855		
4,380.00	4,369.07	4,373.75	4,368.65	10.91	10.32	177.60	1.77	222.38	185.00	164.13	20.87	8.866		
4,410.00	4,398.98	4,403.71	4,398.58	10.99	10.39	177.69	1.76	223.90	186.51	165.50	21.01	8.876		
4,440.00	4,428.89	4,433.67	4,428.50	11.07	10.46	177.78	1.76	225.42	188.03	166.87	21.16	8.886		
4,470.00	4,458.80	4,463.63	4,458.42	11.15	10.54	177.87	1.75	226.93	189.55	168.24	21.31	8.896		
4,500.00	4,488.71	4,493.59	4,488.34	11.23	10.61	177.96	1.75	228.45	191.07	169.62	21.46	8.906		
4,530.00	4,518.62	4,523.55	4,518.26	11.31	10.68	178.05	1.75	229.97	192.59	170.99	21.60	8.915		
4,560.00	4,548.53	4,553.51	4,548.18	11.39	10.76	178.13	1.74	231.48	194.11	172.36	21.75	8.925		
4,590.00	4,578.44	4,583.47	4,578.11	11.47	10.83	178.22	1.74	233.00	195.64	173.74	21.90	8.934		
4,620.00	4,608.35	4,613.43	4,608.03	11.55	10.90	178.30	1.73	234.52	197.16	175.11	22.04	8.944		

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 Gunderson 29-09E
<b>Project:</b>	Mesa County, CO	<b>TVD Reference:</b>	WELL @ 7560.00usft (Original Well Elev)
<b>Reference Site:</b>	Gunderson	<b>MD Reference:</b>	WELL @ 7560.00usft (Original Well Elev)
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Gunderson 29-09E	<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>	Wellbore #1	<b>Database:</b>	EDMDBBW
<b>Reference Design:</b>	Design #1	<b>Offset TVD Reference:</b>	Reference Datum

Offset Design Gunderson - Gunderson 29-10E - Wellbore #1 - Design #1													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)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
4,650.00	4,638.26	4,643.39	4,637.95	11.62	10.97	178.38	1.73	236.03	198.68	176.49	22.19	8.953		
4,680.00	4,668.17	4,673.35	4,667.87	11.70	11.05	178.46	1.73	237.55	200.20	177.86	22.34	8.962		
4,710.00	4,698.08	4,703.31	4,697.79	11.78	11.12	178.54	1.72	239.06	201.73	179.24	22.49	8.971		
4,740.00	4,727.99	4,733.27	4,727.71	11.86	11.19	178.62	1.72	240.58	203.25	180.62	22.63	8.980		
4,770.00	4,757.90	4,763.23	4,757.64	11.94	11.27	178.70	1.71	242.10	204.77	181.99	22.78	8.989		
4,800.00	4,787.81	4,793.19	4,787.56	12.02	11.34	178.77	1.71	243.61	206.30	183.37	22.93	8.998		
4,830.00	4,817.72	4,823.15	4,817.48	12.10	11.41	178.85	1.71	245.13	207.82	184.75	23.07	9.007		
4,860.00	4,847.63	4,853.11	4,847.40	12.18	11.48	178.92	1.70	246.65	209.35	186.12	23.22	9.015		
4,890.00	4,877.54	4,883.07	4,877.32	12.26	11.56	179.00	1.70	248.16	210.87	187.50	23.37	9.024		
4,920.00	4,907.45	4,913.03	4,907.24	12.34	11.63	179.07	1.69	249.68	212.40	188.88	23.52	9.032		
4,950.00	4,937.36	4,942.99	4,937.17	12.42	11.70	179.14	1.69	251.19	213.92	190.26	23.66	9.041		
4,980.00	4,967.27	4,972.95	4,967.09	12.49	11.78	179.21	1.69	252.71	215.45	191.64	23.81	9.049		
5,010.00	4,997.18	5,002.91	4,997.01	12.57	11.85	179.28	1.68	254.23	216.97	193.02	23.96	9.057		
5,040.00	5,027.09	5,032.87	5,026.93	12.65	11.92	179.34	1.68	255.74	218.50	194.40	24.10	9.065		
5,070.00	5,057.00	5,062.83	5,056.85	12.73	11.99	179.41	1.67	257.26	220.03	195.78	24.25	9.073		
5,100.00	5,086.91	5,092.79	5,086.77	12.81	12.07	179.48	1.67	258.78	221.56	197.16	24.40	9.081		
5,130.00	5,116.82	5,122.75	5,116.70	12.89	12.14	179.54	1.67	260.29	223.08	198.54	24.54	9.089		
5,160.00	5,146.72	5,152.71	5,146.62	12.97	12.21	179.61	1.66	261.81	224.61	199.92	24.69	9.097		
5,190.00	5,176.63	5,182.67	5,176.54	13.05	12.29	179.67	1.66	263.32	226.14	201.30	24.84	9.104		
5,220.00	5,206.54	5,212.63	5,206.46	13.13	12.36	179.73	1.65	264.84	227.67	202.68	24.99	9.112		
5,250.00	5,236.45	5,242.59	5,236.38	13.21	12.43	179.79	1.65	266.36	229.20	204.06	25.13	9.119		
5,280.00	5,266.36	5,272.55	5,266.30	13.29	12.50	179.85	1.65	267.87	230.73	205.45	25.28	9.127		
5,310.00	5,296.27	5,302.51	5,296.22	13.37	12.58	179.91	1.64	269.39	232.26	206.83	25.43	9.134		
5,340.00	5,326.18	5,332.47	5,326.15	13.44	12.65	179.97	1.64	270.91	233.78	208.21	25.57	9.141		
5,370.00	5,356.09	5,362.43	5,356.07	13.52	12.72	-179.97	1.63	272.42	235.31	209.59	25.72	9.148		
5,400.00	5,386.00	5,392.39	5,385.99	13.60	12.80	-179.91	1.63	273.94	236.84	210.98	25.87	9.156		
5,430.00	5,415.91	5,422.35	5,415.91	13.68	12.87	-179.86	1.63	275.46	238.37	212.36	26.02	9.163		
5,460.00	5,445.82	5,452.31	5,445.83	13.76	12.94	-179.80	1.62	276.97	239.91	213.74	26.16	9.170		
5,490.00	5,475.73	5,482.27	5,475.75	13.84	13.01	-179.74	1.62	278.49	241.44	215.13	26.31	9.177		
5,520.00	5,505.64	5,512.23	5,505.68	13.92	13.09	-179.69	1.61	280.00	242.97	216.51	26.46	9.183		
5,550.00	5,535.56	5,542.20	5,535.60	13.99	13.16	-179.66	1.61	281.52	244.41	217.81	26.60	9.189		
5,580.00	5,565.50	5,572.17	5,565.54	14.06	13.23	-179.68	1.61	283.04	245.65	218.91	26.74	9.187		
5,610.00	5,595.46	5,602.15	5,595.48	14.12	13.30	-179.76	1.60	284.54	246.68	219.81	26.87	9.181		
5,640.00	5,625.44	5,632.13	5,625.44	14.17	13.35	-179.83	1.60	285.79	247.50	220.52	26.97	9.175		
5,670.00	5,655.42	5,662.13	5,655.42	14.22	13.41	-179.88	1.60	286.72	248.12	221.04	27.08	9.163		
5,700.00	5,685.41	5,692.13	5,685.41	14.28	13.46	-179.92	1.60	287.35	248.53	221.35	27.18	9.143		
5,730.00	5,715.41	5,722.13	5,715.41	14.32	13.51	-179.94	1.59	287.66	248.73	221.45	27.28	9.118		
5,760.00	5,745.41	5,752.13	5,745.41	14.37	13.56	-179.94	1.59	287.70	248.76	221.37	27.38	9.084		
5,790.00	5,775.41	5,782.13	5,775.41	14.43	13.62	-179.94	1.59	287.70	248.76	221.26	27.49	9.048		
5,820.00	5,805.41	5,812.13	5,805.41	14.48	13.67	-179.94	1.59	287.70	248.76	221.15	27.61	9.011		
5,850.00	5,835.41	5,842.13	5,835.41	14.54	13.73	-179.94	1.59	287.70	248.76	221.03	27.72	8.973		
5,880.00	5,865.41	5,872.13	5,865.41	14.60	13.79	-179.94	1.59	287.70	248.76	220.92	27.84	8.935		
5,910.00	5,895.41	5,902.13	5,895.41	14.65	13.84	-179.94	1.59	287.70	248.76	220.80	27.96	8.898		
5,940.00	5,925.41	5,932.13	5,925.41	14.71	13.90	-179.94	1.59	287.70	248.76	220.68	28.07	8.861		
5,970.00	5,955.41	5,962.13	5,955.41	14.77	13.96	-179.94	1.59	287.70	248.76	220.57	28.19	8.824		
6,000.00	5,985.41	5,992.13	5,985.41	14.83	14.01	-179.94	1.59	287.70	248.76	220.45	28.31	8.788		
6,030.00	6,015.41	6,022.13	6,015.41	14.88	14.07	-179.94	1.59	287.70	248.76	220.33	28.43	8.751		
6,060.00	6,045.41	6,052.13	6,045.41	14.94	14.13	-179.94	1.59	287.70	248.76	220.21	28.54	8.715		
6,090.00	6,075.41	6,082.13	6,075.41	15.00	14.19	-179.94	1.59	287.70	248.76	220.09	28.66	8.679		
6,120.00	6,105.41	6,112.13	6,105.41	15.06	14.24	-179.94	1.59	287.70	248.76	219.98	28.78	8.644		
6,150.00	6,135.41	6,142.13	6,135.41	15.12	14.30	-179.94	1.59	287.70	248.76	219.86	28.90	8.608		
6,180.00	6,165.41	6,172.13	6,165.41	15.17	14.36	-179.94	1.59	287.70	248.76	219.74	29.02	8.573		

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



Archer  
Anticollision Report

# Archer

Company:	Piceance Energy, LLC	Local Co-ordinate Reference:	Well Gunderson 29-09E
Project:	Mesa County, CO	TVD Reference:	WELL @ 7560.00usft (Original Well Elev)
Reference Site:	Gunderson	MD Reference:	WELL @ 7560.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Gunderson 29-09E	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDMDBBW
Reference Design:	Design #1	Offset TVD Reference:	Reference Datum

Offset Design Gunderson - Gunderson 29-10E - Wellbore #1 - Design #1													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)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
6,210.00	6,195.41	6,202.13	6,195.41	15.23	14.42	-179.94	1.59	287.70	248.76	219.62	29.13	8.538		
6,240.00	6,225.41	6,232.13	6,225.41	15.29	14.47	-179.94	1.59	287.70	248.76	219.50	29.25	8.504		
6,270.00	6,255.41	6,262.13	6,255.41	15.35	14.53	-179.94	1.59	287.70	248.76	219.38	29.37	8.469		
6,300.00	6,285.41	6,292.13	6,285.41	15.41	14.59	-179.94	1.59	287.70	248.76	219.27	29.49	8.435		
6,330.00	6,315.41	6,322.13	6,315.41	15.47	14.65	-179.94	1.59	287.70	248.76	219.15	29.61	8.401		
6,360.00	6,345.41	6,352.13	6,345.41	15.53	14.71	-179.94	1.59	287.70	248.76	219.03	29.73	8.368		
6,390.00	6,375.41	6,382.13	6,375.41	15.58	14.76	-179.94	1.59	287.70	248.76	218.91	29.85	8.334		
6,420.00	6,405.41	6,412.13	6,405.41	15.64	14.82	-179.94	1.59	287.70	248.76	218.79	29.97	8.301		
6,450.00	6,435.41	6,442.13	6,435.41	15.70	14.88	-179.94	1.59	287.70	248.76	218.67	30.09	8.268		
6,480.00	6,465.41	6,472.13	6,465.41	15.76	14.94	-179.94	1.59	287.70	248.76	218.55	30.21	8.235		
6,510.00	6,495.41	6,502.13	6,495.41	15.82	15.00	-179.94	1.59	287.70	248.76	218.43	30.33	8.203		
6,540.00	6,525.41	6,532.13	6,525.41	15.88	15.06	-179.94	1.59	287.70	248.76	218.31	30.45	8.170		
6,570.00	6,555.41	6,562.13	6,555.41	15.94	15.11	-179.94	1.59	287.70	248.76	218.19	30.57	8.138		
6,600.00	6,585.41	6,592.13	6,585.41	16.00	15.17	-179.94	1.59	287.70	248.76	218.07	30.69	8.107		
6,630.00	6,615.41	6,622.13	6,615.41	16.06	15.23	-179.94	1.59	287.70	248.76	217.95	30.81	8.075		
6,660.00	6,645.41	6,652.13	6,645.41	16.12	15.29	-179.94	1.59	287.70	248.76	217.83	30.93	8.043		
6,690.00	6,675.41	6,682.13	6,675.41	16.18	15.35	-179.94	1.59	287.70	248.76	217.71	31.05	8.012		
6,720.00	6,705.41	6,712.13	6,705.41	16.24	15.41	-179.94	1.59	287.70	248.76	217.59	31.17	7.981		
6,750.00	6,735.41	6,742.13	6,735.41	16.29	15.47	-179.94	1.59	287.70	248.76	217.47	31.29	7.950		
6,780.00	6,765.41	6,772.13	6,765.41	16.35	15.53	-179.94	1.59	287.70	248.76	217.35	31.41	7.920		
6,810.00	6,795.41	6,802.13	6,795.41	16.41	15.58	-179.94	1.59	287.70	248.76	217.23	31.53	7.889		
6,840.00	6,825.41	6,832.13	6,825.41	16.47	15.64	-179.94	1.59	287.70	248.76	217.10	31.65	7.859		
6,870.00	6,855.41	6,862.13	6,855.41	16.53	15.70	-179.94	1.59	287.70	248.76	216.98	31.77	7.829		
6,900.00	6,885.41	6,892.13	6,885.41	16.59	15.76	-179.94	1.59	287.70	248.76	216.86	31.89	7.799		
6,930.00	6,915.41	6,922.13	6,915.41	16.65	15.82	-179.94	1.59	287.70	248.76	216.74	32.02	7.770		
6,960.00	6,945.41	6,952.13	6,945.41	16.71	15.88	-179.94	1.59	287.70	248.76	216.62	32.14	7.740		
6,990.00	6,975.41	6,982.13	6,975.41	16.77	15.94	-179.94	1.59	287.70	248.76	216.50	32.26	7.711		
7,020.00	7,005.41	7,012.13	7,005.41	16.83	16.00	-179.94	1.59	287.70	248.76	216.38	32.38	7.682		
7,050.00	7,035.41	7,042.13	7,035.41	16.89	16.06	-179.94	1.59	287.70	248.76	216.25	32.50	7.653		
7,080.00	7,065.41	7,072.13	7,065.41	16.95	16.12	-179.94	1.59	287.70	248.76	216.13	32.62	7.625		
7,110.00	7,095.41	7,102.13	7,095.41	17.01	16.18	-179.94	1.59	287.70	248.76	216.01	32.75	7.596		
7,140.00	7,125.41	7,132.13	7,125.41	17.07	16.24	-179.94	1.59	287.70	248.76	215.89	32.87	7.568		
7,170.00	7,155.41	7,162.13	7,155.41	17.13	16.30	-179.94	1.59	287.70	248.76	215.77	32.99	7.540		
7,200.00	7,185.41	7,192.13	7,185.41	17.20	16.36	-179.94	1.59	287.70	248.76	215.64	33.11	7.512		
7,230.00	7,215.41	7,222.13	7,215.41	17.26	16.42	-179.94	1.59	287.70	248.76	215.52	33.24	7.485		
7,260.00	7,245.41	7,252.13	7,245.41	17.32	16.48	-179.94	1.59	287.70	248.76	215.40	33.36	7.457		
7,290.00	7,275.41	7,282.13	7,275.41	17.38	16.54	-179.94	1.59	287.70	248.76	215.28	33.48	7.430		
7,320.00	7,305.41	7,312.13	7,305.41	17.44	16.60	-179.94	1.59	287.70	248.76	215.15	33.60	7.403		
7,350.00	7,335.41	7,342.13	7,335.41	17.50	16.66	-179.94	1.59	287.70	248.76	215.03	33.73	7.376		
7,380.00	7,365.41	7,372.13	7,365.41	17.56	16.72	-179.94	1.59	287.70	248.76	214.91	33.85	7.349		
7,410.00	7,395.41	7,402.13	7,395.41	17.62	16.78	-179.94	1.59	287.70	248.76	214.78	33.97	7.322		
7,440.00	7,425.41	7,432.13	7,425.41	17.68	16.84	-179.94	1.59	287.70	248.76	214.66	34.10	7.296		
7,470.00	7,455.41	7,462.13	7,455.41	17.74	16.90	-179.94	1.59	287.70	248.76	214.54	34.22	7.270		
7,500.00	7,485.41	7,492.13	7,485.41	17.80	16.96	-179.94	1.59	287.70	248.76	214.41	34.34	7.244		
7,530.00	7,515.41	7,522.13	7,515.41	17.86	17.02	-179.94	1.59	287.70	248.76	214.29	34.46	7.218		
7,560.00	7,545.41	7,552.13	7,545.41	17.92	17.08	-179.94	1.59	287.70	248.76	214.17	34.59	7.192		
7,590.00	7,575.41	7,582.13	7,575.41	17.99	17.14	-179.94	1.59	287.70	248.76	214.04	34.71	7.166		
7,620.00	7,605.41	7,612.13	7,605.41	18.05	17.21	-179.94	1.59	287.70	248.76	213.92	34.84	7.141		
7,650.00	7,635.41	7,642.13	7,635.41	18.11	17.27	-179.94	1.59	287.70	248.76	213.80	34.96	7.116		
7,680.00	7,665.41	7,672.13	7,665.41	18.17	17.33	-179.94	1.59	287.70	248.76	213.67	35.08	7.090		
7,694.59	7,680.00	7,686.72	7,680.00	18.20	17.36	-179.94	1.59	287.70	248.76	213.61	35.14	7.078 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 Gunderson 29-09E
<b>Project:</b>	Mesa County, CO	<b>TVD Reference:</b>	WELL @ 7560.00usft (Original Well Elev)
<b>Reference Site:</b>	Gunderson	<b>MD Reference:</b>	WELL @ 7560.00usft (Original Well Elev)
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Gunderson 29-09E	<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>	Wellbore #1	<b>Database:</b>	EDMDBBW
<b>Reference Design:</b>	Design #1	<b>Offset TVD Reference:</b>	Reference Datum

Offset Design Gunderson - Gunderson 29-11E - Wellbore #1 - Design #1													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)	Azimuth from North (°)	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	110.00	-7.65	21.01	22.36					
30.00	30.00	30.00	30.00	0.01	0.03	110.00	-7.65	21.01	22.36	22.33	0.03	690.888		
60.00	60.00	60.00	60.00	0.04	0.05	110.00	-7.65	21.01	22.36	22.27	0.09	243.843		
90.00	90.00	90.00	90.00	0.07	0.08	110.00	-7.65	21.01	22.36	22.21	0.15	148.048		
120.00	120.00	120.00	120.00	0.13	0.13	110.00	-7.65	21.01	22.36	22.10	0.26	85.765		
150.00	150.00	150.00	150.00	0.20	0.20	110.00	-7.65	21.01	22.36	21.97	0.40	56.527		
180.00	180.00	180.00	180.00	0.27	0.27	110.00	-7.65	21.01	22.36	21.83	0.53	42.156		
210.00	210.00	210.00	210.00	0.33	0.33	110.00	-7.65	21.01	22.36	21.70	0.67	33.611		
240.00	240.00	240.00	240.00	0.40	0.40	110.00	-7.65	21.01	22.36	21.56	0.80	27.946		
270.00	270.00	270.00	270.00	0.47	0.47	110.00	-7.65	21.01	22.36	21.43	0.94	23.915		
300.00	300.00	300.00	300.00	0.53	0.53	110.00	-7.65	21.01	22.36	21.29	1.07	20.901		
330.00	330.00	330.00	330.00	0.60	0.60	110.00	-7.65	21.01	22.36	21.16	1.20	18.561		
360.00	360.00	360.00	360.00	0.67	0.67	110.00	-7.65	21.01	22.36	21.02	1.34	16.693		
390.00	390.00	390.00	390.00	0.74	0.74	110.00	-7.65	21.01	22.36	20.89	1.47	15.166		
420.00	420.00	420.00	420.00	0.80	0.80	110.00	-7.65	21.01	22.36	20.75	1.61	13.895		
440.00	440.00	440.00	440.00	0.85	0.85	110.00	-7.65	21.01	22.36	20.66	1.70	13.160		
450.00	450.00	450.00	450.00	0.87	0.87	110.00	-7.65	21.01	22.36	20.62	1.74	12.821 CC, ES		
480.00	480.00	479.78	479.78	0.94	0.93	110.15	-7.75	21.13	22.51	20.63	1.87	12.025		
510.00	510.00	509.56	509.56	1.01	0.99	110.58	-8.06	21.47	22.94	20.94	2.00	11.482		
540.00	540.00	539.32	539.31	1.07	1.05	111.26	-8.58	22.05	23.67	21.55	2.12	11.152		
570.00	570.00	569.07	569.03	1.14	1.11	112.15	-9.30	22.85	24.69	22.45	2.25	10.992		
600.00	600.00	598.79	598.72	1.21	1.16	113.19	-10.23	23.89	26.02	23.65	2.37	10.974 SF		
630.00	630.00	628.48	628.36	1.28	1.23	114.62	-11.36	25.15	27.58	25.08	2.50	11.035		
660.00	660.00	658.19	658.00	1.34	1.29	116.62	-12.70	26.63	29.33	26.70	2.63	11.167		
690.00	689.99	688.11	687.85	1.41	1.35	118.99	-14.11	28.20	31.09	28.34	2.75	11.290		
720.00	719.96	718.02	717.69	1.48	1.42	121.63	-15.51	29.76	32.81	29.92	2.88	11.383		
750.00	749.93	747.93	747.52	1.54	1.48	124.50	-16.92	31.33	34.50	31.49	3.01	11.461		
780.00	779.88	777.82	777.34	1.61	1.55	127.59	-18.33	32.89	36.21	33.08	3.14	11.539		
810.00	809.81	807.69	807.14	1.68	1.62	130.86	-19.73	34.45	37.97	34.71	3.27	11.622		
840.00	839.72	837.55	836.92	1.75	1.69	134.20	-21.14	36.02	39.82	36.42	3.40	11.704		
870.00	869.63	867.41	866.71	1.82	1.76	137.28	-22.54	37.58	41.79	38.25	3.54	11.817		
900.00	899.54	897.26	896.49	1.88	1.84	140.07	-23.95	39.14	43.87	40.20	3.67	11.951		
930.00	929.45	927.12	926.27	1.96	1.91	142.60	-25.35	40.70	46.04	42.23	3.81	12.090		
960.00	959.36	956.97	956.05	2.03	1.98	144.90	-26.76	42.27	48.29	44.35	3.95	12.237		
990.00	989.27	986.83	985.83	2.10	2.05	146.99	-28.16	43.83	50.62	46.53	4.09	12.391		
1,020.00	1,019.18	1,016.68	1,015.61	2.17	2.13	148.89	-29.57	45.39	53.00	48.78	4.23	12.544		
1,050.00	1,049.09	1,046.54	1,045.39	2.25	2.20	150.63	-30.97	46.95	55.44	51.07	4.37	12.698		
1,080.00	1,079.00	1,076.40	1,075.18	2.32	2.27	152.22	-32.38	48.52	57.92	53.42	4.51	12.852		
1,110.00	1,108.91	1,106.25	1,104.96	2.39	2.35	153.68	-33.78	50.08	60.45	55.80	4.65	13.004		
1,140.00	1,138.82	1,136.11	1,134.74	2.47	2.42	155.02	-35.19	51.64	63.01	58.22	4.79	13.151		
1,170.00	1,168.73	1,165.96	1,164.52	2.54	2.50	156.26	-36.59	53.20	65.61	60.67	4.93	13.296		
1,200.00	1,198.64	1,195.82	1,194.30	2.62	2.57	157.40	-37.99	54.77	68.23	63.15	5.08	13.439		
1,230.00	1,228.55	1,225.67	1,224.08	2.69	2.65	158.46	-39.40	56.33	70.87	65.65	5.22	13.575		
1,260.00	1,258.46	1,255.53	1,253.87	2.77	2.72	159.44	-40.80	57.89	73.54	68.18	5.36	13.708		
1,290.00	1,288.37	1,285.39	1,283.65	2.84	2.80	160.35	-42.21	59.45	76.23	70.72	5.51	13.838		
1,320.00	1,318.28	1,315.24	1,313.43	2.92	2.87	161.20	-43.61	61.02	78.94	73.28	5.65	13.963		
1,350.00	1,348.19	1,345.10	1,343.21	2.99	2.95	161.99	-45.02	62.58	81.66	75.86	5.80	14.083		
1,380.00	1,378.10	1,374.95	1,372.99	3.07	3.03	162.73	-46.42	64.14	84.40	78.45	5.94	14.200		
1,410.00	1,408.01	1,404.81	1,402.77	3.15	3.10	163.42	-47.83	65.70	87.15	81.06	6.09	14.314		
1,440.00	1,437.92	1,434.66	1,432.56	3.22	3.18	164.08	-49.23	67.27	89.91	83.67	6.23	14.422		
1,470.00	1,467.83	1,464.52	1,462.34	3.30	3.26	164.69	-50.64	68.83	92.68	86.30	6.38	14.528		
1,500.00	1,497.74	1,494.37	1,492.12	3.38	3.33	165.26	-52.04	70.39	95.47	88.94	6.53	14.630		

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 Gunderson 29-09E
<b>Project:</b>	Mesa County, CO	<b>TVD Reference:</b>	WELL @ 7560.00usft (Original Well Elev)
<b>Reference Site:</b>	Gunderson	<b>MD Reference:</b>	WELL @ 7560.00usft (Original Well Elev)
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Gunderson 29-09E	<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>	Wellbore #1	<b>Database:</b>	EDMDBBW
<b>Reference Design:</b>	Design #1	<b>Offset TVD Reference:</b>	Reference Datum

Offset Design Gunderson - Gunderson 29-11E - Wellbore #1 - Design #1													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)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
1,530.00	1,527.65	1,524.23	1,521.90	3.45	3.41	165.81	-53.45	71.95	98.26	91.59	6.67	14.728		
1,560.00	1,557.56	1,554.09	1,551.68	3.53	3.49	166.32	-54.85	73.52	101.06	94.24	6.82	14.823		
1,590.00	1,587.47	1,583.94	1,581.46	3.61	3.56	166.81	-56.26	75.08	103.87	96.90	6.96	14.916		
1,620.00	1,617.38	1,613.80	1,611.25	3.68	3.64	167.27	-57.66	76.64	106.68	99.57	7.11	15.005		
1,650.00	1,647.29	1,643.65	1,641.03	3.76	3.72	167.71	-59.07	78.20	109.50	102.25	7.26	15.090		
1,680.00	1,677.20	1,673.51	1,670.81	3.84	3.79	168.12	-60.47	79.77	112.33	104.93	7.40	15.174		
1,710.00	1,707.11	1,703.36	1,700.59	3.92	3.87	168.52	-61.88	81.33	115.17	107.62	7.55	15.254		
1,740.00	1,737.02	1,733.22	1,730.37	3.99	3.95	168.89	-63.28	82.89	118.00	110.31	7.70	15.332		
1,770.00	1,766.93	1,763.08	1,760.15	4.07	4.02	169.25	-64.68	84.45	120.85	113.00	7.84	15.408		
1,800.00	1,796.84	1,792.93	1,789.94	4.15	4.10	169.59	-66.09	86.02	123.70	115.71	7.99	15.481		
1,830.00	1,826.74	1,822.79	1,819.72	4.23	4.18	169.92	-67.49	87.58	126.55	118.41	8.14	15.551		
1,860.00	1,856.65	1,852.64	1,849.50	4.30	4.26	170.23	-68.90	89.14	129.40	121.12	8.28	15.620		
1,890.00	1,886.56	1,882.50	1,879.28	4.38	4.33	170.53	-70.30	90.70	132.26	123.83	8.43	15.686		
1,920.00	1,916.47	1,912.35	1,909.06	4.46	4.41	170.81	-71.71	92.27	135.13	126.55	8.58	15.751		
1,950.00	1,946.38	1,942.21	1,938.84	4.54	4.49	171.09	-73.11	93.83	137.99	129.27	8.73	15.813		
1,980.00	1,976.29	1,972.06	1,968.62	4.62	4.56	171.35	-74.52	95.39	140.86	131.99	8.87	15.874		
2,010.00	2,006.20	2,001.92	1,998.41	4.69	4.64	171.60	-75.92	96.95	143.74	134.71	9.02	15.933		
2,040.00	2,036.11	2,031.78	2,028.19	4.77	4.72	171.84	-77.33	98.51	146.61	137.44	9.17	15.990		
2,070.00	2,066.02	2,061.63	2,057.97	4.85	4.80	172.08	-78.73	100.08	149.49	140.17	9.32	16.046		
2,100.00	2,095.93	2,091.49	2,087.75	4.93	4.87	172.30	-80.14	101.64	152.37	142.90	9.46	16.100		
2,130.00	2,125.84	2,121.34	2,117.53	5.01	4.95	172.51	-81.54	103.20	155.25	145.64	9.61	16.153		
2,160.00	2,155.75	2,151.20	2,147.31	5.08	5.03	172.72	-82.95	104.76	158.13	148.37	9.76	16.204		
2,190.00	2,185.66	2,181.05	2,177.10	5.16	5.11	172.92	-84.35	106.33	161.02	151.11	9.91	16.253		
2,220.00	2,215.57	2,210.91	2,206.88	5.24	5.19	173.12	-85.76	107.89	163.91	153.85	10.05	16.302		
2,250.00	2,245.48	2,240.77	2,236.66	5.32	5.26	173.30	-87.16	109.45	166.80	156.60	10.20	16.349		
2,280.00	2,275.39	2,270.62	2,266.44	5.40	5.34	173.48	-88.56	111.01	169.69	159.34	10.35	16.395		
2,310.00	2,305.30	2,300.48	2,296.22	5.48	5.42	173.66	-89.97	112.58	172.58	162.08	10.50	16.439		
2,340.00	2,335.21	2,330.33	2,326.00	5.55	5.50	173.83	-91.37	114.14	175.48	164.83	10.65	16.483		
2,370.00	2,365.12	2,360.19	2,355.79	5.63	5.57	173.99	-92.78	115.70	178.37	167.58	10.79	16.525		
2,400.00	2,395.03	2,390.04	2,385.57	5.71	5.65	174.15	-94.18	117.26	181.27	170.33	10.94	16.566		
2,430.00	2,424.94	2,419.90	2,415.35	5.79	5.73	174.30	-95.59	118.83	184.17	173.08	11.09	16.607		
2,460.00	2,454.85	2,449.76	2,445.13	5.87	5.81	174.45	-96.99	120.39	187.07	175.83	11.24	16.646		
2,490.00	2,484.76	2,479.61	2,474.91	5.95	5.89	174.59	-98.40	121.95	189.97	178.59	11.39	16.684		
2,520.00	2,514.67	2,509.47	2,504.69	6.02	5.96	174.73	-99.80	123.51	192.87	181.34	11.53	16.722		
2,550.00	2,544.58	2,539.32	2,534.48	6.10	6.04	174.86	-101.21	125.08	195.78	184.10	11.68	16.758		
2,580.00	2,574.49	2,569.18	2,564.26	6.18	6.12	175.00	-102.61	126.64	198.68	186.85	11.83	16.794		
2,610.00	2,604.40	2,599.03	2,594.04	6.26	6.20	175.12	-104.02	128.20	201.59	189.61	11.98	16.829		
2,640.00	2,634.31	2,628.89	2,623.82	6.34	6.27	175.25	-105.42	129.76	204.50	192.37	12.13	16.863		
2,670.00	2,664.22	2,658.74	2,653.60	6.42	6.35	175.37	-106.83	131.33	207.40	195.13	12.28	16.896		
2,700.00	2,694.13	2,688.60	2,683.38	6.50	6.43	175.48	-108.23	132.89	210.31	197.89	12.42	16.928		
2,730.00	2,724.04	2,718.46	2,713.16	6.57	6.51	175.60	-109.64	134.45	213.22	200.65	12.57	16.960		
2,760.00	2,753.95	2,748.31	2,742.95	6.65	6.59	175.71	-111.04	136.01	216.13	203.41	12.72	16.991		
2,790.00	2,783.86	2,778.17	2,772.73	6.73	6.66	175.82	-112.44	137.58	219.04	206.17	12.87	17.022		
2,820.00	2,813.77	2,808.02	2,802.51	6.81	6.74	175.92	-113.85	139.14	221.95	208.94	13.02	17.051		
2,850.00	2,843.68	2,837.88	2,832.29	6.89	6.82	176.02	-115.25	140.70	224.87	211.70	13.17	17.080		
2,880.00	2,873.59	2,867.73	2,862.07	6.97	6.90	176.12	-116.66	142.26	227.78	214.47	13.31	17.109		
2,910.00	2,903.50	2,897.59	2,891.85	7.05	6.98	176.22	-118.06	143.83	230.69	217.23	13.46	17.137		
2,940.00	2,933.40	2,927.45	2,921.64	7.13	7.05	176.31	-119.47	145.39	233.61	220.00	13.61	17.164		
2,970.00	2,963.31	2,957.30	2,951.42	7.20	7.13	176.41	-120.87	146.95	236.52	222.76	13.76	17.191		
3,000.00	2,993.22	2,987.16	2,981.20	7.28	7.21	176.50	-122.28	148.51	239.44	225.53	13.91	17.217		
3,030.00	3,023.13	3,017.01	3,010.98	7.36	7.29	176.58	-123.68	150.08	242.36	228.30	14.06	17.243		
3,060.00	3,053.04	3,046.87	3,040.76	7.44	7.37	176.67	-125.09	151.64	245.27	231.07	14.20	17.268		

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



Archer  
Anticollision Report

Archer

Company:	Piceance Energy, LLC	Local Co-ordinate Reference:	Well Gunderson 29-09E
Project:	Mesa County, CO	TVD Reference:	WELL @ 7560.00usft (Original Well Elev)
Reference Site:	Gunderson	MD Reference:	WELL @ 7560.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Gunderson 29-09E	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDMDBBW
Reference Design:	Design #1	Offset TVD Reference:	Reference Datum

Offset Design		Gunderson - Gunderson 29-11E - Wellbore #1 - Design #1											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)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
3,090.00	3,082.95	3,076.72	3,070.54	7.52	7.45	176.75	-126.49	153.20	248.19	233.84	14.35	17.292		
3,120.00	3,112.86	3,106.58	3,100.33	7.60	7.52	176.84	-127.90	154.76	251.11	236.61	14.50	17.317		
3,150.00	3,142.77	3,136.43	3,130.11	7.68	7.60	176.92	-129.30	156.33	254.03	239.38	14.65	17.340		
3,180.00	3,172.68	3,166.29	3,159.89	7.76	7.68	176.99	-130.71	157.89	256.94	242.15	14.80	17.364		
3,210.00	3,202.59	3,196.15	3,189.67	7.83	7.76	177.07	-132.11	159.45	259.86	244.92	14.95	17.386		
3,240.00	3,232.50	3,226.00	3,219.45	7.91	7.84	177.15	-133.52	161.01	262.78	247.69	15.10	17.409		
3,270.00	3,262.41	3,255.86	3,249.23	7.99	7.91	177.22	-134.92	162.58	265.70	250.46	15.24	17.431		
3,300.00	3,292.32	3,285.71	3,279.02	8.07	7.99	177.29	-136.33	164.14	268.63	253.23	15.39	17.452		
3,330.00	3,322.23	3,315.57	3,308.80	8.15	8.07	177.36	-137.73	165.70	271.55	256.01	15.54	17.473		
3,360.00	3,352.14	3,345.42	3,338.58	8.23	8.15	177.43	-139.13	167.26	274.47	258.78	15.69	17.494		
3,390.00	3,382.05	3,375.28	3,368.36	8.31	8.23	177.50	-140.54	168.82	277.39	261.55	15.84	17.514		
3,420.00	3,411.96	3,405.14	3,398.14	8.39	8.30	177.56	-141.94	170.39	280.31	264.33	15.99	17.534		
3,450.00	3,441.87	3,434.99	3,427.92	8.47	8.38	177.62	-143.35	171.95	283.23	267.10	16.14	17.554		
3,480.00	3,471.78	3,464.85	3,457.71	8.54	8.46	177.69	-144.75	173.51	286.16	269.87	16.28	17.573		
3,510.00	3,501.69	3,494.70	3,487.49	8.62	8.54	177.75	-146.16	175.07	289.08	272.65	16.43	17.592		
3,540.00	3,531.60	3,524.56	3,517.27	8.70	8.62	177.81	-147.56	176.64	292.00	275.42	16.58	17.611		
3,570.00	3,561.51	3,554.41	3,547.05	8.78	8.70	177.87	-148.97	178.20	294.93	278.20	16.73	17.629		
3,600.00	3,591.42	3,584.27	3,576.83	8.86	8.77	177.93	-150.37	179.76	297.85	280.97	16.88	17.647		
3,630.00	3,621.33	3,614.12	3,606.61	8.94	8.85	177.98	-151.78	181.32	300.78	283.75	17.03	17.665		
3,660.00	3,651.24	3,643.98	3,636.39	9.02	8.93	178.04	-153.18	182.89	303.70	286.53	17.18	17.682		
3,690.00	3,681.15	3,673.84	3,666.18	9.10	9.01	178.09	-154.59	184.45	306.63	289.30	17.32	17.699		
3,720.00	3,711.06	3,703.69	3,695.96	9.18	9.09	178.15	-155.99	186.01	309.55	292.08	17.47	17.716		
3,750.00	3,740.97	3,733.55	3,725.74	9.25	9.16	178.20	-157.40	187.57	312.48	294.86	17.62	17.733		
3,780.00	3,770.88	3,763.40	3,755.52	9.33	9.24	178.25	-158.80	189.14	315.40	297.63	17.77	17.749		
3,810.00	3,800.79	3,793.26	3,785.30	9.41	9.32	178.30	-160.21	190.70	318.33	300.41	17.92	17.765		
3,840.00	3,830.70	3,823.11	3,815.08	9.49	9.40	178.35	-161.61	192.26	321.26	303.19	18.07	17.781		
3,870.00	3,860.61	3,852.97	3,844.87	9.57	9.48	178.40	-163.01	193.82	324.18	305.97	18.22	17.796		
3,900.00	3,890.52	3,882.83	3,874.65	9.65	9.56	178.45	-164.42	195.39	327.11	308.74	18.37	17.811		
3,930.00	3,920.43	3,912.68	3,904.43	9.73	9.63	178.50	-165.82	196.95	330.04	311.52	18.51	17.826		
3,960.00	3,950.34	3,942.54	3,934.21	9.81	9.71	178.54	-167.23	198.51	332.96	314.30	18.66	17.841		
3,990.00	3,980.25	3,972.39	3,963.99	9.89	9.79	178.59	-168.63	200.07	335.89	317.08	18.81	17.856		
4,020.00	4,010.16	4,002.25	3,993.77	9.97	9.87	178.63	-170.04	201.64	338.82	319.86	18.96	17.870		
4,050.00	4,040.06	4,032.10	4,023.56	10.04	9.95	178.68	-171.44	203.20	341.75	322.64	19.11	17.884		
4,080.00	4,069.97	4,061.96	4,053.34	10.12	10.03	178.72	-172.85	204.76	344.68	325.42	19.26	17.898		
4,110.00	4,099.88	4,091.81	4,083.12	10.20	10.10	178.76	-174.25	206.32	347.60	328.20	19.41	17.912		
4,140.00	4,129.79	4,121.67	4,112.90	10.28	10.18	178.81	-175.66	207.89	350.53	330.98	19.56	17.925		
4,170.00	4,159.70	4,151.53	4,142.68	10.36	10.26	178.85	-177.06	209.45	353.46	333.76	19.70	17.938		
4,200.00	4,189.61	4,181.38	4,172.46	10.44	10.34	178.89	-178.47	211.01	356.39	336.54	19.85	17.952		
4,230.00	4,219.52	4,211.24	4,202.25	10.52	10.42	178.93	-179.87	212.57	359.32	339.32	20.00	17.964		
4,260.00	4,249.43	4,241.09	4,232.03	10.60	10.50	178.97	-181.28	214.14	362.25	342.10	20.15	17.977		
4,290.00	4,279.34	4,270.95	4,261.81	10.68	10.57	179.01	-182.68	215.70	365.18	344.88	20.30	17.990		
4,320.00	4,309.25	4,300.80	4,291.59	10.76	10.65	179.04	-184.09	217.26	368.11	347.66	20.45	18.002		
4,350.00	4,339.16	4,330.66	4,321.37	10.83	10.73	179.08	-185.49	218.82	371.04	350.44	20.60	18.014		
4,380.00	4,369.07	4,360.52	4,351.15	10.91	10.81	179.12	-186.89	220.39	373.97	353.22	20.75	18.026		
4,410.00	4,398.98	4,390.37	4,380.94	10.99	10.89	179.15	-188.30	221.95	376.90	356.00	20.89	18.038		
4,440.00	4,428.89	4,420.23	4,410.72	11.07	10.96	179.19	-189.70	223.51	379.83	358.78	21.04	18.050		
4,470.00	4,458.80	4,450.08	4,440.50	11.15	11.04	179.22	-191.11	225.07	382.76	361.57	21.19	18.061		
4,500.00	4,488.71	4,479.94	4,470.28	11.23	11.12	179.26	-192.51	226.64	385.69	364.35	21.34	18.073		
4,530.00	4,518.62	4,509.79	4,500.06	11.31	11.20	179.29	-193.92	228.20	388.62	367.13	21.49	18.084		
4,560.00	4,548.53	4,539.65	4,529.84	11.39	11.28	179.33	-195.32	229.76	391.55	369.91	21.64	18.095		
4,590.00	4,578.44	4,569.50	4,559.62	11.47	11.36	179.36	-196.73	231.32	394.48	372.69	21.79	18.106		
4,620.00	4,608.35	4,599.36	4,589.41	11.55	11.43	179.39	-198.13	232.89	397.41	375.47	21.94	18.116		

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



Archer  
Anticollision Report

# Archer

Company:	Piceance Energy, LLC	Local Co-ordinate Reference:	Well Gunderson 29-09E
Project:	Mesa County, CO	TVD Reference:	WELL @ 7560.00usft (Original Well Elev)
Reference Site:	Gunderson	MD Reference:	WELL @ 7560.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Gunderson 29-09E	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDMDBBW
Reference Design:	Design #1	Offset TVD Reference:	Reference Datum

Offset Design Gunderson - Gunderson 29-11E - Wellbore #1 - Design #1													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)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
4,650.00	4,638.26	4,629.22	4,619.19	11.62	11.51	179.42	-199.54	234.45	400.34	378.26	22.09	18.127		
4,680.00	4,668.17	4,659.07	4,648.97	11.70	11.59	179.46	-200.94	236.01	403.27	381.04	22.23	18.137		
4,710.00	4,698.08	4,688.93	4,678.75	11.78	11.67	179.49	-202.35	237.57	406.21	383.82	22.38	18.148		
4,740.00	4,727.99	4,718.78	4,708.53	11.86	11.75	179.52	-203.75	239.13	409.14	386.60	22.53	18.158		
4,770.00	4,757.90	4,748.64	4,738.31	11.94	11.83	179.55	-205.16	240.70	412.07	389.39	22.68	18.168		
4,800.00	4,787.81	4,778.49	4,768.10	12.02	11.90	179.58	-206.56	242.26	415.00	392.17	22.83	18.178		
4,830.00	4,817.72	4,808.35	4,797.88	12.10	11.98	179.61	-207.97	243.82	417.93	394.95	22.98	18.188		
4,860.00	4,847.63	4,838.21	4,827.66	12.18	12.06	179.64	-209.37	245.38	420.86	397.74	23.13	18.197		
4,890.00	4,877.54	4,868.06	4,857.44	12.26	12.14	179.66	-210.78	246.95	423.80	400.52	23.28	18.207		
4,920.00	4,907.45	4,897.92	4,887.22	12.34	12.22	179.69	-212.18	248.51	426.73	403.30	23.43	18.216		
4,950.00	4,937.36	4,927.77	4,917.00	12.42	12.30	179.72	-213.58	250.07	429.66	406.09	23.57	18.226		
4,980.00	4,967.27	4,957.63	4,946.79	12.49	12.37	179.75	-214.99	251.63	432.59	408.87	23.72	18.235		
5,010.00	4,997.18	4,987.48	4,976.57	12.57	12.45	179.77	-216.39	253.20	435.52	411.65	23.87	18.244		
5,040.00	5,027.09	5,017.34	5,006.35	12.65	12.53	179.80	-217.80	254.76	438.46	414.44	24.02	18.253		
5,070.00	5,057.00	5,047.19	5,036.13	12.73	12.61	179.83	-219.20	256.32	441.39	417.22	24.17	18.262		
5,100.00	5,086.91	5,077.05	5,065.91	12.81	12.69	179.85	-220.61	257.88	444.32	420.00	24.32	18.271		
5,130.00	5,116.82	5,106.91	5,095.69	12.89	12.77	179.88	-222.01	259.45	447.26	422.79	24.47	18.279		
5,160.00	5,146.72	5,136.76	5,125.48	12.97	12.84	179.90	-223.42	261.01	450.19	425.57	24.62	18.288		
5,190.00	5,176.63	5,166.62	5,155.26	13.05	12.92	179.93	-224.82	262.57	453.12	428.36	24.77	18.296		
5,220.00	5,206.54	5,196.47	5,185.04	13.13	13.00	179.95	-226.23	264.13	456.05	431.14	24.91	18.305		
5,250.00	5,236.45	5,226.33	5,214.82	13.21	13.08	179.98	-227.63	265.70	458.99	433.92	25.06	18.313		
5,280.00	5,266.36	5,256.18	5,244.60	13.29	13.16	-180.00	-229.04	267.26	461.92	436.71	25.21	18.321		
5,310.00	5,296.27	5,286.04	5,274.38	13.37	13.24	-179.97	-230.44	268.82	464.85	439.49	25.36	18.329		
5,340.00	5,326.18	5,315.90	5,304.16	13.44	13.31	-179.95	-231.85	270.38	467.79	442.28	25.51	18.337		
5,370.00	5,356.09	5,345.75	5,333.95	13.52	13.39	-179.93	-233.25	271.95	470.72	445.06	25.66	18.345		
5,400.00	5,386.00	5,375.61	5,363.73	13.60	13.47	-179.90	-234.66	273.51	473.65	447.85	25.81	18.353		
5,430.00	5,415.91	5,405.46	5,393.51	13.68	13.55	-179.88	-236.06	275.07	476.59	450.63	25.96	18.360		
5,460.00	5,445.82	5,435.32	5,423.29	13.76	13.63	-179.86	-237.46	276.63	479.52	453.42	26.11	18.368		
5,490.00	5,475.73	5,465.17	5,453.07	13.84	13.71	-179.84	-238.87	278.20	482.46	456.20	26.26	18.376		
5,520.00	5,505.64	5,495.03	5,482.85	13.92	13.79	-179.82	-240.27	279.76	485.39	458.99	26.40	18.383		
5,550.00	5,535.56	5,524.89	5,512.64	13.99	13.86	-179.81	-241.68	281.32	488.24	461.69	26.55	18.390		
5,580.00	5,565.50	5,556.60	5,544.27	14.06	13.94	-179.83	-243.14	282.95	490.85	464.16	26.69	18.389		
5,610.00	5,595.46	5,590.39	5,578.00	14.12	14.01	-179.87	-244.47	284.43	493.06	466.23	26.83	18.377		
5,640.00	5,625.44	5,624.23	5,611.81	14.17	14.08	-179.90	-245.54	285.62	494.83	467.88	26.95	18.363		
5,670.00	5,655.42	5,658.11	5,645.67	14.22	14.13	-179.92	-246.34	286.51	496.15	469.09	27.06	18.335		
5,700.00	5,685.41	5,692.02	5,679.57	14.28	14.19	-179.93	-246.87	287.10	497.03	469.86	27.17	18.292		
5,730.00	5,715.41	5,725.95	5,713.50	14.32	14.25	-179.94	-247.14	287.39	497.47	470.19	27.28	18.234		
5,760.00	5,745.41	5,757.87	5,745.41	14.37	14.31	-179.94	-247.17	287.43	497.52	470.13	27.39	18.163		
5,790.00	5,775.41	5,787.87	5,775.41	14.43	14.36	-179.94	-247.17	287.43	497.52	470.02	27.50	18.091		
5,820.00	5,805.41	5,817.87	5,805.41	14.48	14.41	-179.94	-247.17	287.43	497.52	469.91	27.61	18.018		
5,850.00	5,835.41	5,847.87	5,835.41	14.54	14.46	-179.94	-247.17	287.43	497.52	469.80	27.72	17.945		
5,880.00	5,865.41	5,877.87	5,865.41	14.60	14.51	-179.94	-247.17	287.43	497.52	469.69	27.84	17.873		
5,910.00	5,895.41	5,907.87	5,895.41	14.65	14.56	-179.94	-247.17	287.43	497.52	469.57	27.95	17.801		
5,940.00	5,925.41	5,937.87	5,925.41	14.71	14.60	-179.94	-247.17	287.43	497.52	469.46	28.06	17.730		
5,970.00	5,955.41	5,967.87	5,955.41	14.77	14.65	-179.94	-247.17	287.43	497.52	469.35	28.17	17.659		
6,000.00	5,985.41	5,997.87	5,985.41	14.83	14.70	-179.94	-247.17	287.43	497.52	469.24	28.29	17.589		
6,030.00	6,015.41	6,027.87	6,015.41	14.88	14.75	-179.94	-247.17	287.43	497.52	469.12	28.40	17.519		
6,060.00	6,045.41	6,057.87	6,045.41	14.94	14.80	-179.94	-247.17	287.43	497.52	469.01	28.51	17.449		
6,090.00	6,075.41	6,087.87	6,075.41	15.00	14.85	-179.94	-247.17	287.43	497.52	468.90	28.63	17.380		
6,120.00	6,105.41	6,117.87	6,105.41	15.06	14.90	-179.94	-247.17	287.43	497.52	468.78	28.74	17.311		
6,150.00	6,135.41	6,147.87	6,135.41	15.12	14.95	-179.94	-247.17	287.43	497.52	468.67	28.85	17.243		
6,180.00	6,165.41	6,177.87	6,165.41	15.17	15.00	-179.94	-247.17	287.43	497.52	468.55	28.97	17.175		

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 Gunderson 29-09E
<b>Project:</b>	Mesa County, CO	<b>TVD Reference:</b>	WELL @ 7560.00usft (Original Well Elev)
<b>Reference Site:</b>	Gunderson	<b>MD Reference:</b>	WELL @ 7560.00usft (Original Well Elev)
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Gunderson 29-09E	<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>	Wellbore #1	<b>Database:</b>	EDMDBBW
<b>Reference Design:</b>	Design #1	<b>Offset TVD Reference:</b>	Reference Datum

Offset Design Gunderson - Gunderson 29-11E - Wellbore #1 - Design #1													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)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
6,210.00	6,195.41	6,207.87	6,195.41	15.23	15.05	-179.94	-247.17	287.43	497.52	468.44	29.08	17.108		
6,240.00	6,225.41	6,237.87	6,225.41	15.29	15.10	-179.94	-247.17	287.43	497.52	468.33	29.20	17.041		
6,270.00	6,255.41	6,267.87	6,255.41	15.35	15.15	-179.94	-247.17	287.43	497.52	468.21	29.31	16.974		
6,300.00	6,285.41	6,297.87	6,285.41	15.41	15.21	-179.94	-247.17	287.43	497.52	468.10	29.42	16.908		
6,330.00	6,315.41	6,327.87	6,315.41	15.47	15.26	-179.94	-247.17	287.43	497.52	467.98	29.54	16.843		
6,360.00	6,345.41	6,357.87	6,345.41	15.53	15.31	-179.94	-247.17	287.43	497.52	467.87	29.65	16.777		
6,390.00	6,375.41	6,387.87	6,375.41	15.58	15.36	-179.94	-247.17	287.43	497.52	467.75	29.77	16.713		
6,420.00	6,405.41	6,417.87	6,405.41	15.64	15.41	-179.94	-247.17	287.43	497.52	467.64	29.88	16.648		
6,450.00	6,435.41	6,447.87	6,435.41	15.70	15.46	-179.94	-247.17	287.43	497.52	467.52	30.00	16.584		
6,480.00	6,465.41	6,477.87	6,465.41	15.76	15.51	-179.94	-247.17	287.43	497.52	467.41	30.12	16.520		
6,510.00	6,495.41	6,507.87	6,495.41	15.82	15.57	-179.94	-247.17	287.43	497.52	467.29	30.23	16.457		
6,540.00	6,525.41	6,537.87	6,525.41	15.88	15.62	-179.94	-247.17	287.43	497.52	467.17	30.35	16.394		
6,570.00	6,555.41	6,567.87	6,555.41	15.94	15.67	-179.94	-247.17	287.43	497.52	467.06	30.46	16.332		
6,600.00	6,585.41	6,597.87	6,585.41	16.00	15.72	-179.94	-247.17	287.43	497.52	466.94	30.58	16.270		
6,630.00	6,615.41	6,627.87	6,615.41	16.06	15.77	-179.94	-247.17	287.43	497.52	466.83	30.70	16.208		
6,660.00	6,645.41	6,657.87	6,645.41	16.12	15.83	-179.94	-247.17	287.43	497.52	466.71	30.81	16.147		
6,690.00	6,675.41	6,687.87	6,675.41	16.18	15.88	-179.94	-247.17	287.43	497.52	466.59	30.93	16.086		
6,720.00	6,705.41	6,717.87	6,705.41	16.24	15.93	-179.94	-247.17	287.43	497.52	466.48	31.05	16.025		
6,750.00	6,735.41	6,747.87	6,735.41	16.29	15.98	-179.94	-247.17	287.43	497.52	466.36	31.16	15.965		
6,780.00	6,765.41	6,777.87	6,765.41	16.35	16.04	-179.94	-247.17	287.43	497.52	466.24	31.28	15.905		
6,810.00	6,795.41	6,807.87	6,795.41	16.41	16.09	-179.94	-247.17	287.43	497.52	466.12	31.40	15.846		
6,840.00	6,825.41	6,837.87	6,825.41	16.47	16.14	-179.94	-247.17	287.43	497.52	466.01	31.51	15.787		
6,870.00	6,855.41	6,867.87	6,855.41	16.53	16.20	-179.94	-247.17	287.43	497.52	465.89	31.63	15.728		
6,900.00	6,885.41	6,897.87	6,885.41	16.59	16.25	-179.94	-247.17	287.43	497.52	465.77	31.75	15.670		
6,930.00	6,915.41	6,927.87	6,915.41	16.65	16.30	-179.94	-247.17	287.43	497.52	465.65	31.87	15.612		
6,960.00	6,945.41	6,957.87	6,945.41	16.71	16.36	-179.94	-247.17	287.43	497.52	465.54	31.99	15.554		
6,990.00	6,975.41	6,987.87	6,975.41	16.77	16.41	-179.94	-247.17	287.43	497.52	465.42	32.10	15.497		
7,020.00	7,005.41	7,017.87	7,005.41	16.83	16.46	-179.94	-247.17	287.43	497.52	465.30	32.22	15.440		
7,050.00	7,035.41	7,047.87	7,035.41	16.89	16.52	-179.94	-247.17	287.43	497.52	465.18	32.34	15.384		
7,080.00	7,065.41	7,077.87	7,065.41	16.95	16.57	-179.94	-247.17	287.43	497.52	465.06	32.46	15.328		
7,110.00	7,095.41	7,107.87	7,095.41	17.01	16.62	-179.94	-247.17	287.43	497.52	464.94	32.58	15.272		
7,140.00	7,125.41	7,137.87	7,125.41	17.07	16.68	-179.94	-247.17	287.43	497.52	464.83	32.70	15.216		
7,170.00	7,155.41	7,167.87	7,155.41	17.13	16.73	-179.94	-247.17	287.43	497.52	464.71	32.82	15.161		
7,200.00	7,185.41	7,197.87	7,185.41	17.20	16.79	-179.94	-247.17	287.43	497.52	464.59	32.93	15.107		
7,230.00	7,215.41	7,227.87	7,215.41	17.26	16.84	-179.94	-247.17	287.43	497.52	464.47	33.05	15.052		
7,260.00	7,245.41	7,257.87	7,245.41	17.32	16.90	-179.94	-247.17	287.43	497.52	464.35	33.17	14.998		
7,290.00	7,275.41	7,287.87	7,275.41	17.38	16.95	-179.94	-247.17	287.43	497.52	464.23	33.29	14.944		
7,320.00	7,305.41	7,317.87	7,305.41	17.44	17.00	-179.94	-247.17	287.43	497.52	464.11	33.41	14.891		
7,350.00	7,335.41	7,347.87	7,335.41	17.50	17.06	-179.94	-247.17	287.43	497.52	463.99	33.53	14.838		
7,380.00	7,365.41	7,377.87	7,365.41	17.56	17.11	-179.94	-247.17	287.43	497.52	463.87	33.65	14.785		
7,410.00	7,395.41	7,407.87	7,395.41	17.62	17.17	-179.94	-247.17	287.43	497.52	463.75	33.77	14.733		
7,440.00	7,425.41	7,437.87	7,425.41	17.68	17.22	-179.94	-247.17	287.43	497.52	463.63	33.89	14.680		
7,470.00	7,455.41	7,467.87	7,455.41	17.74	17.28	-179.94	-247.17	287.43	497.52	463.51	34.01	14.629		
7,500.00	7,485.41	7,497.87	7,485.41	17.80	17.33	-179.94	-247.17	287.43	497.52	463.39	34.13	14.577		
7,530.00	7,515.41	7,527.87	7,515.41	17.86	17.39	-179.94	-247.17	287.43	497.52	463.27	34.25	14.526		
7,560.00	7,545.41	7,557.87	7,545.41	17.92	17.44	-179.94	-247.17	287.43	497.52	463.15	34.37	14.475		
7,590.00	7,575.41	7,587.87	7,575.41	17.99	17.50	-179.94	-247.17	287.43	497.52	463.03	34.49	14.425		
7,620.00	7,605.41	7,617.87	7,605.41	18.05	17.55	-179.94	-247.17	287.43	497.52	462.91	34.61	14.374		
7,650.00	7,635.41	7,647.87	7,635.41	18.11	17.61	-179.94	-247.17	287.43	497.52	462.79	34.73	14.324		
7,680.00	7,665.41	7,677.87	7,665.41	18.17	17.67	-179.94	-247.17	287.43	497.52	462.67	34.85	14.275		
7,694.59	7,680.00	7,692.45	7,680.00	18.20	17.69	-179.94	-247.17	287.43	497.52	462.61	34.91	14.251		

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 Gunderson 29-09E
<b>Project:</b>	Mesa County, CO	<b>TVD Reference:</b>	WELL @ 7560.00usft (Original Well Elev)
<b>Reference Site:</b>	Gunderson	<b>MD Reference:</b>	WELL @ 7560.00usft (Original Well Elev)
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Gunderson 29-09E	<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>	Wellbore #1	<b>Database:</b>	EDMDBBW
<b>Reference Design:</b>	Design #1	<b>Offset TVD Reference:</b>	Reference Datum

Offset Design Gunderson - Gunderson 29-12E - Wellbore #1 - Design #1													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)	Azimuth from North (°)	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	173.48	-9.91	1.13	9.97					
30.00	30.00	30.00	30.00	0.01	0.03	173.48	-9.91	1.13	9.97	9.94	0.03	308.075		
60.00	60.00	60.00	60.00	0.04	0.05	173.48	-9.91	1.13	9.97	9.88	0.09	108.732		
90.00	90.00	90.00	90.00	0.07	0.08	173.48	-9.91	1.13	9.97	9.82	0.15	66.016		
120.00	120.00	120.00	120.00	0.13	0.13	173.48	-9.91	1.13	9.97	9.71	0.26	38.244		
150.00	150.00	150.00	150.00	0.20	0.20	173.48	-9.91	1.13	9.97	9.58	0.40	25.206		
180.00	180.00	180.00	180.00	0.27	0.27	173.48	-9.91	1.13	9.97	9.44	0.53	18.798		
210.00	210.00	210.00	210.00	0.33	0.33	173.48	-9.91	1.13	9.97	9.31	0.67	14.987		
240.00	240.00	240.00	240.00	0.40	0.40	173.48	-9.91	1.13	9.97	9.17	0.80	12.461		
270.00	270.00	270.00	270.00	0.47	0.47	173.48	-9.91	1.13	9.97	9.04	0.94	10.664		
300.00	300.00	300.00	300.00	0.53	0.53	173.48	-9.91	1.13	9.97	8.90	1.07	9.320 CC, ES		
330.00	330.00	329.90	329.90	0.60	0.60	173.12	-10.04	1.21	10.11	8.92	1.20	8.445		
360.00	360.00	359.80	359.80	0.67	0.66	172.10	-10.44	1.45	10.55	9.22	1.33	7.956		
390.00	390.00	389.69	389.67	0.74	0.72	170.58	-11.12	1.84	11.27	9.82	1.45	7.755 SF		
420.00	420.00	419.55	419.52	0.80	0.78	168.75	-12.06	2.40	12.30	10.72	1.58	7.779		
450.00	450.00	449.39	449.32	0.87	0.84	166.81	-13.26	3.11	13.64	11.93	1.71	7.980		
480.00	480.00	479.20	479.08	0.94	0.90	164.91	-14.74	3.97	15.29	13.45	1.84	8.324		
510.00	510.00	508.96	508.78	1.01	0.96	163.13	-16.47	5.00	17.26	15.29	1.97	8.777		
540.00	540.00	538.69	538.41	1.07	1.03	161.52	-18.47	6.17	19.54	17.44	2.10	9.299		
570.00	570.00	568.36	567.96	1.14	1.10	160.10	-20.73	7.50	22.14	19.91	2.24	9.904		
600.00	600.00	597.97	597.43	1.21	1.17	158.87	-23.25	8.99	25.06	22.69	2.37	10.578		
630.00	630.00	627.64	626.93	1.28	1.24	158.11	-26.01	10.61	28.31	25.80	2.51	11.294		
660.00	660.00	657.45	656.56	1.34	1.32	158.03	-28.83	12.27	31.71	29.08	2.64	12.019		
690.00	689.99	687.24	686.17	1.41	1.40	158.46	-31.64	13.92	35.22	32.45	2.77	12.718		
720.00	719.96	717.02	715.77	1.48	1.48	159.24	-34.45	15.58	38.83	35.93	2.90	13.383		
750.00	749.93	746.78	745.35	1.54	1.57	160.29	-37.26	17.23	42.56	39.53	3.04	14.021		
780.00	779.88	776.51	774.90	1.61	1.65	161.54	-40.07	18.88	46.42	43.25	3.17	14.648		
810.00	809.81	806.22	804.43	1.68	1.74	162.91	-42.88	20.54	50.42	47.12	3.30	15.260		
840.00	839.72	835.91	833.94	1.75	1.82	164.34	-45.68	22.19	54.56	51.11	3.44	15.847		
870.00	869.63	865.59	863.45	1.82	1.91	165.58	-48.48	23.84	58.73	55.15	3.58	16.402		
900.00	899.54	895.27	892.95	1.88	1.99	166.66	-51.29	25.49	62.93	59.21	3.72	16.921		
930.00	929.45	924.96	922.45	1.96	2.08	167.61	-54.09	27.14	67.15	63.29	3.86	17.397		
960.00	959.36	954.64	951.96	2.03	2.17	168.44	-56.89	28.79	71.38	67.38	4.00	17.841		
990.00	989.27	984.32	981.46	2.10	2.25	169.18	-59.70	30.44	75.62	71.48	4.14	18.257		
1,020.00	1,019.18	1,014.00	1,010.97	2.17	2.34	169.84	-62.50	32.09	79.88	75.60	4.28	18.643		
1,050.00	1,049.09	1,043.69	1,040.47	2.25	2.43	170.44	-65.30	33.73	84.15	79.72	4.43	19.003		
1,080.00	1,079.00	1,073.37	1,069.98	2.32	2.52	170.97	-68.11	35.38	88.42	83.85	4.57	19.341		
1,110.00	1,108.91	1,103.05	1,099.48	2.39	2.61	171.46	-70.91	37.03	92.70	87.99	4.72	19.659		
1,140.00	1,138.82	1,132.74	1,128.98	2.47	2.70	171.90	-73.71	38.68	96.99	92.13	4.86	19.956		
1,170.00	1,168.73	1,162.42	1,158.49	2.54	2.79	172.31	-76.52	40.33	101.28	96.28	5.01	20.235		
1,200.00	1,198.64	1,192.10	1,187.99	2.62	2.87	172.68	-79.32	41.98	105.58	100.43	5.15	20.500		
1,230.00	1,228.55	1,221.79	1,217.50	2.69	2.96	173.02	-82.12	43.63	109.88	104.59	5.30	20.748		
1,260.00	1,258.46	1,251.47	1,247.00	2.77	3.05	173.34	-84.93	45.28	114.19	108.75	5.44	20.982		
1,290.00	1,288.37	1,281.15	1,276.51	2.84	3.14	173.64	-87.73	46.93	118.50	112.91	5.59	21.204		
1,320.00	1,318.28	1,310.83	1,306.01	2.92	3.23	173.91	-90.53	48.58	122.81	117.07	5.73	21.414		
1,350.00	1,348.19	1,340.52	1,335.51	2.99	3.32	174.17	-93.34	50.23	127.12	121.24	5.88	21.612		
1,380.00	1,378.10	1,370.20	1,365.02	3.07	3.41	174.40	-96.14	51.88	131.44	125.41	6.03	21.800		
1,410.00	1,408.01	1,399.88	1,394.52	3.15	3.50	174.63	-98.94	53.53	135.76	129.58	6.18	21.982		
1,440.00	1,437.92	1,429.57	1,424.03	3.22	3.59	174.84	-101.75	55.18	140.08	133.75	6.32	22.152		
1,470.00	1,467.83	1,459.25	1,453.53	3.30	3.68	175.03	-104.55	56.83	144.40	137.93	6.47	22.315		
1,500.00	1,497.74	1,488.93	1,483.04	3.38	3.77	175.22	-107.35	58.48	148.72	142.10	6.62	22.470		
1,530.00	1,527.65	1,518.62	1,512.54	3.45	3.86	175.40	-110.16	60.13	153.05	146.28	6.77	22.618		

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 Gunderson 29-09E
<b>Project:</b>	Mesa County, CO	<b>TVD Reference:</b>	WELL @ 7560.00usft (Original Well Elev)
<b>Reference Site:</b>	Gunderson	<b>MD Reference:</b>	WELL @ 7560.00usft (Original Well Elev)
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Gunderson 29-09E	<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>	Wellbore #1	<b>Database:</b>	EDMDBBW
<b>Reference Design:</b>	Design #1	<b>Offset TVD Reference:</b>	Reference Datum

Offset Design Gunderson - Gunderson 29-12E - Wellbore #1 - Design #1													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)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
1,560.00	1,557.56	1,548.30	1,542.04	3.53	3.95	175.56	-112.96	61.78	157.37	150.46	6.91	22.760		
1,590.00	1,587.47	1,577.98	1,571.55	3.61	4.04	175.72	-115.76	63.43	161.70	154.64	7.06	22.895		
1,620.00	1,617.38	1,607.67	1,601.05	3.68	4.13	175.87	-118.57	65.08	166.03	158.82	7.21	23.025		
1,650.00	1,647.29	1,637.35	1,630.56	3.76	4.23	176.01	-121.37	66.73	170.36	163.00	7.36	23.148		
1,680.00	1,677.20	1,667.03	1,660.06	3.84	4.32	176.14	-124.18	68.38	174.69	167.18	7.51	23.267		
1,710.00	1,707.11	1,696.71	1,689.57	3.92	4.41	176.27	-126.98	70.03	179.02	171.36	7.66	23.381		
1,740.00	1,737.02	1,726.40	1,719.07	3.99	4.50	176.39	-129.78	71.68	183.35	175.55	7.81	23.491		
1,770.00	1,766.93	1,756.08	1,748.57	4.07	4.59	176.51	-132.59	73.33	187.69	179.73	7.95	23.596		
1,800.00	1,796.84	1,785.76	1,778.08	4.15	4.68	176.62	-135.39	74.98	192.02	183.92	8.10	23.697		
1,830.00	1,826.74	1,815.45	1,807.58	4.23	4.77	176.72	-138.19	76.63	196.36	188.10	8.25	23.795		
1,860.00	1,856.65	1,845.13	1,837.09	4.30	4.86	176.82	-141.00	78.28	200.69	192.29	8.40	23.888		
1,890.00	1,886.56	1,874.81	1,866.59	4.38	4.95	176.92	-143.80	79.93	205.03	196.48	8.55	23.979		
1,920.00	1,916.47	1,904.50	1,896.10	4.46	5.04	177.01	-146.60	81.58	209.36	200.66	8.70	24.066		
1,950.00	1,946.38	1,934.18	1,925.60	4.54	5.13	177.10	-149.41	83.23	213.70	204.85	8.85	24.150		
1,980.00	1,976.29	1,963.86	1,955.10	4.62	5.22	177.19	-152.21	84.88	218.04	209.04	9.00	24.231		
2,010.00	2,006.20	1,993.54	1,984.61	4.69	5.32	177.27	-155.01	86.53	222.38	213.23	9.15	24.309		
2,040.00	2,036.11	2,023.23	2,014.11	4.77	5.41	177.35	-157.82	88.18	226.71	217.42	9.30	24.385		
2,070.00	2,066.02	2,052.91	2,043.62	4.85	5.50	177.42	-160.62	89.83	231.05	221.61	9.45	24.458		
2,100.00	2,095.93	2,082.59	2,073.12	4.93	5.59	177.50	-163.42	91.48	235.39	225.80	9.60	24.529		
2,130.00	2,125.84	2,112.28	2,102.63	5.01	5.68	177.57	-166.23	93.13	239.73	229.99	9.75	24.598		
2,160.00	2,155.75	2,141.96	2,132.13	5.08	5.77	177.64	-169.03	94.78	244.07	234.18	9.90	24.664		
2,190.00	2,185.66	2,171.64	2,161.63	5.16	5.86	177.70	-171.83	96.43	248.41	238.37	10.05	24.729		
2,220.00	2,215.57	2,201.33	2,191.14	5.24	5.95	177.77	-174.64	98.08	252.75	242.56	10.20	24.791		
2,250.00	2,245.48	2,231.01	2,220.64	5.32	6.04	177.83	-177.44	99.73	257.09	246.75	10.35	24.852		
2,280.00	2,275.39	2,260.69	2,250.15	5.40	6.14	177.89	-180.24	101.38	261.44	250.94	10.50	24.910		
2,310.00	2,305.30	2,290.38	2,279.65	5.48	6.23	177.94	-183.05	103.03	265.78	255.13	10.64	24.968		
2,340.00	2,335.21	2,320.06	2,309.15	5.55	6.32	178.00	-185.85	104.68	270.12	259.32	10.79	25.023		
2,370.00	2,365.12	2,349.74	2,338.66	5.63	6.41	178.05	-188.65	106.33	274.46	263.52	10.94	25.077		
2,400.00	2,395.03	2,379.42	2,368.16	5.71	6.50	178.11	-191.46	107.98	278.80	267.71	11.09	25.129		
2,430.00	2,424.94	2,409.11	2,397.67	5.79	6.59	178.16	-194.26	109.63	283.14	271.90	11.24	25.180		
2,460.00	2,454.85	2,438.79	2,427.17	5.87	6.68	178.20	-197.06	111.28	287.49	276.09	11.40	25.229		
2,490.00	2,484.76	2,468.47	2,456.68	5.95	6.77	178.25	-199.87	112.93	291.83	280.29	11.55	25.277		
2,520.00	2,514.67	2,498.16	2,486.18	6.02	6.87	178.30	-202.67	114.58	296.17	284.48	11.70	25.324		
2,550.00	2,544.58	2,527.84	2,515.68	6.10	6.96	178.34	-205.47	116.23	300.52	288.67	11.85	25.370		
2,580.00	2,574.49	2,557.52	2,545.19	6.18	7.05	178.39	-208.28	117.88	304.86	292.86	12.00	25.414		
2,610.00	2,604.40	2,587.21	2,574.69	6.26	7.14	178.43	-211.08	119.53	309.20	297.06	12.15	25.458		
2,640.00	2,634.31	2,616.89	2,604.20	6.34	7.23	178.47	-213.88	121.18	313.55	301.25	12.30	25.500		
2,670.00	2,664.22	2,646.57	2,633.70	6.42	7.32	178.51	-216.69	122.83	317.89	305.44	12.45	25.541		
2,700.00	2,694.13	2,676.25	2,663.21	6.50	7.41	178.55	-219.49	124.48	322.23	309.64	12.60	25.581		
2,730.00	2,724.04	2,705.94	2,692.71	6.57	7.50	178.59	-222.29	126.13	326.58	313.83	12.75	25.620		
2,760.00	2,753.95	2,735.62	2,722.21	6.65	7.60	178.62	-225.10	127.78	330.92	318.03	12.90	25.658		
2,790.00	2,783.86	2,765.30	2,751.72	6.73	7.69	178.66	-227.90	129.43	335.27	322.22	13.05	25.696		
2,820.00	2,813.77	2,794.99	2,781.22	6.81	7.78	178.69	-230.70	131.08	339.61	326.41	13.20	25.732		
2,850.00	2,843.68	2,824.67	2,810.73	6.89	7.87	178.73	-233.51	132.73	343.96	330.61	13.35	25.767		
2,880.00	2,873.59	2,854.35	2,840.23	6.97	7.96	178.76	-236.31	134.38	348.30	334.80	13.50	25.802		
2,910.00	2,903.50	2,884.04	2,869.74	7.05	8.05	178.79	-239.11	136.03	352.65	339.00	13.65	25.836		
2,940.00	2,933.40	2,913.72	2,899.24	7.13	8.14	178.83	-241.92	137.67	356.99	343.19	13.80	25.869		
2,970.00	2,963.31	2,943.40	2,928.74	7.20	8.24	178.86	-244.72	139.32	361.34	347.39	13.95	25.902		
3,000.00	2,993.22	2,973.09	2,958.25	7.28	8.33	178.89	-247.52	140.97	365.68	351.58	14.10	25.933		
3,030.00	3,023.13	3,002.77	2,987.75	7.36	8.42	178.92	-250.33	142.62	370.03	355.78	14.25	25.964		
3,060.00	3,053.04	3,032.45	3,017.26	7.44	8.51	178.94	-253.13	144.27	374.37	359.97	14.40	25.995		
3,090.00	3,082.95	3,062.13	3,046.76	7.52	8.60	178.97	-255.93	145.92	378.72	364.17	14.55	26.025		

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 Gunderson 29-09E
<b>Project:</b>	Mesa County, CO	<b>TVD Reference:</b>	WELL @ 7560.00usft (Original Well Elev)
<b>Reference Site:</b>	Gunderson	<b>MD Reference:</b>	WELL @ 7560.00usft (Original Well Elev)
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Gunderson 29-09E	<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>	Wellbore #1	<b>Database:</b>	EDMDBBW
<b>Reference Design:</b>	Design #1	<b>Offset TVD Reference:</b>	Reference Datum

Offset Design Gunderson - Gunderson 29-12E - Wellbore #1 - Design #1													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)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
3,120.00	3,112.86	3,091.82	3,076.27	7.60	8.69	179.00	-258.74	147.57	383.06	368.36	14.70	26.054		
3,150.00	3,142.77	3,121.50	3,105.77	7.68	8.78	179.03	-261.54	149.22	387.41	372.56	14.85	26.082		
3,180.00	3,172.68	3,151.18	3,135.27	7.76	8.88	179.05	-264.34	150.87	391.76	376.75	15.00	26.110		
3,210.00	3,202.59	3,180.87	3,164.78	7.83	8.97	179.08	-267.15	152.52	396.10	380.95	15.15	26.137		
3,240.00	3,232.50	3,210.55	3,194.28	7.91	9.06	179.10	-269.95	154.17	400.45	385.14	15.31	26.164		
3,270.00	3,262.41	3,240.23	3,223.79	7.99	9.15	179.13	-272.75	155.82	404.79	389.34	15.46	26.190		
3,300.00	3,292.32	3,269.92	3,253.29	8.07	9.24	179.15	-275.56	157.47	409.14	393.53	15.61	26.216		
3,330.00	3,322.23	3,299.60	3,282.80	8.15	9.33	179.18	-278.36	159.12	413.48	397.73	15.76	26.241		
3,360.00	3,352.14	3,329.28	3,312.30	8.23	9.43	179.20	-281.17	160.77	417.83	401.92	15.91	26.266		
3,390.00	3,382.05	3,358.96	3,341.80	8.31	9.52	179.22	-283.97	162.42	422.18	406.12	16.06	26.290		
3,420.00	3,411.96	3,388.65	3,371.31	8.39	9.61	179.24	-286.77	164.07	426.52	410.31	16.21	26.314		
3,450.00	3,441.87	3,418.33	3,400.81	8.47	9.70	179.27	-289.58	165.72	430.87	414.51	16.36	26.337		
3,480.00	3,471.78	3,448.01	3,430.32	8.54	9.79	179.29	-292.38	167.37	435.22	418.71	16.51	26.360		
3,510.00	3,501.69	3,477.70	3,459.82	8.62	9.88	179.31	-295.18	169.02	439.56	422.90	16.66	26.382		
3,540.00	3,531.60	3,507.38	3,489.33	8.70	9.97	179.33	-297.99	170.67	443.91	427.10	16.81	26.404		
3,570.00	3,561.51	3,537.06	3,518.83	8.78	10.07	179.35	-300.79	172.32	448.26	431.29	16.96	26.426		
3,600.00	3,591.42	3,566.75	3,548.33	8.86	10.16	179.37	-303.59	173.97	452.60	435.49	17.11	26.447		
3,630.00	3,621.33	3,596.43	3,577.84	8.94	10.25	179.39	-306.40	175.62	456.95	439.69	17.26	26.468		
3,660.00	3,651.24	3,626.11	3,607.34	9.02	10.34	179.41	-309.20	177.27	461.30	443.88	17.42	26.488		
3,690.00	3,681.15	3,655.80	3,636.85	9.10	10.43	179.42	-312.00	178.92	465.64	448.08	17.57	26.508		
3,720.00	3,711.06	3,685.48	3,666.35	9.18	10.52	179.44	-314.81	180.57	469.99	452.27	17.72	26.528		
3,750.00	3,740.97	3,715.16	3,695.86	9.25	10.62	179.46	-317.61	182.22	474.34	456.47	17.87	26.547		
3,780.00	3,770.88	3,744.84	3,725.36	9.33	10.71	179.48	-320.41	183.87	478.68	460.67	18.02	26.566		
3,810.00	3,800.79	3,774.53	3,754.86	9.41	10.80	179.50	-323.22	185.52	483.03	464.86	18.17	26.585		
3,840.00	3,830.70	3,804.21	3,784.37	9.49	10.89	179.51	-326.02	187.17	487.38	469.06	18.32	26.604		
3,870.00	3,860.61	3,833.89	3,813.87	9.57	10.98	179.53	-328.82	188.82	491.73	473.25	18.47	26.622		
3,900.00	3,890.52	3,863.58	3,843.38	9.65	11.07	179.55	-331.63	190.47	496.07	477.45	18.62	26.639		
3,930.00	3,920.43	3,893.26	3,872.88	9.73	11.16	179.56	-334.43	192.12	500.42	481.65	18.77	26.657		
3,960.00	3,950.34	3,922.94	3,902.39	9.81	11.26	179.58	-337.23	193.77	504.77	485.84	18.92	26.674		
3,990.00	3,980.25	3,952.63	3,931.89	9.89	11.35	179.59	-340.04	195.42	509.11	490.04	19.07	26.691		
4,020.00	4,010.16	3,982.31	3,961.39	9.97	11.44	179.61	-342.84	197.07	513.46	494.24	19.23	26.708		
4,050.00	4,040.06	4,011.99	3,990.90	10.04	11.53	179.62	-345.64	198.72	517.81	498.43	19.38	26.724		
4,080.00	4,069.97	4,041.67	4,020.40	10.12	11.62	179.64	-348.45	200.37	522.16	502.63	19.53	26.740		
4,110.00	4,099.88	4,071.36	4,049.91	10.20	11.71	179.65	-351.25	202.02	526.50	506.83	19.68	26.756		
4,140.00	4,129.79	4,101.04	4,079.41	10.28	11.81	179.67	-354.05	203.67	530.85	511.02	19.83	26.772		
4,170.00	4,159.70	4,130.72	4,108.92	10.36	11.90	179.68	-356.86	205.32	535.20	515.22	19.98	26.787		
4,200.00	4,189.61	4,160.41	4,138.42	10.44	11.99	179.69	-359.66	206.97	539.55	519.41	20.13	26.802		
4,230.00	4,219.52	4,190.09	4,167.92	10.52	12.08	179.71	-362.46	208.62	543.89	523.61	20.28	26.817		
4,260.00	4,249.43	4,219.77	4,197.43	10.60	12.17	179.72	-365.27	210.27	548.24	527.81	20.43	26.832		
4,290.00	4,279.34	4,249.46	4,226.93	10.68	12.26	179.73	-368.07	211.92	552.59	532.00	20.58	26.846		
4,320.00	4,309.25	4,279.14	4,256.44	10.76	12.36	179.75	-370.87	213.57	556.94	536.20	20.73	26.860		
4,350.00	4,339.16	4,308.82	4,285.94	10.83	12.45	179.76	-373.68	215.22	561.28	540.40	20.89	26.875		
4,380.00	4,369.07	4,338.51	4,315.45	10.91	12.54	179.77	-376.48	216.87	565.63	544.59	21.04	26.888		
4,410.00	4,398.98	4,368.19	4,344.95	10.99	12.63	179.78	-379.28	218.52	569.98	548.79	21.19	26.902		
4,440.00	4,428.89	4,397.87	4,374.45	11.07	12.72	179.80	-382.09	220.17	574.33	552.99	21.34	26.915		
4,470.00	4,458.80	4,427.55	4,403.96	11.15	12.81	179.81	-384.89	221.82	578.67	557.18	21.49	26.929		
4,500.00	4,488.71	4,457.24	4,433.46	11.23	12.90	179.82	-387.69	223.47	583.02	561.38	21.64	26.942		
4,530.00	4,518.62	4,486.92	4,462.97	11.31	13.00	179.83	-390.50	225.12	587.37	565.58	21.79	26.954		
4,560.00	4,548.53	4,516.60	4,492.47	11.39	13.09	179.84	-393.30	226.77	591.72	569.78	21.94	26.967		
4,590.00	4,578.44	4,546.29	4,521.98	11.47	13.18	179.86	-396.10	228.42	596.07	573.97	22.09	26.980		
4,620.00	4,608.35	4,575.97	4,551.48	11.55	13.27	179.87	-398.91	230.07	600.41	578.17	22.24	26.992		
4,650.00	4,638.26	4,605.65	4,580.98	11.62	13.36	179.88	-401.71	231.72	604.76	582.37	22.40	27.004		

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



Archer  
Anticollision Report

Archer

Company:	Piceance Energy, LLC	Local Co-ordinate Reference:	Well Gunderson 29-09E
Project:	Mesa County, CO	TVD Reference:	WELL @ 7560.00usft (Original Well Elev)
Reference Site:	Gunderson	MD Reference:	WELL @ 7560.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Gunderson 29-09E	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDMDBBW
Reference Design:	Design #1	Offset TVD Reference:	Reference Datum

Offset Design Gunderson - Gunderson 29-12E - Wellbore #1 - Design #1													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)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
4,680.00	4,668.17	4,635.34	4,610.49	11.70	13.45	179.89	-404.51	233.37	609.11	586.56	22.55	27.016		
4,710.00	4,698.08	4,665.02	4,639.99	11.78	13.55	179.90	-407.32	235.02	613.46	590.76	22.70	27.028		
4,740.00	4,727.99	4,694.70	4,669.50	11.86	13.64	179.91	-410.12	236.67	617.80	594.96	22.85	27.039		
4,770.00	4,757.90	4,724.38	4,699.00	11.94	13.73	179.92	-412.92	238.32	622.15	599.15	23.00	27.051		
4,800.00	4,787.81	4,754.07	4,728.50	12.02	13.82	179.93	-415.73	239.97	626.50	603.35	23.15	27.062		
4,830.00	4,817.72	4,783.75	4,758.01	12.10	13.91	179.94	-418.53	241.61	630.85	607.55	23.30	27.073		
4,860.00	4,847.63	4,813.43	4,787.51	12.18	14.00	179.95	-421.33	243.26	635.20	611.74	23.45	27.084		
4,890.00	4,877.54	4,843.12	4,817.02	12.26	14.10	179.96	-424.14	244.91	639.54	615.94	23.60	27.095		
4,920.00	4,907.45	4,872.80	4,846.52	12.34	14.19	179.97	-426.94	246.56	643.89	620.14	23.75	27.106		
4,950.00	4,937.36	4,902.48	4,876.03	12.42	14.28	179.98	-429.74	248.21	648.24	624.33	23.91	27.117		
4,980.00	4,967.27	4,932.17	4,905.53	12.49	14.37	179.99	-432.55	249.86	652.59	628.53	24.06	27.127		
5,010.00	4,997.18	4,961.85	4,935.03	12.57	14.46	180.00	-435.35	251.51	656.94	632.73	24.21	27.137		
5,040.00	5,027.09	4,991.53	4,964.54	12.65	14.55	-179.99	-438.15	253.16	661.28	636.93	24.36	27.148		
5,070.00	5,057.00	5,021.21	4,994.04	12.73	14.65	-179.98	-440.96	254.81	665.63	641.12	24.51	27.158		
5,100.00	5,086.91	5,050.90	5,023.55	12.81	14.74	-179.98	-443.76	256.46	669.98	645.32	24.66	27.167		
5,130.00	5,116.82	5,080.58	5,053.05	12.89	14.83	-179.97	-446.57	258.11	674.33	649.52	24.81	27.177		
5,160.00	5,146.72	5,110.26	5,082.56	12.97	14.92	-179.96	-449.37	259.76	678.68	653.71	24.96	27.187		
5,190.00	5,176.63	5,139.95	5,112.06	13.05	15.01	-179.95	-452.17	261.41	683.03	657.91	25.11	27.197		
5,220.00	5,206.54	5,169.63	5,141.56	13.13	15.10	-179.94	-454.98	263.06	687.37	662.11	25.27	27.206		
5,250.00	5,236.45	5,199.31	5,171.07	13.21	15.20	-179.93	-457.78	264.71	691.72	666.31	25.42	27.215		
5,280.00	5,266.36	5,229.00	5,200.57	13.29	15.29	-179.92	-460.58	266.36	696.07	670.50	25.57	27.224		
5,310.00	5,296.27	5,258.68	5,230.08	13.37	15.38	-179.92	-463.39	268.01	700.42	674.70	25.72	27.234		
5,340.00	5,326.18	5,288.36	5,259.58	13.44	15.47	-179.91	-466.19	269.66	704.77	678.90	25.87	27.243		
5,370.00	5,356.09	5,318.05	5,289.09	13.52	15.56	-179.90	-468.99	271.31	709.12	683.09	26.02	27.251		
5,400.00	5,386.00	5,347.73	5,318.59	13.60	15.65	-179.89	-471.80	272.96	713.46	687.29	26.17	27.260		
5,430.00	5,415.91	5,377.41	5,348.09	13.68	15.75	-179.88	-474.60	274.61	717.81	691.49	26.32	27.269		
5,460.00	5,445.82	5,407.09	5,377.60	13.76	15.84	-179.88	-477.40	276.26	722.16	695.69	26.47	27.277		
5,490.00	5,475.73	5,436.78	5,407.10	13.84	15.93	-179.87	-480.21	277.91	726.51	699.88	26.63	27.286		
5,520.00	5,505.64	5,472.29	5,442.41	13.92	16.02	-179.88	-483.45	279.82	730.77	703.99	26.78	27.285		
5,550.00	5,535.56	5,510.45	5,480.41	13.99	16.12	-179.90	-486.54	281.64	734.63	707.69	26.94	27.267		
5,580.00	5,565.50	5,548.75	5,518.58	14.06	16.19	-179.91	-489.19	283.20	737.94	710.85	27.09	27.242		
5,610.00	5,595.46	5,587.16	5,556.91	14.12	16.26	-179.92	-491.42	284.51	740.70	713.47	27.23	27.202		
5,640.00	5,625.44	5,625.67	5,595.36	14.17	16.33	-179.93	-493.20	285.56	742.91	715.55	27.36	27.156		
5,670.00	5,655.42	5,664.25	5,633.91	14.22	16.39	-179.93	-494.54	286.35	744.56	717.08	27.48	27.093		
5,700.00	5,685.41	5,702.89	5,672.53	14.28	16.45	-179.94	-495.43	286.87	745.66	718.06	27.60	27.012		
5,730.00	5,715.41	5,741.55	5,711.19	14.32	16.51	-179.94	-495.87	287.13	746.21	718.48	27.73	26.913		
5,760.00	5,745.41	5,775.77	5,745.41	14.37	16.56	-179.94	-495.93	287.16	746.28	718.44	27.84	26.805		
5,790.00	5,775.41	5,805.77	5,775.41	14.43	16.61	-179.94	-495.93	287.16	746.28	718.33	27.95	26.703		
5,820.00	5,805.41	5,835.77	5,805.41	14.48	16.65	-179.94	-495.93	287.16	746.28	718.22	28.05	26.602		
5,850.00	5,835.41	5,865.77	5,835.41	14.54	16.69	-179.94	-495.93	287.16	746.28	718.12	28.16	26.499		
5,880.00	5,865.41	5,895.77	5,865.41	14.60	16.73	-179.94	-495.93	287.16	746.28	718.01	28.27	26.398		
5,910.00	5,895.41	5,925.77	5,895.41	14.65	16.77	-179.94	-495.93	287.16	746.28	717.90	28.38	26.296		
5,940.00	5,925.41	5,955.77	5,925.41	14.71	16.81	-179.94	-495.93	287.16	746.28	717.79	28.49	26.195		
5,970.00	5,955.41	5,985.77	5,955.41	14.77	16.85	-179.94	-495.93	287.16	746.28	717.68	28.60	26.095		
6,000.00	5,985.41	6,015.77	5,985.41	14.83	16.89	-179.94	-495.93	287.16	746.28	717.57	28.71	25.996		
6,030.00	6,015.41	6,045.77	6,015.41	14.88	16.93	-179.94	-495.93	287.16	746.28	717.46	28.82	25.896		
6,060.00	6,045.41	6,075.77	6,045.41	14.94	16.97	-179.94	-495.93	287.16	746.28	717.35	28.93	25.798		
6,090.00	6,075.41	6,105.77	6,075.41	15.00	17.02	-179.94	-495.93	287.16	746.28	717.24	29.04	25.700		
6,120.00	6,105.41	6,135.77	6,105.41	15.06	17.06	-179.94	-495.93	287.16	746.28	717.13	29.15	25.603		
6,150.00	6,135.41	6,165.77	6,135.41	15.12	17.10	-179.94	-495.93	287.16	746.28	717.02	29.26	25.506		
6,180.00	6,165.41	6,195.77	6,165.41	15.17	17.14	-179.94	-495.93	287.16	746.28	716.91	29.37	25.410		
6,210.00	6,195.41	6,225.77	6,195.41	15.23	17.18	-179.94	-495.93	287.16	746.28	716.80	29.48	25.314		

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 Gunderson 29-09E
<b>Project:</b>	Mesa County, CO	<b>TVD Reference:</b>	WELL @ 7560.00usft (Original Well Elev)
<b>Reference Site:</b>	Gunderson	<b>MD Reference:</b>	WELL @ 7560.00usft (Original Well Elev)
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Gunderson 29-09E	<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>	Wellbore #1	<b>Database:</b>	EDMDBBW
<b>Reference Design:</b>	Design #1	<b>Offset TVD Reference:</b>	Reference Datum

Offset Design Gunderson - Gunderson 29-12E - Wellbore #1 - Design #1													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)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
6,240.00	6,225.41	6,255.77	6,225.41	15.29	17.23	-179.94	-495.93	287.16	746.28	716.68	29.59	25.219		
6,270.00	6,255.41	6,285.77	6,255.41	15.35	17.27	-179.94	-495.93	287.16	746.28	716.57	29.70	25.124		
6,300.00	6,285.41	6,315.77	6,285.41	15.41	17.31	-179.94	-495.93	287.16	746.28	716.46	29.82	25.030		
6,330.00	6,315.41	6,345.77	6,315.41	15.47	17.36	-179.94	-495.93	287.16	746.28	716.35	29.93	24.936		
6,360.00	6,345.41	6,375.77	6,345.41	15.53	17.40	-179.94	-495.93	287.16	746.28	716.24	30.04	24.844		
6,390.00	6,375.41	6,405.77	6,375.41	15.58	17.44	-179.94	-495.93	287.16	746.28	716.13	30.15	24.751		
6,420.00	6,405.41	6,435.77	6,405.41	15.64	17.49	-179.94	-495.93	287.16	746.28	716.01	30.26	24.659		
6,450.00	6,435.41	6,465.77	6,435.41	15.70	17.53	-179.94	-495.93	287.16	746.28	715.90	30.38	24.568		
6,480.00	6,465.41	6,495.77	6,465.41	15.76	17.57	-179.94	-495.93	287.16	746.28	715.79	30.49	24.477		
6,510.00	6,495.41	6,525.77	6,495.41	15.82	17.62	-179.94	-495.93	287.16	746.28	715.68	30.60	24.387		
6,540.00	6,525.41	6,555.77	6,525.41	15.88	17.66	-179.94	-495.93	287.16	746.28	715.56	30.71	24.297		
6,570.00	6,555.41	6,585.77	6,555.41	15.94	17.71	-179.94	-495.93	287.16	746.28	715.45	30.83	24.208		
6,600.00	6,585.41	6,615.77	6,585.41	16.00	17.75	-179.94	-495.93	287.16	746.28	715.34	30.94	24.119		
6,630.00	6,615.41	6,645.77	6,615.41	16.06	17.79	-179.94	-495.93	287.16	746.28	715.22	31.06	24.031		
6,660.00	6,645.41	6,675.77	6,645.41	16.12	17.84	-179.94	-495.93	287.16	746.28	715.11	31.17	23.943		
6,690.00	6,675.41	6,705.77	6,675.41	16.18	17.88	-179.94	-495.93	287.16	746.28	714.99	31.28	23.856		
6,720.00	6,705.41	6,735.77	6,705.41	16.24	17.93	-179.94	-495.93	287.16	746.28	714.88	31.40	23.769		
6,750.00	6,735.41	6,765.77	6,735.41	16.29	17.97	-179.94	-495.93	287.16	746.28	714.77	31.51	23.683		
6,780.00	6,765.41	6,795.77	6,765.41	16.35	18.02	-179.94	-495.93	287.16	746.28	714.65	31.63	23.597		
6,810.00	6,795.41	6,825.77	6,795.41	16.41	18.06	-179.94	-495.93	287.16	746.28	714.54	31.74	23.512		
6,840.00	6,825.41	6,855.77	6,825.41	16.47	18.11	-179.94	-495.93	287.16	746.28	714.42	31.85	23.428		
6,870.00	6,855.41	6,885.77	6,855.41	16.53	18.16	-179.94	-495.93	287.16	746.28	714.31	31.97	23.343		
6,900.00	6,885.41	6,915.77	6,885.41	16.59	18.20	-179.94	-495.93	287.16	746.28	714.19	32.08	23.260		
6,930.00	6,915.41	6,945.77	6,915.41	16.65	18.25	-179.94	-495.93	287.16	746.28	714.08	32.20	23.176		
6,960.00	6,945.41	6,975.77	6,945.41	16.71	18.29	-179.94	-495.93	287.16	746.28	713.96	32.32	23.094		
6,990.00	6,975.41	7,005.77	6,975.41	16.77	18.34	-179.94	-495.93	287.16	746.28	713.85	32.43	23.012		
7,020.00	7,005.41	7,035.77	7,005.41	16.83	18.39	-179.94	-495.93	287.16	746.28	713.73	32.55	22.930		
7,050.00	7,035.41	7,065.77	7,035.41	16.89	18.43	-179.94	-495.93	287.16	746.28	713.62	32.66	22.849		
7,080.00	7,065.41	7,095.77	7,065.41	16.95	18.48	-179.94	-495.93	287.16	746.28	713.50	32.78	22.768		
7,110.00	7,095.41	7,125.77	7,095.41	17.01	18.52	-179.94	-495.93	287.16	746.28	713.38	32.89	22.687		
7,140.00	7,125.41	7,155.77	7,125.41	17.07	18.57	-179.94	-495.93	287.16	746.28	713.27	33.01	22.608		
7,170.00	7,155.41	7,185.77	7,155.41	17.13	18.62	-179.94	-495.93	287.16	746.28	713.15	33.13	22.528		
7,200.00	7,185.41	7,215.77	7,185.41	17.20	18.67	-179.94	-495.93	287.16	746.28	713.03	33.24	22.449		
7,230.00	7,215.41	7,245.77	7,215.41	17.26	18.71	-179.94	-495.93	287.16	746.28	712.92	33.36	22.371		
7,260.00	7,245.41	7,275.77	7,245.41	17.32	18.76	-179.94	-495.93	287.16	746.28	712.80	33.48	22.293		
7,290.00	7,275.41	7,305.77	7,275.41	17.38	18.81	-179.94	-495.93	287.16	746.28	712.68	33.59	22.215		
7,320.00	7,305.41	7,335.77	7,305.41	17.44	18.86	-179.94	-495.93	287.16	746.28	712.57	33.71	22.138		
7,350.00	7,335.41	7,365.77	7,335.41	17.50	18.90	-179.94	-495.93	287.16	746.28	712.45	33.83	22.061		
7,380.00	7,365.41	7,395.77	7,365.41	17.56	18.95	-179.94	-495.93	287.16	746.28	712.33	33.94	21.985		
7,410.00	7,395.41	7,425.77	7,395.41	17.62	19.00	-179.94	-495.93	287.16	746.28	712.22	34.06	21.909		
7,440.00	7,425.41	7,455.77	7,425.41	17.68	19.05	-179.94	-495.93	287.16	746.28	712.10	34.18	21.834		
7,470.00	7,455.41	7,485.77	7,455.41	17.74	19.09	-179.94	-495.93	287.16	746.28	711.98	34.30	21.759		
7,500.00	7,485.41	7,515.77	7,485.41	17.80	19.14	-179.94	-495.93	287.16	746.28	711.86	34.41	21.685		
7,530.00	7,515.41	7,545.77	7,515.41	17.86	19.19	-179.94	-495.93	287.16	746.28	711.74	34.53	21.611		
7,560.00	7,545.41	7,575.77	7,545.41	17.92	19.24	-179.94	-495.93	287.16	746.28	711.63	34.65	21.537		
7,590.00	7,575.41	7,605.77	7,575.41	17.99	19.29	-179.94	-495.93	287.16	746.28	711.51	34.77	21.464		
7,620.00	7,605.41	7,635.77	7,605.41	18.05	19.34	-179.94	-495.93	287.16	746.28	711.39	34.89	21.391		
7,650.00	7,635.41	7,665.77	7,635.41	18.11	19.39	-179.94	-495.93	287.16	746.28	711.27	35.01	21.319		
7,680.00	7,665.41	7,695.77	7,665.41	18.17	19.43	-179.94	-495.93	287.16	746.28	711.15	35.12	21.247		
7,694.59	7,680.00	7,710.36	7,680.00	18.20	19.46	-179.94	-495.93	287.16	746.28	711.10	35.18	21.212		

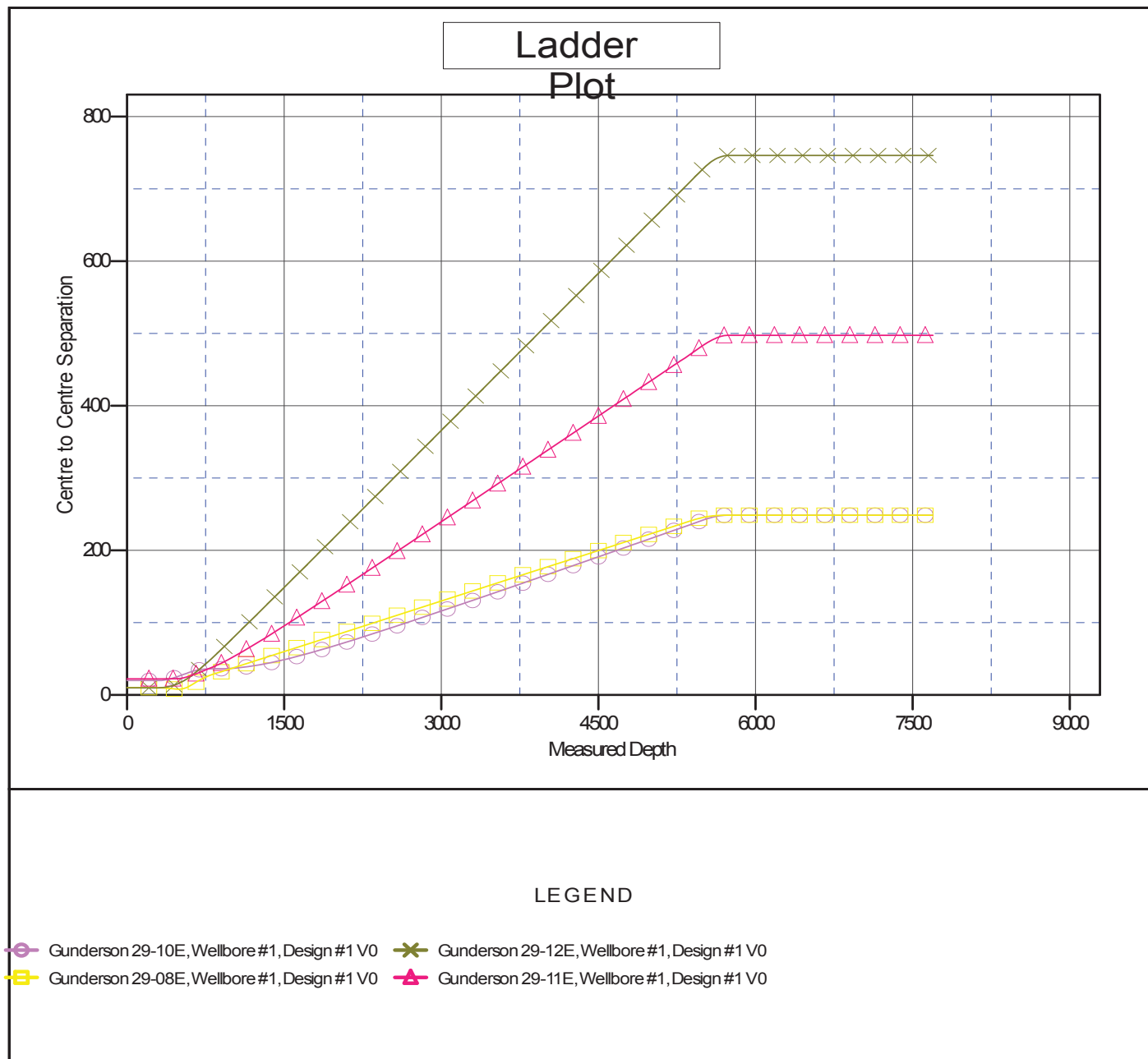
CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



Company:	Piceance Energy, LLC	Local Co-ordinate Reference:	Well Gunderson 29-09E
Project:	Mesa County, CO	TVD Reference:	WELL @ 7560.00usft (Original Well Elev)
Reference Site:	Gunderson	MD Reference:	WELL @ 7560.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Gunderson 29-09E	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDMDBBW
Reference Design:	Design #1	Offset TVD Reference:	Reference Datum

Reference Depths are relative to WELL @ 7560.00usft (Original Well E  
Offset Depths are relative to Offset Datum  
Central Meridian is -105.500000

Coordinates are relative to: Gunderson 29-09E  
Coordinate System is US State Plane 1983, Colorado Central Zone  
Grid Convergence at Surface is: -1.44°





Company:	Piceance Energy, LLC	Local Co-ordinate Reference:	Well Gunderson 29-09E
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Reference Site:	Gunderson	MD Reference:	WELL @ 7560.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Gunderson 29-09E	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDMDBBW
Reference Design:	Design #1	Offset TVD Reference:	Reference Datum

Reference Depths are relative to WELL @ 7560.00usft (Original Well E  
Offset Depths are relative to Offset Datum  
Central Meridian is -105.500000

Coordinates are relative to: Gunderson 29-09E  
Coordinate System is US State Plane 1983, Colorado Central Zone  
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