



# **Piceance Energy, LLC**

**Mesa County, CO  
Gunderson  
Gunderson 29-07E**

**Wellbore #1**

**Plan: Design #1**

## **Standard Planning Report**

**03 October, 2014**

# **Archer**



Project: Mesa County, CO  
Site: Gunderson  
Well: Gunderson 29-07E  
Wellbore: Wellbore #1  
Design: Design #1  
Latitude: 39.248831  
Longitude: -107.787905  
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 29-07E, 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 29-07E

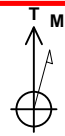
+N/-S	+E/-W	Northing	Ground Level: Easting	Latitude	Longitude	Slot
0.00	0.00	1523679.386	2352153.408	39.248831	-107.787905	

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

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
Gunderson 29-07E tgt	7680.00	751.26	318.27	1524422.391	2352490.500	39.250894	-107.786781	Circle (Radius: 50.00)

### SECTION DETAILS

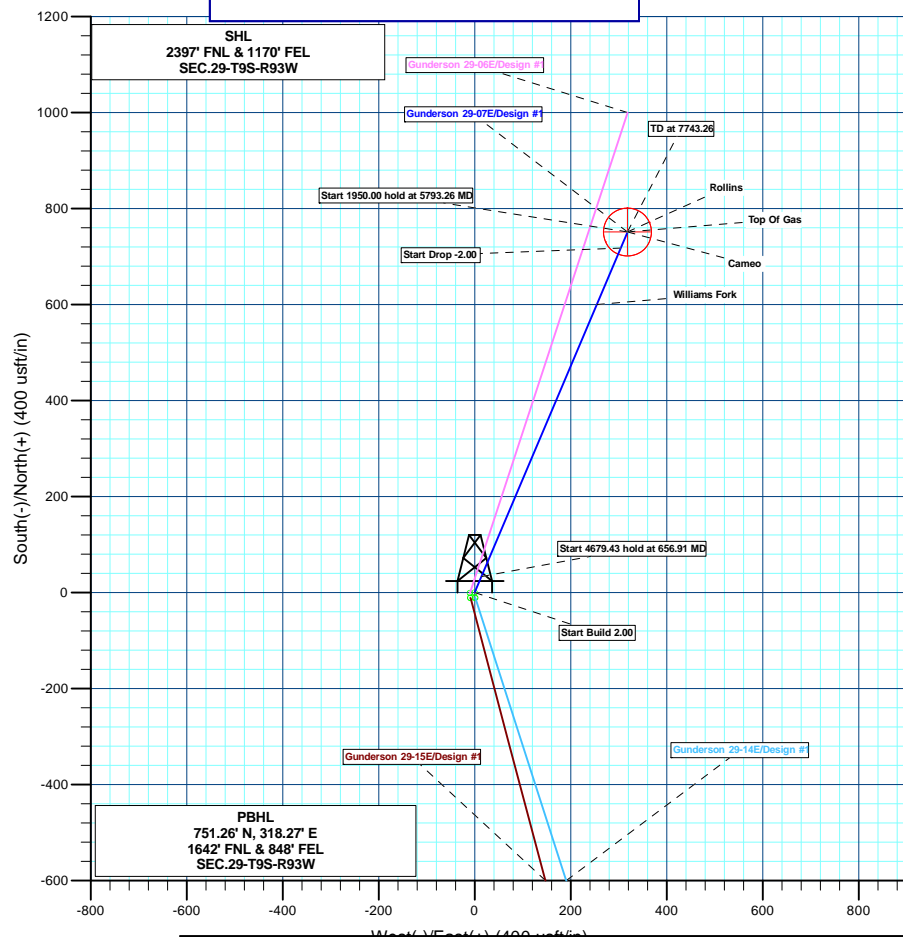
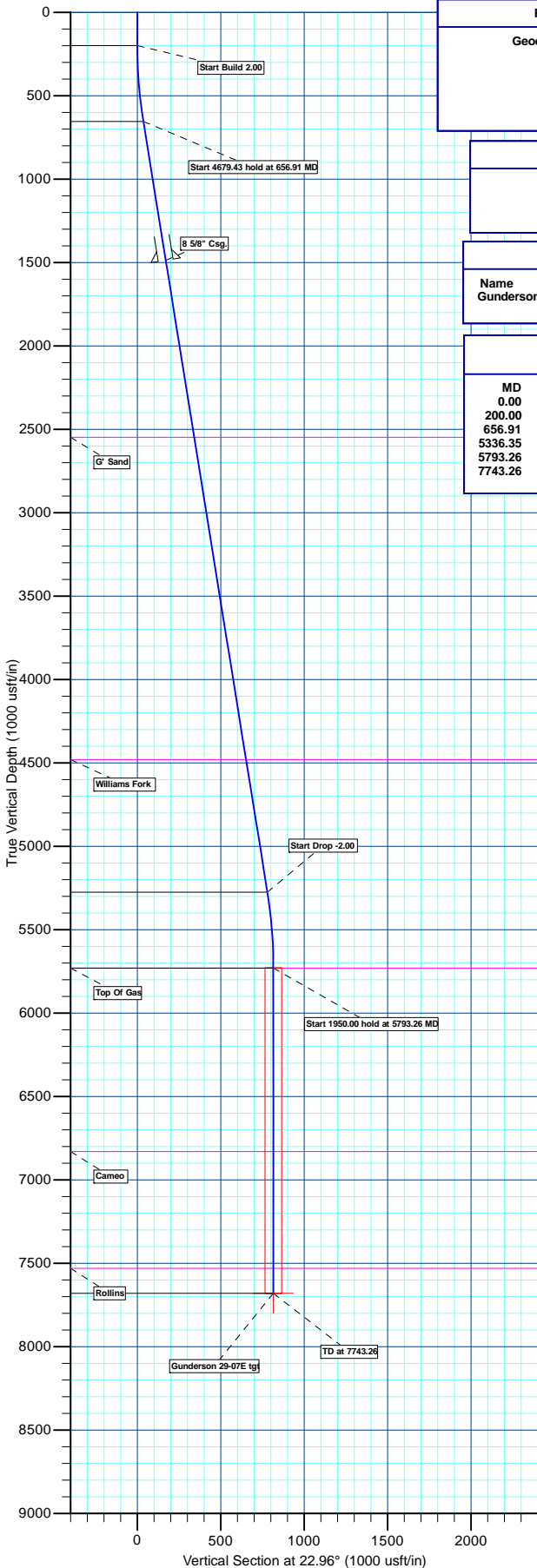
MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSeet	Annotation
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	Start Build 2.00
656.91	9.14	22.96	654.98	33.48	14.18	2.00	22.96	36.36	Start 4679.43 hold at 656.91 MD
5336.35	9.14	22.96	5275.02	717.78	304.09	0.00	0.00	779.54	Start Drop -2.00
5793.26	0.00	0.00	5730.00	751.26	318.27	2.00	180.00	815.90	Start 1950.00 hold at 5793.26 MD
7743.26	0.00	0.00	7680.00	751.26	318.27	0.00	0.00	815.90	TD at 7743.26



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	2574.27	G' Sand
4480.00	4531.11	Williams Fork
5730.00	5793.26	Top Of Gas
6830.00	6893.26	Cameo
7530.00	7593.26	Rollins



Plan: Design #1 (Gunderson 29-07E/Wellbore #1)

Created By: Ricky Osburn Date: 6:51, October 03 2014



<b>Database:</b>	EDMDBBW	<b>Local Co-ordinate Reference:</b>	Well Gunderson 29-07E
<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 29-07E	<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		

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

Well	Gunderson 29-07E					
Well Position	+N/-S	10.23 usft	Northing:	1,523,679.386 usft	Latitude:	39.248831
	+E/-W	89.43 usft	Easting:	2,352,153.408 usft	Longitude:	-107.787905
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	22.96

<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	
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00	
656.91	9.14	22.96	654.98	33.48	14.18	2.00	2.00	0.00	22.96	
5,336.35	9.14	22.96	5,275.02	717.78	304.09	0.00	0.00	0.00	0.00	
5,793.26	0.00	0.00	5,730.00	751.26	318.27	2.00	-2.00	0.00	180.00	
7,743.26	0.00	0.00	7,680.00	751.26	318.27	0.00	0.00	0.00	0.00	Gunderson 29-07E tg



Database:	EDMDBBW	Local Co-ordinate Reference:	Well Gunderson 29-07E
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 29-07E	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
Start Build 2.00									
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	2.00	22.96	299.98	1.61	0.68	1.75	2.00	2.00	0.00
400.00	4.00	22.96	399.84	6.43	2.72	6.98	2.00	2.00	0.00
500.00	6.00	22.96	499.45	14.45	6.12	15.69	2.00	2.00	0.00
600.00	8.00	22.96	598.70	25.67	10.88	27.88	2.00	2.00	0.00
Start 4679.43 hold at 656.91 MD									
656.91	9.14	22.96	654.98	33.48	14.18	36.36	2.00	2.00	0.00
700.00	9.14	22.96	697.52	39.78	16.85	43.20	0.00	0.00	0.00
800.00	9.14	22.96	796.25	54.40	23.05	59.08	0.00	0.00	0.00
900.00	9.14	22.96	894.98	69.03	29.24	74.97	0.00	0.00	0.00
1,000.00	9.14	22.96	993.71	83.65	35.44	90.85	0.00	0.00	0.00
1,100.00	9.14	22.96	1,092.44	98.27	41.63	106.73	0.00	0.00	0.00
1,200.00	9.14	22.96	1,191.17	112.90	47.83	122.61	0.00	0.00	0.00
1,300.00	9.14	22.96	1,289.90	127.52	54.03	138.49	0.00	0.00	0.00
1,400.00	9.14	22.96	1,388.63	142.15	60.22	154.38	0.00	0.00	0.00
8 5/8" Csg.									
1,500.00	9.14	22.96	1,487.36	156.77	66.42	170.26	0.00	0.00	0.00
1,600.00	9.14	22.96	1,586.10	171.39	72.61	186.14	0.00	0.00	0.00
1,700.00	9.14	22.96	1,684.83	186.02	78.81	202.02	0.00	0.00	0.00
1,800.00	9.14	22.96	1,783.56	200.64	85.00	217.90	0.00	0.00	0.00
1,900.00	9.14	22.96	1,882.29	215.26	91.20	233.78	0.00	0.00	0.00
2,000.00	9.14	22.96	1,981.02	229.89	97.39	249.67	0.00	0.00	0.00
2,100.00	9.14	22.96	2,079.75	244.51	103.59	265.55	0.00	0.00	0.00
2,200.00	9.14	22.96	2,178.48	259.13	109.78	281.43	0.00	0.00	0.00
2,300.00	9.14	22.96	2,277.21	273.76	115.98	297.31	0.00	0.00	0.00
2,400.00	9.14	22.96	2,375.94	288.38	122.17	313.19	0.00	0.00	0.00
2,500.00	9.14	22.96	2,474.67	303.00	128.37	329.07	0.00	0.00	0.00
G' Sand									
2,574.27	9.14	22.96	2,548.00	313.87	132.97	340.87	0.00	0.00	0.00
2,600.00	9.14	22.96	2,573.40	317.63	134.56	344.96	0.00	0.00	0.00
2,700.00	9.14	22.96	2,672.13	332.25	140.76	360.84	0.00	0.00	0.00
2,800.00	9.14	22.96	2,770.87	346.87	146.96	376.72	0.00	0.00	0.00
2,900.00	9.14	22.96	2,869.60	361.50	153.15	392.60	0.00	0.00	0.00
3,000.00	9.14	22.96	2,968.33	376.12	159.35	408.48	0.00	0.00	0.00
3,100.00	9.14	22.96	3,067.06	390.75	165.54	424.37	0.00	0.00	0.00
3,200.00	9.14	22.96	3,165.79	405.37	171.74	440.25	0.00	0.00	0.00
3,300.00	9.14	22.96	3,264.52	419.99	177.93	456.13	0.00	0.00	0.00
3,400.00	9.14	22.96	3,363.25	434.62	184.13	472.01	0.00	0.00	0.00
3,500.00	9.14	22.96	3,461.98	449.24	190.32	487.89	0.00	0.00	0.00
3,600.00	9.14	22.96	3,560.71	463.86	196.52	503.77	0.00	0.00	0.00
3,700.00	9.14	22.96	3,659.44	478.49	202.71	519.66	0.00	0.00	0.00
3,800.00	9.14	22.96	3,758.17	493.11	208.91	535.54	0.00	0.00	0.00
3,900.00	9.14	22.96	3,856.90	507.73	215.10	551.42	0.00	0.00	0.00
4,000.00	9.14	22.96	3,955.63	522.36	221.30	567.30	0.00	0.00	0.00
4,100.00	9.14	22.96	4,054.37	536.98	227.50	583.18	0.00	0.00	0.00
4,200.00	9.14	22.96	4,153.10	551.60	233.69	599.06	0.00	0.00	0.00
4,300.00	9.14	22.96	4,251.83	566.23	239.89	614.95	0.00	0.00	0.00
4,400.00	9.14	22.96	4,350.56	580.85	246.08	630.83	0.00	0.00	0.00
4,500.00	9.14	22.96	4,449.29	595.48	252.28	646.71	0.00	0.00	0.00
Williams Fork									
4,531.11	9.14	22.96	4,480.00	600.02	254.20	651.65	0.00	0.00	0.00



Database:	EDMDBBW	Local Co-ordinate Reference:	Well Gunderson 29-07E
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 29-07E	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	9.14	22.96	4,548.02	610.10	258.47	662.59	0.00	0.00	0.00
4,700.00	9.14	22.96	4,646.75	624.72	264.67	678.47	0.00	0.00	0.00
4,800.00	9.14	22.96	4,745.48	639.35	270.86	694.36	0.00	0.00	0.00
4,900.00	9.14	22.96	4,844.21	653.97	277.06	710.24	0.00	0.00	0.00
5,000.00	9.14	22.96	4,942.94	668.59	283.25	726.12	0.00	0.00	0.00
5,100.00	9.14	22.96	5,041.67	683.22	289.45	742.00	0.00	0.00	0.00
5,200.00	9.14	22.96	5,140.40	697.84	295.64	757.88	0.00	0.00	0.00
5,300.00	9.14	22.96	5,239.13	712.46	301.84	773.76	0.00	0.00	0.00
Start Drop -2.00									
5,336.35	9.14	22.96	5,275.02	717.78	304.09	779.54	0.00	0.00	0.00
5,400.00	7.87	22.96	5,337.97	726.44	307.76	788.95	2.00	-2.00	0.00
5,500.00	5.87	22.96	5,437.25	737.45	312.42	800.90	2.00	-2.00	0.00
5,600.00	3.87	22.96	5,536.89	745.26	315.73	809.38	2.00	-2.00	0.00
5,700.00	1.87	22.96	5,636.76	749.86	317.68	814.38	2.00	-2.00	0.00
Start 1950.00 hold at 5793.26 MD - Top Of Gas									
5,793.26	0.00	0.00	5,730.00	751.26	318.27	815.90	2.00	-2.00	0.00
5,800.00	0.00	0.00	5,736.74	751.26	318.27	815.90	0.00	0.00	0.00
5,900.00	0.00	0.00	5,836.74	751.26	318.27	815.90	0.00	0.00	0.00
6,000.00	0.00	0.00	5,936.74	751.26	318.27	815.90	0.00	0.00	0.00
6,100.00	0.00	0.00	6,036.74	751.26	318.27	815.90	0.00	0.00	0.00
6,200.00	0.00	0.00	6,136.74	751.26	318.27	815.90	0.00	0.00	0.00
6,300.00	0.00	0.00	6,236.74	751.26	318.27	815.90	0.00	0.00	0.00
6,400.00	0.00	0.00	6,336.74	751.26	318.27	815.90	0.00	0.00	0.00
6,500.00	0.00	0.00	6,436.74	751.26	318.27	815.90	0.00	0.00	0.00
6,600.00	0.00	0.00	6,536.74	751.26	318.27	815.90	0.00	0.00	0.00
6,700.00	0.00	0.00	6,636.74	751.26	318.27	815.90	0.00	0.00	0.00
6,800.00	0.00	0.00	6,736.74	751.26	318.27	815.90	0.00	0.00	0.00
Cameo									
6,893.26	0.00	0.00	6,830.00	751.26	318.27	815.90	0.00	0.00	0.00
6,900.00	0.00	0.00	6,836.74	751.26	318.27	815.90	0.00	0.00	0.00
7,000.00	0.00	0.00	6,936.74	751.26	318.27	815.90	0.00	0.00	0.00
7,100.00	0.00	0.00	7,036.74	751.26	318.27	815.90	0.00	0.00	0.00
7,200.00	0.00	0.00	7,136.74	751.26	318.27	815.90	0.00	0.00	0.00
7,300.00	0.00	0.00	7,236.74	751.26	318.27	815.90	0.00	0.00	0.00
7,400.00	0.00	0.00	7,336.74	751.26	318.27	815.90	0.00	0.00	0.00
7,500.00	0.00	0.00	7,436.74	751.26	318.27	815.90	0.00	0.00	0.00
Rollins									
7,593.26	0.00	0.00	7,530.00	751.26	318.27	815.90	0.00	0.00	0.00
7,600.00	0.00	0.00	7,536.74	751.26	318.27	815.90	0.00	0.00	0.00
7,700.00	0.00	0.00	7,636.74	751.26	318.27	815.90	0.00	0.00	0.00
TD at 7743.26									
7,743.26	0.00	0.00	7,680.00	751.26	318.27	815.90	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 29-07E tgt	0.00	0.00	7,680.00	751.26	318.27	1,524,422.391	2,352,490.500	39.250894	-107.786781
- plan hits target center									
- Circle (radius 50.00)									



Database:	EDMDBBW	Local Co-ordinate Reference:	Well Gunderson 29-07E
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 29-07E	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	1,487.36	8 5/8" Csg.	8-5/8	12-1/4	

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
2,574.27	2,548.00	G' Sand		0.00	
4,531.11	4,480.00	Williams Fork		0.00	
5,793.26	5,730.00	Top Of Gas		0.00	
6,893.26	6,830.00	Cameo		0.00	
7,593.26	7,530.00	Rollins		0.00	

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
200.00	200.00	0.00	0.00	Start Build 2.00	
656.91	654.98	33.48	14.18	Start 4679.43 hold at 656.91 MD	
5,336.35	5,275.02	717.78	304.09	Start Drop -2.00	
5,793.26	5,730.00	751.26	318.27	Start 1950.00 hold at 5793.26 MD	
7,743.26	7,680.00	751.26	318.27	TD at 7743.26	



# **Piceance Energy, LLC**

**Mesa County, CO**

**Gunderson**

**Gunderson 29-07E**

**Wellbore #1**

**Design #1**

## **Anticollision Report**

**03 October, 2014**

# **Archer**



<b>Company:</b>	Piceance Energy, LLC	<b>Local Co-ordinate Reference:</b>	Well Gunderson 29-07E
<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 29-07E	<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

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

<b>Survey Tool Program</b>	<b>Date</b>	10/03/14		
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
0.00	7,743.26	Design #1 (Wellbore #1)	MWD	MWD - Standard

<b>Summary</b>						
<b>Site Name</b>	<b>Reference Measured Depth (usft)</b>	<b>Offset Measured Depth (usft)</b>	<b>Distance Between Centres (usft)</b>	<b>Distance Between Ellipses (usft)</b>	<b>Separation Factor</b>	<b>Warning</b>
<b>Offset Well - Wellbore - Design</b>						
Gunderson						
Gunderson 29-06E - Wellbore #1 - Design #1	180.00	180.00	10.00	9.47	18.859	CC
Gunderson 29-06E - Wellbore #1 - Design #1	240.00	240.00	10.14	9.34	12.673	ES
Gunderson 29-06E - Wellbore #1 - Design #1	2,340.00	2,349.87	34.55	19.50	2.297	SF
Gunderson 29-14E - Wellbore #1 - Design #1	180.00	180.00	11.13	10.60	20.982	CC
Gunderson 29-14E - Wellbore #1 - Design #1	210.00	209.96	11.16	10.50	16.823	ES
Gunderson 29-14E - Wellbore #1 - Design #1	300.00	299.52	14.37	13.31	13.550	SF
Gunderson 29-15E - Wellbore #1 - Design #1	180.00	180.00	14.15	13.62	26.671	CC
Gunderson 29-15E - Wellbore #1 - Design #1	210.00	210.00	14.16	13.50	21.282	ES
Gunderson 29-15E - Wellbore #1 - Design #1	390.00	389.86	20.29	18.79	13.594	SF

<b>Offset Design</b>													<b>Offset Site Error:</b>	0.00 usft
Gunderson - Gunderson 29-06E - Wellbore #1 - Design #1													<b>Offset Well Error:</b>	0.00 usft
<b>Survey Program:</b>	0-MWD													
<b>Reference</b>	<b>Offset</b>		<b>Semi Major Axis</b>		<b>Distance</b>									
<b>Measured Depth (usft)</b>	<b>Vertical Depth (usft)</b>	<b>Measured Depth (usft)</b>	<b>Vertical Depth (usft)</b>	<b>Reference (usft)</b>	<b>Offset (usft)</b>	<b>Azimuth from North (°)</b>	<b>Offset Wellbore Centre +N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Between Centres (usft)</b>	<b>Between Ellipses (usft)</b>	<b>Minimum Separation (usft)</b>	<b>Separation Factor</b>	<b>Warning</b>	
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	CC	
189.46	189.46	189.46	189.46	0.29	0.29	-96.51	-1.13	-9.94	10.01	9.43	0.57	17.465		
210.00	210.00	210.00	210.00	0.33	0.33	-96.57	-1.13	-9.94	10.01	9.35	0.67	15.050		
240.00	240.00	240.00	240.00	0.40	0.40	-97.85	-1.13	-9.94	10.14	9.34	0.80	12.673	ES	
270.00	269.99	269.99	269.99	0.47	0.47	-100.57	-1.13	-9.94	10.45	9.51	0.94	11.165		
300.00	299.98	299.98	299.98	0.54	0.53	-104.45	-1.13	-9.94	10.97	9.90	1.07	10.233		
330.00	329.96	329.96	329.96	0.61	0.60	-109.12	-1.13	-9.94	11.74	10.53	1.21	9.700		
360.00	359.92	359.92	359.92	0.68	0.67	-114.17	-1.13	-9.94	12.80	11.46	1.35	9.495		
390.00	389.86	389.86	389.86	0.75	0.74	-119.20	-1.13	-9.94	14.20	12.71	1.49	9.552		
420.00	419.78	419.78	419.78	0.82	0.80	-123.93	-1.13	-9.94	15.95	14.32	1.63	9.809		
450.00	449.68	449.68	449.68	0.89	0.87	-128.20	-1.13	-9.94	18.06	16.29	1.77	10.221		
480.00	479.55	479.55	479.55	0.97	0.94	-131.93	-1.13	-9.94	20.53	18.62	1.91	10.768		

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 29-07E
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 29-07E	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 29-06E - 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							
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	Warning	
510.00	509.40	509.40	509.40	1.04	1.01	-135.14	-1.13	-9.94	23.36	21.31	2.05	11.416		
540.00	539.20	539.20	539.20	1.13	1.07	-137.88	-1.13	-9.94	26.54	24.35	2.19	12.133		
570.00	568.97	568.97	568.97	1.21	1.14	-140.20	-1.13	-9.94	30.07	27.74	2.33	12.924		
600.00	598.70	598.70	598.70	1.30	1.21	-142.16	-1.13	-9.94	33.93	31.47	2.46	13.776		
630.00	628.39	628.39	628.39	1.39	1.27	-143.83	-1.13	-9.94	38.14	35.53	2.60	14.649		
660.00	658.03	658.03	658.03	1.48	1.34	-145.26	-1.13	-9.94	42.67	39.93	2.74	15.565		
690.00	687.65	687.65	687.65	1.58	1.41	-146.44	-1.13	-9.94	47.34	44.46	2.88	16.453		
720.00	717.26	717.57	717.57	1.68	1.47	-147.39	-1.08	-9.92	51.98	48.96	3.01	17.241		
750.00	746.88	747.80	747.80	1.79	1.54	-148.11	-0.75	-9.82	56.35	53.20	3.15	17.880		
780.00	776.50	778.12	778.11	1.89	1.61	-148.66	-0.12	-9.61	60.43	57.14	3.29	18.386		
810.00	806.12	808.52	808.49	1.99	1.68	-149.08	0.82	-9.30	64.20	60.78	3.42	18.763		
840.00	835.74	839.00	838.95	2.09	1.75	-149.39	2.07	-8.89	67.67	64.11	3.56	19.010		
870.00	865.36	869.56	869.46	2.20	1.82	-149.62	3.64	-8.38	70.83	67.13	3.70	19.159		
900.00	894.98	900.17	900.01	2.30	1.89	-149.77	5.51	-7.76	73.68	69.85	3.83	19.220		
930.00	924.60	930.85	930.60	2.41	1.96	-149.87	7.70	-7.04	76.22	72.24	3.97	19.176		
960.00	954.22	961.58	961.22	2.51	2.03	-149.90	10.21	-6.22	78.44	74.32	4.12	19.059		
990.00	983.84	992.35	991.85	2.62	2.10	-149.88	13.03	-5.29	80.35	76.09	4.26	18.877		
1,020.00	1,013.46	1,023.17	1,022.48	2.72	2.18	-149.82	16.17	-4.26	81.94	77.54	4.40	18.621		
1,050.00	1,043.08	1,054.01	1,053.11	2.83	2.25	-149.71	19.63	-3.13	83.22	78.67	4.55	18.310		
1,080.00	1,072.70	1,084.87	1,083.72	2.94	2.33	-149.56	23.40	-1.89	84.18	79.49	4.69	17.953		
1,110.00	1,102.31	1,115.76	1,114.30	3.04	2.41	-149.36	27.49	-0.55	84.83	79.99	4.84	17.545		
1,140.00	1,131.93	1,146.65	1,144.84	3.15	2.50	-149.11	31.89	0.89	85.16	80.18	4.98	17.088		
1,170.00	1,161.55	1,177.54	1,175.33	3.26	2.59	-148.81	36.60	2.44	85.18	80.05	5.13	16.599		
1,200.00	1,191.17	1,208.43	1,205.76	3.36	2.68	-148.46	41.63	4.09	84.89	79.61	5.28	16.077		
1,230.00	1,220.79	1,239.31	1,236.13	3.47	2.78	-148.05	46.96	5.84	84.28	78.85	5.43	15.512		
1,260.00	1,250.41	1,270.16	1,266.41	3.58	2.87	-147.59	52.60	7.69	83.37	77.78	5.58	14.929		
1,290.00	1,280.03	1,300.99	1,296.59	3.69	2.97	-147.05	58.55	9.64	82.14	76.40	5.74	14.315		
1,320.00	1,309.65	1,331.79	1,326.68	3.80	3.09	-146.43	64.80	11.69	80.61	74.72	5.90	13.669		
1,350.00	1,339.27	1,362.54	1,356.65	3.90	3.20	-145.72	71.34	13.84	78.78	72.73	6.06	13.007		
1,380.00	1,368.89	1,392.95	1,386.22	4.01	3.31	-144.92	78.09	16.05	76.68	70.46	6.22	12.330		
1,410.00	1,398.51	1,422.85	1,415.28	4.12	3.43	-144.09	84.79	18.25	74.53	68.15	6.38	11.676		
1,440.00	1,428.13	1,452.76	1,444.34	4.23	3.55	-143.21	91.48	20.45	72.40	65.85	6.55	11.054		
1,470.00	1,457.75	1,482.66	1,473.40	4.34	3.67	-142.29	98.18	22.64	70.28	63.57	6.72	10.464		
1,500.00	1,487.36	1,512.56	1,502.46	4.44	3.79	-141.30	104.88	24.84	68.19	61.30	6.89	9.899		
1,530.00	1,516.98	1,542.47	1,531.53	4.55	3.92	-140.25	111.57	27.04	66.11	59.04	7.07	9.356		
1,560.00	1,546.60	1,572.37	1,560.59	4.66	4.04	-139.14	118.27	29.23	64.06	56.81	7.25	8.840		
1,590.00	1,576.22	1,602.28	1,589.65	4.77	4.17	-137.95	124.96	31.43	62.03	54.60	7.43	8.347		
1,620.00	1,605.84	1,632.18	1,618.71	4.88	4.30	-136.68	131.66	33.63	60.03	52.40	7.62	7.873		
1,650.00	1,635.46	1,662.08	1,647.77	4.99	4.43	-135.33	138.36	35.83	58.05	50.23	7.82	7.423		
1,680.00	1,665.08	1,691.99	1,676.83	5.09	4.55	-133.89	145.05	38.02	56.12	48.09	8.03	6.990		
1,710.00	1,694.70	1,721.89	1,705.90	5.20	4.69	-132.34	151.75	40.22	54.21	45.97	8.24	6.577		
1,740.00	1,724.32	1,751.80	1,734.96	5.31	4.82	-130.69	158.44	42.42	52.35	43.89	8.47	6.182		
1,770.00	1,753.94	1,781.70	1,764.02	5.42	4.95	-128.92	165.14	44.61	50.54	41.84	8.70	5.806		
1,800.00	1,783.56	1,811.60	1,793.08	5.53	5.08	-127.02	171.83	46.81	48.78	39.82	8.95	5.448		
1,830.00	1,813.18	1,841.51	1,822.14	5.64	5.22	-124.99	178.53	49.01	47.07	37.85	9.21	5.108		
1,860.00	1,842.80	1,871.41	1,851.20	5.75	5.35	-122.81	185.23	51.20	45.42	35.93	9.49	4.786		
1,890.00	1,872.41	1,901.32	1,880.27	5.86	5.49	-120.48	191.92	53.40	43.85	34.06	9.78	4.482		
1,920.00	1,902.03	1,931.22	1,909.33	5.97	5.62	-117.98	198.62	55.60	42.35	32.25	10.09	4.196		
1,950.00	1,931.65	1,961.12	1,938.39	6.07	5.76	-115.31	205.31	57.79	40.93	30.51	10.42	3.929		
1,980.00	1,961.27	1,991.03	1,967.45	6.18	5.89	-112.46	212.01	59.99	39.62	28.85	10.76	3.681		
2,010.00	1,990.89	2,020.93	1,996.51	6.29	6.03	-109.44	218.71	62.19	38.40	27.28	11.12	3.453		
2,040.00	2,020.51	2,050.84	2,025.57	6.40	6.17	-106.24	225.40	64.39	37.30	25.81	11.50	3.245		

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 29-07E
<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 29-07E	<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 29-06E - 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		
2,070.00	2,050.13	2,080.74	2,054.64	6.51	6.31	-102.86	232.10	66.58	36.33	24.45	11.88	3.058		
2,100.00	2,079.75	2,110.64	2,083.70	6.62	6.44	-99.33	238.79	68.78	35.50	23.22	12.28	2.891		
2,130.00	2,109.37	2,140.55	2,112.76	6.73	6.58	-95.65	245.49	70.98	34.80	22.13	12.67	2.746		
2,160.00	2,138.99	2,170.45	2,141.82	6.84	6.72	-91.84	252.19	73.17	34.27	21.20	13.07	2.622		
2,190.00	2,168.61	2,200.35	2,170.88	6.95	6.86	-87.95	258.88	75.37	33.89	20.44	13.45	2.519		
2,220.00	2,198.23	2,230.26	2,199.94	7.06	7.00	-84.00	265.58	77.57	33.68	19.86	13.82	2.437		
2,241.65	2,219.60	2,251.84	2,220.92	7.13	7.10	-81.13	270.41	79.15	33.64	19.56	14.08	2.390		
2,250.00	2,227.85	2,260.16	2,229.01	7.16	7.14	-80.02	272.27	79.76	33.65	19.48	14.17	2.374		
2,280.00	2,257.47	2,290.07	2,258.07	7.27	7.28	-76.06	278.97	81.96	33.78	19.29	14.49	2.331		
2,310.00	2,287.08	2,319.97	2,287.13	7.38	7.42	-72.15	285.66	84.16	34.08	19.30	14.78	2.305		
2,340.00	2,316.70	2,349.87	2,316.19	7.49	7.56	-68.33	292.36	86.35	34.55	19.50	15.04	2.297 SF		
2,370.00	2,346.32	2,379.78	2,345.25	7.60	7.70	-64.63	299.06	88.55	35.17	19.90	15.27	2.303		
2,400.00	2,375.94	2,409.68	2,374.32	7.71	7.84	-61.07	305.75	90.75	35.94	20.48	15.47	2.324		
2,430.00	2,405.56	2,439.59	2,403.38	7.82	7.98	-57.66	312.45	92.95	36.86	21.22	15.64	2.357		
2,460.00	2,435.18	2,469.49	2,432.44	7.93	8.12	-54.43	319.14	95.14	37.90	22.11	15.79	2.401		
2,490.00	2,464.80	2,499.39	2,461.50	8.04	8.26	-51.38	325.84	97.34	39.07	23.15	15.92	2.454		
2,520.00	2,494.42	2,529.30	2,490.56	8.15	8.40	-48.50	332.54	99.54	40.34	24.31	16.03	2.517		
2,550.00	2,524.04	2,559.20	2,519.62	8.26	8.54	-45.80	339.23	101.73	41.71	25.58	16.13	2.586		
2,580.00	2,553.66	2,589.11	2,548.69	8.36	8.68	-43.27	345.93	103.93	43.17	26.95	16.22	2.662		
2,610.00	2,583.28	2,619.01	2,577.75	8.47	8.83	-40.91	352.62	106.13	44.71	28.41	16.30	2.743		
2,640.00	2,612.90	2,648.91	2,606.81	8.58	8.97	-38.70	359.32	108.32	46.33	29.95	16.38	2.828		
2,670.00	2,642.52	2,678.82	2,635.87	8.69	9.11	-36.65	366.02	110.52	48.01	31.55	16.46	2.917		
2,700.00	2,672.13	2,708.72	2,664.93	8.80	9.25	-34.73	372.71	112.72	49.75	33.21	16.54	3.008		
2,730.00	2,701.75	2,738.63	2,693.99	8.91	9.39	-32.93	379.41	114.91	51.54	34.93	16.62	3.102		
2,760.00	2,731.37	2,768.53	2,723.06	9.02	9.53	-31.26	386.10	117.11	53.39	36.69	16.69	3.198		
2,790.00	2,760.99	2,798.43	2,752.12	9.13	9.68	-29.70	392.80	119.31	55.27	38.50	16.77	3.295		
2,820.00	2,790.61	2,828.34	2,781.18	9.24	9.82	-28.24	399.49	121.51	57.19	40.33	16.86	3.393		
2,850.00	2,820.23	2,858.24	2,810.24	9.35	9.96	-26.87	406.19	123.70	59.15	42.21	16.94	3.491		
2,880.00	2,849.85	2,888.14	2,839.30	9.46	10.10	-25.59	412.89	125.90	61.14	44.11	17.03	3.590		
2,910.00	2,879.47	2,918.05	2,868.36	9.57	10.25	-24.39	419.58	128.10	63.15	46.03	17.12	3.689		
2,940.00	2,909.09	2,947.95	2,897.43	9.68	10.39	-23.26	426.28	130.29	65.20	47.98	17.22	3.787		
2,970.00	2,938.71	2,977.86	2,926.49	9.79	10.53	-22.21	432.97	132.49	67.26	49.95	17.31	3.885		
3,000.00	2,968.33	3,007.76	2,955.55	9.89	10.67	-21.21	439.67	134.69	69.35	51.94	17.41	3.983		
3,030.00	2,997.95	3,037.66	2,984.61	10.00	10.82	-20.27	446.37	136.88	71.46	53.94	17.52	4.080		
3,060.00	3,027.57	3,067.57	3,013.67	10.11	10.96	-19.38	453.06	139.08	73.58	55.96	17.62	4.176		
3,090.00	3,057.18	3,097.47	3,042.73	10.22	11.10	-18.55	459.76	141.28	75.73	58.00	17.73	4.271		
3,120.00	3,086.80	3,127.38	3,071.80	10.33	11.24	-17.76	466.45	143.47	77.88	60.04	17.84	4.365		
3,150.00	3,116.42	3,157.28	3,100.86	10.44	11.39	-17.01	473.15	145.67	80.05	62.10	17.95	4.459		
3,180.00	3,146.04	3,187.18	3,129.92	10.55	11.53	-16.30	479.84	147.87	82.24	64.17	18.07	4.551		
3,210.00	3,175.66	3,217.09	3,158.98	10.66	11.67	-15.62	486.54	150.07	84.43	66.24	18.19	4.642		
3,240.00	3,205.28	3,246.99	3,188.04	10.77	11.82	-14.98	493.24	152.26	86.64	68.33	18.31	4.732		
3,270.00	3,234.90	3,276.90	3,217.10	10.88	11.96	-14.38	499.93	154.46	88.85	70.42	18.43	4.821		
3,300.00	3,264.52	3,306.80	3,246.17	10.99	12.10	-13.80	506.63	156.66	91.08	72.52	18.55	4.909		
3,330.00	3,294.14	3,336.70	3,275.23	11.10	12.25	-13.25	513.32	158.85	93.31	74.63	18.68	4.995		
3,360.00	3,323.76	3,366.61	3,304.29	11.21	12.39	-12.72	520.02	161.05	95.55	76.75	18.81	5.081		
3,390.00	3,353.38	3,396.51	3,333.35	11.32	12.53	-12.22	526.72	163.25	97.80	78.87	18.94	5.165		
3,420.00	3,383.00	3,426.42	3,362.41	11.43	12.68	-11.74	533.41	165.44	100.06	80.99	19.07	5.248		
3,450.00	3,412.62	3,456.32	3,391.48	11.54	12.82	-11.28	540.11	167.64	102.32	83.12	19.20	5.330		
3,480.00	3,442.23	3,486.22	3,420.54	11.64	12.96	-10.84	546.80	169.84	104.59	85.26	19.33	5.410		
3,510.00	3,471.85	3,516.13	3,449.60	11.75	13.11	-10.42	553.50	172.03	106.86	87.40	19.47	5.490		
3,540.00	3,501.47	3,546.03	3,478.66	11.86	13.25	-10.02	560.20	174.23	109.14	89.54	19.60	5.568		
3,570.00	3,531.09	3,575.93	3,507.72	11.97	13.39	-9.63	566.89	176.43	111.43	91.69	19.74	5.645		

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 29-07E
<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 29-07E	<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 29-06E - 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		
3,600.00	3,560.71	3,605.84	3,536.78	12.08	13.54	-9.26	573.59	178.63	113.72	93.84	19.88	5.721		
3,630.00	3,590.33	3,635.74	3,565.85	12.19	13.68	-8.91	580.28	180.82	116.01	96.00	20.01	5.796		
3,660.00	3,619.95	3,665.65	3,594.91	12.30	13.82	-8.56	586.98	183.02	118.31	98.16	20.15	5.870		
3,690.00	3,649.57	3,695.55	3,623.97	12.41	13.97	-8.23	593.67	185.22	120.61	100.32	20.30	5.943		
3,720.00	3,679.19	3,725.45	3,653.03	12.52	14.11	-7.92	600.37	187.41	122.92	102.48	20.44	6.015		
3,750.00	3,708.81	3,755.36	3,682.09	12.63	14.26	-7.61	607.07	189.61	125.23	104.65	20.58	6.085		
3,780.00	3,738.43	3,785.26	3,711.15	12.74	14.40	-7.31	613.76	191.81	127.54	106.82	20.72	6.155		
3,810.00	3,768.05	3,815.17	3,740.22	12.85	14.54	-7.03	620.46	194.00	129.86	108.99	20.87	6.223		
3,840.00	3,797.67	3,845.07	3,769.28	12.96	14.69	-6.76	627.15	196.20	132.18	111.16	21.01	6.291		
3,870.00	3,827.28	3,874.97	3,798.34	13.07	14.83	-6.49	633.85	198.40	134.50	113.34	21.16	6.357		
3,900.00	3,856.90	3,904.88	3,827.40	13.18	14.98	-6.23	640.55	200.60	136.82	115.52	21.30	6.423		
3,930.00	3,886.52	3,934.78	3,856.46	13.29	15.12	-5.99	647.24	202.79	139.15	117.70	21.45	6.487		
3,960.00	3,916.14	3,964.69	3,885.52	13.40	15.26	-5.75	653.94	204.99	141.48	119.88	21.60	6.551		
3,990.00	3,945.76	3,994.59	3,914.59	13.50	15.41	-5.52	660.63	207.19	143.81	122.06	21.74	6.614		
4,020.00	3,975.38	4,024.49	3,943.65	13.61	15.55	-5.29	667.33	209.38	146.14	124.25	21.89	6.676		
4,050.00	4,005.00	4,054.40	3,972.71	13.72	15.70	-5.07	674.02	211.58	148.48	126.44	22.04	6.737		
4,080.00	4,034.62	4,084.30	4,001.77	13.83	15.84	-4.86	680.72	213.78	150.82	128.63	22.19	6.797		
4,110.00	4,064.24	4,114.21	4,030.83	13.94	15.98	-4.66	687.42	215.97	153.15	130.82	22.34	6.856		
4,140.00	4,093.86	4,144.11	4,059.89	14.05	16.13	-4.46	694.11	218.17	155.50	133.01	22.49	6.914		
4,170.00	4,123.48	4,174.01	4,088.96	14.16	16.27	-4.27	700.81	220.37	157.84	135.20	22.64	6.972		
4,200.00	4,153.10	4,203.92	4,118.02	14.27	16.42	-4.08	707.50	222.56	160.18	137.39	22.79	7.028		
4,230.00	4,182.72	4,233.82	4,147.08	14.38	16.56	-3.90	714.20	224.76	162.53	139.59	22.94	7.084		
4,260.00	4,212.33	4,263.72	4,176.14	14.49	16.70	-3.72	720.90	226.96	164.88	141.78	23.09	7.140		
4,290.00	4,241.95	4,293.63	4,205.20	14.60	16.85	-3.55	727.59	229.16	167.23	143.98	23.25	7.194		
4,320.00	4,271.57	4,323.53	4,234.26	14.71	16.99	-3.39	734.29	231.35	169.58	146.18	23.40	7.248		
4,350.00	4,301.19	4,353.44	4,263.33	14.82	17.14	-3.22	740.98	233.55	171.93	148.38	23.55	7.300		
4,380.00	4,330.81	4,383.34	4,292.39	14.93	17.28	-3.07	747.68	235.75	174.28	150.58	23.70	7.353		
4,410.00	4,360.43	4,413.24	4,321.45	15.04	17.43	-2.91	754.38	237.94	176.64	152.78	23.86	7.404		
4,440.00	4,390.05	4,443.15	4,350.51	15.15	17.57	-2.76	761.07	240.14	178.99	154.98	24.01	7.455		
4,470.00	4,419.67	4,473.05	4,379.57	15.26	17.71	-2.62	767.77	242.34	181.35	157.19	24.16	7.505		
4,500.00	4,449.29	4,502.96	4,408.63	15.37	17.86	-2.48	774.46	244.53	183.71	159.39	24.32	7.554		
4,530.00	4,478.91	4,532.86	4,437.70	15.48	18.00	-2.34	781.16	246.73	186.07	161.60	24.47	7.603		
4,560.00	4,508.53	4,562.76	4,466.76	15.58	18.15	-2.20	787.85	248.93	188.43	163.80	24.63	7.651		
4,590.00	4,538.15	4,592.67	4,495.82	15.69	18.29	-2.07	794.55	251.12	190.79	166.01	24.78	7.699		
4,620.00	4,567.77	4,622.57	4,524.88	15.80	18.44	-1.94	801.25	253.32	193.15	168.21	24.94	7.745		
4,650.00	4,597.38	4,652.48	4,553.94	15.91	18.58	-1.82	807.94	255.52	195.52	170.42	25.09	7.792		
4,680.00	4,627.00	4,682.38	4,583.01	16.02	18.73	-1.70	814.64	257.72	197.88	172.63	25.25	7.837		
4,710.00	4,656.62	4,712.28	4,612.07	16.13	18.87	-1.58	821.33	259.91	200.24	174.84	25.40	7.882		
4,740.00	4,686.24	4,742.19	4,641.13	16.24	19.01	-1.46	828.03	262.11	202.61	177.05	25.56	7.927		
4,770.00	4,715.86	4,772.09	4,670.19	16.35	19.16	-1.35	834.73	264.31	204.98	179.26	25.72	7.971		
4,800.00	4,745.48	4,802.00	4,699.25	16.46	19.30	-1.24	841.42	266.50	207.34	181.47	25.87	8.014		
4,830.00	4,775.10	4,831.90	4,728.31	16.57	19.45	-1.13	848.12	268.70	209.71	183.68	26.03	8.057		
4,860.00	4,804.72	4,861.80	4,757.38	16.68	19.59	-1.02	854.81	270.90	212.08	185.89	26.19	8.099		
4,890.00	4,834.34	4,891.71	4,786.44	16.79	19.74	-0.92	861.51	273.09	214.45	188.10	26.34	8.141		
4,920.00	4,863.96	4,921.61	4,815.50	16.90	19.88	-0.82	868.21	275.29	216.82	190.32	26.50	8.182		
4,950.00	4,893.58	4,951.52	4,844.56	17.01	20.03	-0.72	874.90	277.49	219.19	192.53	26.66	8.222		
4,980.00	4,923.20	4,981.42	4,873.62	17.12	20.17	-0.62	881.60	279.68	221.56	194.74	26.81	8.263		
5,010.00	4,952.82	5,011.32	4,902.68	17.23	20.31	-0.52	888.29	281.88	223.93	196.96	26.97	8.302		
5,040.00	4,982.43	5,041.23	4,931.75	17.34	20.46	-0.43	894.99	284.08	226.30	199.17	27.13	8.342		
5,070.00	5,012.05	5,071.13	4,960.81	17.45	20.60	-0.34	901.68	286.28	228.68	201.39	27.29	8.380		
5,100.00	5,041.67	5,101.03	4,989.87	17.56	20.75	-0.25	908.38	288.47	231.05	203.60	27.45	8.419		
5,130.00	5,071.29	5,130.94	5,018.93	17.67	20.89	-0.16	915.08	290.67	233.42	205.82	27.60	8.456		

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 29-07E
<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 29-07E	<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 29-06E - 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		
5,160.00	5,100.91	5,160.84	5,047.99	17.77	21.04	-0.07	921.77	292.87	235.80	208.04	27.76	8.494		
5,190.00	5,130.53	5,192.71	5,078.99	17.88	21.18	0.04	928.81	295.17	238.08	210.16	27.92	8.528		
5,220.00	5,160.15	5,225.23	5,110.70	17.99	21.30	0.13	935.66	297.42	240.04	211.97	28.07	8.552		
5,250.00	5,189.77	5,257.79	5,142.53	18.10	21.41	0.20	942.18	299.56	241.69	213.46	28.22	8.564		
5,280.00	5,219.39	5,290.39	5,174.47	18.21	21.53	0.24	948.36	301.59	243.01	214.62	28.38	8.562		
5,310.00	5,249.01	5,323.02	5,206.52	18.32	21.63	0.25	954.19	303.50	244.00	215.46	28.54	8.549		
5,340.00	5,278.63	5,355.66	5,238.65	18.43	21.73	0.23	959.69	305.31	244.67	215.97	28.70	8.525		
5,370.00	5,308.28	5,388.32	5,270.85	18.52	21.84	0.21	964.84	307.00	245.19	216.34	28.85	8.499		
5,400.00	5,337.97	5,420.98	5,303.11	18.62	21.93	0.19	969.63	308.57	245.68	216.69	28.99	8.474		
5,430.00	5,367.71	5,453.64	5,335.44	18.69	22.02	0.17	974.08	310.03	246.13	217.01	29.12	8.453		
5,460.00	5,397.49	5,486.31	5,367.83	18.77	22.11	0.15	978.18	311.38	246.55	217.31	29.24	8.432		
5,490.00	5,427.31	5,518.99	5,400.26	18.84	22.19	0.14	981.93	312.61	246.93	217.57	29.36	8.411		
5,520.00	5,457.15	5,551.67	5,432.74	18.91	22.26	0.12	985.33	313.72	247.27	217.81	29.47	8.392		
5,550.00	5,487.03	5,584.35	5,465.27	18.97	22.34	0.11	988.38	314.72	247.58	218.01	29.57	8.373		
5,580.00	5,516.94	5,617.04	5,497.83	19.04	22.40	0.10	991.07	315.60	247.86	218.19	29.67	8.354		
5,610.00	5,546.86	5,649.73	5,530.43	19.10	22.46	0.09	993.41	316.37	248.09	218.33	29.76	8.336		
5,640.00	5,576.81	5,682.42	5,563.06	19.15	22.53	0.08	995.40	317.02	248.30	218.45	29.85	8.318		
5,670.00	5,606.78	5,715.12	5,595.70	19.20	22.58	0.07	997.03	317.56	248.46	218.53	29.93	8.301		
5,700.00	5,636.76	5,747.81	5,628.37	19.25	22.63	0.07	998.31	317.98	248.59	218.59	30.01	8.285		
5,730.00	5,666.74	5,780.51	5,661.06	19.29	22.68	0.06	999.24	318.28	248.69	218.61	30.08	8.269		
5,760.00	5,696.74	5,813.21	5,693.75	19.33	22.72	0.06	999.81	318.47	248.74	218.60	30.14	8.253		
5,790.00	5,726.74	5,845.91	5,726.45	19.37	22.76	0.06	1,000.02	318.54	248.77	218.57	30.20	8.238		
5,820.00	5,756.74	5,876.20	5,756.74	19.41	22.79	0.06	1,000.02	318.54	248.77	218.47	30.30	8.211		
5,850.00	5,786.74	5,906.20	5,786.74	19.46	22.82	0.06	1,000.02	318.54	248.77	218.36	30.40	8.183		
5,880.00	5,816.74	5,936.20	5,816.74	19.50	22.86	0.06	1,000.02	318.54	248.77	218.26	30.51	8.153		
5,910.00	5,846.74	5,966.20	5,846.74	19.54	22.89	0.06	1,000.02	318.54	248.77	218.15	30.62	8.124		
5,940.00	5,876.74	5,996.20	5,876.74	19.58	22.93	0.06	1,000.02	318.54	248.77	218.04	30.73	8.095		
5,970.00	5,906.74	6,026.20	5,906.74	19.62	22.96	0.06	1,000.02	318.54	248.77	217.93	30.84	8.066		
6,000.00	5,936.74	6,056.20	5,936.74	19.67	23.00	0.06	1,000.02	318.54	248.77	217.82	30.95	8.038		
6,030.00	5,966.74	6,086.20	5,966.74	19.71	23.04	0.06	1,000.02	318.54	248.77	217.71	31.06	8.009		
6,060.00	5,996.74	6,116.20	5,996.74	19.75	23.07	0.06	1,000.02	318.54	248.77	217.59	31.17	7.981		
6,090.00	6,026.74	6,146.20	6,026.74	19.80	23.11	0.06	1,000.02	318.54	248.77	217.48	31.28	7.952		
6,120.00	6,056.74	6,176.20	6,056.74	19.84	23.14	0.06	1,000.02	318.54	248.77	217.37	31.39	7.924		
6,150.00	6,086.74	6,206.20	6,086.74	19.88	23.18	0.06	1,000.02	318.54	248.77	217.26	31.50	7.896		
6,180.00	6,116.74	6,236.20	6,116.74	19.93	23.22	0.06	1,000.02	318.54	248.77	217.15	31.62	7.868		
6,210.00	6,146.74	6,266.20	6,146.74	19.97	23.25	0.06	1,000.02	318.54	248.77	217.04	31.73	7.841		
6,240.00	6,176.74	6,296.20	6,176.74	20.01	23.29	0.06	1,000.02	318.54	248.77	216.93	31.84	7.813		
6,270.00	6,206.74	6,326.20	6,206.74	20.06	23.33	0.06	1,000.02	318.54	248.77	216.82	31.95	7.786		
6,300.00	6,236.74	6,356.20	6,236.74	20.10	23.36	0.06	1,000.02	318.54	248.77	216.70	32.06	7.759		
6,330.00	6,266.74	6,386.20	6,266.74	20.14	23.40	0.06	1,000.02	318.54	248.77	216.59	32.17	7.732		
6,360.00	6,296.74	6,416.20	6,296.74	20.19	23.44	0.06	1,000.02	318.54	248.77	216.48	32.29	7.705		
6,390.00	6,326.74	6,446.20	6,326.74	20.23	23.48	0.06	1,000.02	318.54	248.77	216.37	32.40	7.678		
6,420.00	6,356.74	6,476.20	6,356.74	20.28	23.51	0.06	1,000.02	318.54	248.77	216.25	32.51	7.651		
6,450.00	6,386.74	6,506.20	6,386.74	20.32	23.55	0.06	1,000.02	318.54	248.77	216.14	32.63	7.625		
6,480.00	6,416.74	6,536.20	6,416.74	20.37	23.59	0.06	1,000.02	318.54	248.77	216.03	32.74	7.599		
6,510.00	6,446.74	6,566.20	6,446.74	20.41	23.63	0.06	1,000.02	318.54	248.77	215.91	32.85	7.572		
6,540.00	6,476.74	6,596.20	6,476.74	20.46	23.67	0.06	1,000.02	318.54	248.77	215.80	32.97	7.546		
6,570.00	6,506.74	6,626.20	6,506.74	20.50	23.70	0.06	1,000.02	318.54	248.77	215.69	33.08	7.520		
6,600.00	6,536.74	6,656.20	6,536.74	20.55	23.74	0.06	1,000.02	318.54	248.77	215.57	33.19	7.495		
6,630.00	6,566.74	6,686.20	6,566.74	20.59	23.78	0.06	1,000.02	318.54	248.77	215.46	33.31	7.469		
6,660.00	6,596.74	6,716.20	6,596.74	20.64	23.82	0.06	1,000.02	318.54	248.77	215.35	33.42	7.444		
6,690.00	6,626.74	6,746.20	6,626.74	20.68	23.86	0.06	1,000.02	318.54	248.77	215.23	33.53	7.418		

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



<b>Company:</b>	Piceance Energy, LLC	<b>Local Co-ordinate Reference:</b>	Well Gunderson 29-07E
<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 29-07E	<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 29-06E - 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	
6,720.00	6,656.74	6,776.20	6,656.74	20.73	23.90	0.06	1,000.02	318.54	248.77	215.12	33.65	7.393	
6,750.00	6,686.74	6,806.20	6,686.74	20.78	23.94	0.06	1,000.02	318.54	248.77	215.00	33.76	7.368	
6,780.00	6,716.74	6,836.20	6,716.74	20.82	23.98	0.06	1,000.02	318.54	248.77	214.89	33.88	7.343	
6,810.00	6,746.74	6,866.20	6,746.74	20.87	24.02	0.06	1,000.02	318.54	248.77	214.77	33.99	7.318	
6,840.00	6,776.74	6,896.20	6,776.74	20.91	24.06	0.06	1,000.02	318.54	248.77	214.66	34.11	7.294	
6,870.00	6,806.74	6,926.20	6,806.74	20.96	24.10	0.06	1,000.02	318.54	248.77	214.54	34.22	7.269	
6,900.00	6,836.74	6,956.20	6,836.74	21.01	24.14	0.06	1,000.02	318.54	248.77	214.43	34.34	7.245	
6,930.00	6,866.74	6,986.20	6,866.74	21.05	24.17	0.06	1,000.02	318.54	248.77	214.31	34.45	7.220	
6,960.00	6,896.74	7,016.20	6,896.74	21.10	24.21	0.06	1,000.02	318.54	248.77	214.20	34.57	7.196	
6,990.00	6,926.74	7,046.20	6,926.74	21.15	24.26	0.06	1,000.02	318.54	248.77	214.08	34.68	7.172	
7,020.00	6,956.74	7,076.20	6,956.74	21.19	24.30	0.06	1,000.02	318.54	248.77	213.97	34.80	7.148	
7,050.00	6,986.74	7,106.20	6,986.74	21.24	24.34	0.06	1,000.02	318.54	248.77	213.85	34.92	7.125	
7,080.00	7,016.74	7,136.20	7,016.74	21.29	24.38	0.06	1,000.02	318.54	248.77	213.73	35.03	7.101	
7,110.00	7,046.74	7,166.20	7,046.74	21.33	24.42	0.06	1,000.02	318.54	248.77	213.62	35.15	7.078	
7,140.00	7,076.74	7,196.20	7,076.74	21.38	24.46	0.06	1,000.02	318.54	248.77	213.50	35.26	7.054	
7,170.00	7,106.74	7,226.20	7,106.74	21.43	24.50	0.06	1,000.02	318.54	248.77	213.38	35.38	7.031	
7,200.00	7,136.74	7,256.20	7,136.74	21.48	24.54	0.06	1,000.02	318.54	248.77	213.27	35.50	7.008	
7,230.00	7,166.74	7,286.20	7,166.74	21.52	24.58	0.06	1,000.02	318.54	248.77	213.15	35.61	6.985	
7,260.00	7,196.74	7,316.20	7,196.74	21.57	24.62	0.06	1,000.02	318.54	248.77	213.03	35.73	6.962	
7,290.00	7,226.74	7,346.20	7,226.74	21.62	24.66	0.06	1,000.02	318.54	248.77	212.92	35.85	6.939	
7,320.00	7,256.74	7,376.20	7,256.74	21.67	24.70	0.06	1,000.02	318.54	248.77	212.80	35.97	6.917	
7,350.00	7,286.74	7,406.20	7,286.74	21.72	24.75	0.06	1,000.02	318.54	248.77	212.68	36.08	6.894	
7,380.00	7,316.74	7,436.20	7,316.74	21.76	24.79	0.06	1,000.02	318.54	248.77	212.57	36.20	6.872	
7,410.00	7,346.74	7,466.20	7,346.74	21.81	24.83	0.06	1,000.02	318.54	248.77	212.45	36.32	6.850	
7,440.00	7,376.74	7,496.20	7,376.74	21.86	24.87	0.06	1,000.02	318.54	248.77	212.33	36.44	6.828	
7,470.00	7,406.74	7,526.20	7,406.74	21.91	24.91	0.06	1,000.02	318.54	248.77	212.21	36.55	6.806	
7,500.00	7,436.74	7,556.20	7,436.74	21.96	24.95	0.06	1,000.02	318.54	248.77	212.10	36.67	6.784	
7,530.00	7,466.74	7,586.20	7,466.74	22.01	25.00	0.06	1,000.02	318.54	248.77	211.98	36.79	6.762	
7,560.00	7,496.74	7,616.20	7,496.74	22.05	25.04	0.06	1,000.02	318.54	248.77	211.86	36.91	6.740	
7,590.00	7,526.74	7,646.20	7,526.74	22.10	25.08	0.06	1,000.02	318.54	248.77	211.74	37.02	6.719	
7,620.00	7,556.74	7,676.20	7,556.74	22.15	25.12	0.06	1,000.02	318.54	248.77	211.62	37.14	6.698	
7,650.00	7,586.74	7,706.20	7,586.74	22.20	25.17	0.06	1,000.02	318.54	248.77	211.50	37.26	6.676	
7,680.00	7,616.74	7,736.20	7,616.74	22.25	25.21	0.06	1,000.02	318.54	248.77	211.39	37.38	6.655	
7,710.00	7,646.74	7,766.20	7,646.74	22.30	25.25	0.06	1,000.02	318.54	248.77	211.27	37.50	6.634	
7,740.00	7,676.74	7,796.20	7,676.74	22.35	25.30	0.06	1,000.02	318.54	248.77	211.15	37.62	6.613	
7,743.26	7,680.00	7,799.46	7,680.00	22.35	25.30	0.06	1,000.02	318.54	248.77	211.14	37.63	6.611	



# Archer

## Anticollision Report



<b>Company:</b>	Piceance Energy, LLC	<b>Local Co-ordinate Reference:</b>	Well Gunderson 29-07E
<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 29-07E	<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 29-14E - 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	174.16	-11.07	1.13	11.13					
30.00	30.00	30.00	30.00	0.01	0.03	174.16	-11.07	1.13	11.13	11.10	0.03	343.875		
60.00	60.00	60.00	60.00	0.04	0.05	174.16	-11.07	1.13	11.13	11.04	0.09	121.368		
90.00	90.00	90.00	90.00	0.07	0.08	174.16	-11.07	1.13	11.13	10.98	0.15	73.688		
120.00	120.00	120.00	120.00	0.13	0.13	174.16	-11.07	1.13	11.13	10.87	0.26	42.688		
150.00	150.00	150.00	150.00	0.20	0.20	174.16	-11.07	1.13	11.13	10.73	0.40	28.135		
180.00	180.00	180.00	180.00	0.27	0.27	174.16	-11.07	1.13	11.13	10.60	0.53	20.982 CC		
189.45	189.45	189.45	189.45	0.29	0.29	174.17	-11.07	1.13	11.13	10.56	0.57	19.432		
210.00	210.00	209.96	209.96	0.33	0.33	174.18	-11.09	1.14	11.16	10.50	0.66	16.823 ES		
240.00	240.00	239.84	239.84	0.40	0.39	174.54	-11.34	1.22	11.65	10.85	0.79	14.660		
270.00	269.99	269.70	269.69	0.47	0.45	175.22	-11.88	1.39	12.71	11.79	0.93	13.718		
300.00	299.98	299.52	299.50	0.54	0.51	176.08	-12.72	1.66	14.37	13.31	1.06	13.550 SF		
330.00	329.96	329.28	329.23	0.61	0.58	176.97	-13.85	2.03	16.60	15.40	1.20	13.849		
360.00	359.92	358.96	358.88	0.68	0.64	177.81	-15.27	2.48	19.42	18.09	1.34	14.520		
390.00	389.86	388.56	388.42	0.75	0.70	178.55	-16.98	3.03	22.83	21.35	1.48	15.461		
420.00	419.78	418.04	417.83	0.82	0.77	179.18	-18.97	3.68	26.81	25.20	1.62	16.557		
450.00	449.68	447.41	447.10	0.89	0.84	179.72	-21.23	4.41	31.38	29.61	1.76	17.785		
480.00	479.55	476.63	476.20	0.97	0.91	-179.83	-23.78	5.22	36.52	34.61	1.91	19.134		
510.00	509.40	505.71	505.13	1.04	0.98	-179.44	-26.58	6.13	42.23	40.18	2.05	20.561		
540.00	539.20	534.61	533.85	1.13	1.07	-179.11	-29.65	7.12	48.51	46.31	2.20	22.022		
570.00	568.97	563.32	562.35	1.21	1.15	-178.83	-32.97	8.19	55.35	53.00	2.35	23.548		
600.00	598.70	591.84	590.62	1.30	1.23	-178.58	-36.54	9.33	62.75	60.26	2.50	25.126		
630.00	628.39	620.14	618.64	1.39	1.32	-178.36	-40.34	10.56	70.71	68.06	2.65	26.700		
660.00	658.03	648.22	646.39	1.48	1.42	-178.16	-44.38	11.86	79.21	76.41	2.80	28.313		
690.00	687.65	676.10	673.92	1.58	1.51	-178.02	-48.64	13.23	88.09	85.15	2.94	29.940		
720.00	717.26	703.83	701.24	1.68	1.61	-177.96	-53.14	14.68	97.23	94.14	3.09	31.487		
750.00	746.88	731.40	728.36	1.79	1.71	-177.95	-57.85	16.20	106.63	103.40	3.24	32.949		
780.00	776.50	758.80	755.26	1.89	1.82	-177.98	-62.78	17.79	116.29	112.91	3.38	34.365		
810.00	806.12	786.02	781.95	1.99	1.92	-178.05	-67.93	19.44	126.20	122.67	3.53	35.732		
840.00	835.74	814.20	809.53	2.09	2.04	-178.15	-73.39	21.20	136.26	132.57	3.69	36.929		
870.00	865.36	842.46	837.20	2.20	2.16	-178.24	-78.88	22.97	146.32	142.49	3.83	38.162		
900.00	894.98	870.73	864.87	2.30	2.27	-178.32	-84.36	24.74	156.38	152.40	3.98	39.303		
930.00	924.60	898.99	892.54	2.41	2.39	-178.39	-89.84	26.50	166.44	162.31	4.13	40.347		
960.00	954.22	927.25	920.21	2.51	2.51	-178.45	-95.33	28.27	176.50	172.23	4.27	41.310		
990.00	983.84	955.51	947.88	2.62	2.63	-178.50	-100.81	30.03	186.56	182.14	4.42	42.206		
1,020.00	1,013.46	983.78	975.55	2.72	2.76	-178.55	-106.29	31.80	196.62	192.05	4.57	43.033		
1,050.00	1,043.08	1,012.04	1,003.21	2.83	2.88	-178.60	-111.78	33.57	206.68	201.96	4.72	43.802		
1,080.00	1,072.70	1,040.30	1,030.88	2.94	3.00	-178.64	-117.26	35.33	216.74	211.87	4.87	44.522		
1,110.00	1,102.31	1,068.56	1,058.55	3.04	3.12	-178.67	-122.74	37.10	226.80	221.78	5.02	45.191		
1,140.00	1,131.93	1,096.82	1,086.22	3.15	3.25	-178.71	-128.23	38.86	236.86	231.69	5.17	45.812		
1,170.00	1,161.55	1,125.09	1,113.89	3.26	3.37	-178.74	-133.71	40.63	246.92	241.60	5.32	46.402		
1,200.00	1,191.17	1,153.35	1,141.56	3.36	3.49	-178.77	-139.19	42.40	256.99	251.51	5.47	46.960		
1,230.00	1,220.79	1,181.61	1,169.23	3.47	3.62	-178.79	-144.68	44.16	267.05	261.42	5.62	47.475		
1,260.00	1,250.41	1,209.87	1,196.90	3.58	3.74	-178.82	-150.16	45.93	277.11	271.33	5.78	47.982		
1,290.00	1,280.03	1,238.14	1,224.57	3.69	3.87	-178.84	-155.64	47.69	287.17	281.24	5.93	48.439		
1,320.00	1,309.65	1,266.40	1,252.24	3.80	3.99	-178.86	-161.13	49.46	297.23	291.15	6.08	48.849		
1,350.00	1,339.27	1,294.66	1,279.90	3.90	4.12	-178.88	-166.61	51.23	307.29	301.05	6.24	49.262		
1,380.00	1,368.89	1,322.92	1,307.57	4.01	4.24	-178.90	-172.10	52.99	317.35	310.96	6.39	49.647		
1,410.00	1,398.51	1,351.19	1,335.24	4.12	4.37	-178.92	-177.58	54.76	327.41	320.87	6.55	50.012		
1,440.00	1,428.13	1,379.45	1,362.91	4.23	4.49	-178.93	-183.06	56.52	337.48	330.77	6.70	50.365		
1,470.00	1,457.75	1,407.71	1,390.58	4.34	4.62	-178.95	-188.55	58.29	347.54	340.68	6.85	50.701		
1,500.00	1,487.36	1,435.97	1,418.25	4.44	4.74	-178.96	-194.03	60.06	357.60	350.59	7.01	51.014		

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 29-07E
<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 29-07E	<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 29-14E - 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	1,516.98	1,464.24	1,445.92	4.55	4.87	-178.97	-199.51	61.82	367.66	360.50	7.16	51.315		
1,560.00	1,546.60	1,492.50	1,473.59	4.66	4.99	-178.99	-205.00	63.59	377.72	370.40	7.32	51.604		
1,590.00	1,576.22	1,520.76	1,501.26	4.77	5.12	-179.00	-210.48	65.35	387.78	380.31	7.47	51.877		
1,620.00	1,605.84	1,549.02	1,528.93	4.88	5.24	-179.01	-215.96	67.12	397.84	390.21	7.63	52.138		
1,650.00	1,635.46	1,577.28	1,556.59	4.99	5.37	-179.02	-221.45	68.89	407.91	400.12	7.79	52.389		
1,680.00	1,665.08	1,605.55	1,584.26	5.09	5.50	-179.03	-226.93	70.65	417.97	410.03	7.94	52.630		
1,710.00	1,694.70	1,633.81	1,611.93	5.20	5.62	-179.04	-232.41	72.42	428.03	419.93	8.10	52.858		
1,740.00	1,724.32	1,662.07	1,639.60	5.31	5.75	-179.05	-237.90	74.18	438.09	429.84	8.25	53.078		
1,770.00	1,753.94	1,690.33	1,667.27	5.42	5.87	-179.06	-243.38	75.95	448.15	439.74	8.41	53.290		
1,800.00	1,783.56	1,718.60	1,694.94	5.53	6.00	-179.07	-248.86	77.72	458.21	449.65	8.57	53.492		
1,830.00	1,813.18	1,746.86	1,722.61	5.64	6.13	-179.08	-254.35	79.48	468.27	459.55	8.72	53.687		
1,860.00	1,842.80	1,775.12	1,750.28	5.75	6.25	-179.09	-259.83	81.25	478.34	469.46	8.88	53.874		
1,890.00	1,872.41	1,803.38	1,777.95	5.86	6.38	-179.10	-265.31	83.01	488.40	479.36	9.04	54.055		
1,920.00	1,902.03	1,831.65	1,805.62	5.97	6.51	-179.10	-270.80	84.78	498.46	489.27	9.19	54.228		
1,950.00	1,931.65	1,859.91	1,833.28	6.07	6.63	-179.11	-276.28	86.55	508.52	499.17	9.35	54.395		
1,980.00	1,961.27	1,888.17	1,860.95	6.18	6.76	-179.12	-281.76	88.31	518.58	509.08	9.51	54.557		
2,010.00	1,990.89	1,916.43	1,888.62	6.29	6.88	-179.12	-287.25	90.08	528.64	518.98	9.66	54.712		
2,040.00	2,020.51	1,944.70	1,916.29	6.40	7.01	-179.13	-292.73	91.84	538.71	528.89	9.82	54.862		
2,070.00	2,050.13	1,972.96	1,943.96	6.51	7.14	-179.14	-298.22	93.61	548.77	538.79	9.98	55.007		
2,100.00	2,079.75	2,001.22	1,971.63	6.62	7.26	-179.14	-303.70	95.38	558.83	548.70	10.13	55.148		
2,130.00	2,109.37	2,029.48	1,999.30	6.73	7.39	-179.15	-309.18	97.14	568.89	558.60	10.29	55.283		
2,160.00	2,138.99	2,057.74	2,026.97	6.84	7.52	-179.15	-314.67	98.91	578.95	568.50	10.45	55.414		
2,190.00	2,168.61	2,086.01	2,054.64	6.95	7.64	-179.16	-320.15	100.67	589.01	578.41	10.60	55.541		
2,220.00	2,198.23	2,114.27	2,082.31	7.06	7.77	-179.16	-325.63	102.44	599.08	588.31	10.76	55.664		
2,250.00	2,227.85	2,142.53	2,109.97	7.16	7.90	-179.17	-331.12	104.21	609.14	598.22	10.92	55.783		
2,280.00	2,257.47	2,170.79	2,137.64	7.27	8.02	-179.17	-336.60	105.97	619.20	608.12	11.08	55.899		
2,310.00	2,287.08	2,199.06	2,165.31	7.38	8.15	-179.18	-342.08	107.74	629.26	618.03	11.23	56.011		
2,340.00	2,316.70	2,227.32	2,192.98	7.49	8.28	-179.18	-347.57	109.50	639.32	627.93	11.39	56.119		
2,370.00	2,346.32	2,255.58	2,220.65	7.60	8.40	-179.19	-353.05	111.27	649.38	637.83	11.55	56.225		
2,400.00	2,375.94	2,283.84	2,248.32	7.71	8.53	-179.19	-358.53	113.04	659.45	647.74	11.71	56.327		
2,430.00	2,405.56	2,312.11	2,275.99	7.82	8.66	-179.19	-364.02	114.80	669.51	657.64	11.87	56.427		
2,460.00	2,435.18	2,340.37	2,303.66	7.93	8.78	-179.20	-369.50	116.57	679.57	667.55	12.02	56.523		
2,490.00	2,464.80	2,368.63	2,331.33	8.04	8.91	-179.20	-374.98	118.33	689.63	677.45	12.18	56.617		
2,520.00	2,494.42	2,396.89	2,358.99	8.15	9.04	-179.21	-380.47	120.10	699.69	687.35	12.34	56.709		
2,550.00	2,524.04	2,425.16	2,386.66	8.26	9.17	-179.21	-385.95	121.87	709.75	697.26	12.50	56.797		
2,580.00	2,553.66	2,453.42	2,414.33	8.36	9.29	-179.21	-391.43	123.63	719.82	707.16	12.65	56.884		
2,610.00	2,583.28	2,481.68	2,442.00	8.47	9.42	-179.22	-396.92	125.40	729.88	717.07	12.81	56.968		
2,640.00	2,612.90	2,509.94	2,469.67	8.58	9.55	-179.22	-402.40	127.16	739.94	726.97	12.97	57.050		
2,670.00	2,642.52	2,538.20	2,497.34	8.69	9.67	-179.22	-407.88	128.93	750.00	736.87	13.13	57.130		
2,700.00	2,672.13	2,566.47	2,525.01	8.80	9.80	-179.23	-413.37	130.70	760.06	746.78	13.29	57.207		
2,730.00	2,701.75	2,594.73	2,552.68	8.91	9.93	-179.23	-418.85	132.46	770.12	756.68	13.44	57.283		
2,760.00	2,731.37	2,622.99	2,580.35	9.02	10.05	-179.23	-424.34	134.23	780.19	766.58	13.60	57.357		
2,790.00	2,760.99	2,651.25	2,608.02	9.13	10.18	-179.24	-429.82	135.99	790.25	776.49	13.76	57.429		
2,820.00	2,790.61	2,679.52	2,635.68	9.24	10.31	-179.24	-435.30	137.76	800.31	786.39	13.92	57.500		
2,850.00	2,820.23	2,707.78	2,663.35	9.35	10.43	-179.24	-440.79	139.53	810.37	796.29	14.08	57.568		
2,880.00	2,849.85	2,736.04	2,691.02	9.46	10.56	-179.24	-446.27	141.29	820.43	806.20	14.23	57.635		
2,910.00	2,879.47	2,764.30	2,718.69	9.57	10.69	-179.25	-451.75	143.06	830.49	816.10	14.39	57.701		
2,940.00	2,909.09	2,792.57	2,746.36	9.68	10.82	-179.25	-457.24	144.82	840.56	826.01	14.55	57.765		
2,970.00	2,938.71	2,820.83	2,774.03	9.79	10.94	-179.25	-462.72	146.59	850.62	835.91	14.71	57.827		
3,000.00	2,968.33	2,849.09	2,801.70	9.89	11.07	-179.25	-468.20	148.36	860.68	845.81	14.87	57.888		
3,030.00	2,997.95	2,877.35	2,829.37	10.00	11.20	-179.26	-473.69	150.12	870.74	855.72	15.03	57.948		
3,060.00	3,027.57	2,905.62	2,857.04	10.11	11.32	-179.26	-479.17	151.89	880.80	865.62	15.18	58.006		

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 29-07E
<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 29-07E	<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 29-14E - 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	3,057.18	2,933.88	2,884.71	10.22	11.45	-179.26	-484.65	153.65	890.87	875.52	15.34	58.063		
3,120.00	3,086.80	2,962.14	2,912.37	10.33	11.58	-179.26	-490.14	155.42	900.93	885.43	15.50	58.119		
3,150.00	3,116.42	2,990.40	2,940.04	10.44	11.70	-179.27	-495.62	157.19	910.99	895.33	15.66	58.173		
3,180.00	3,146.04	3,018.66	2,967.71	10.55	11.83	-179.27	-501.10	158.95	921.05	905.23	15.82	58.227		
3,210.00	3,175.66	3,046.93	2,995.38	10.66	11.96	-179.27	-506.59	160.72	931.11	915.14	15.98	58.279		
3,240.00	3,205.28	3,075.19	3,023.05	10.77	12.09	-179.27	-512.07	162.48	941.17	925.04	16.14	58.330		
3,270.00	3,234.90	3,103.45	3,050.72	10.88	12.21	-179.27	-517.55	164.25	951.24	934.94	16.29	58.380		
3,300.00	3,264.52	3,131.71	3,078.39	10.99	12.34	-179.28	-523.04	166.02	961.30	944.85	16.45	58.429		
3,330.00	3,294.14	3,159.98	3,106.06	11.10	12.47	-179.28	-528.52	167.78	971.36	954.75	16.61	58.477		
3,360.00	3,323.76	3,188.24	3,133.73	11.21	12.59	-179.28	-534.00	169.55	981.42	964.65	16.77	58.524		
3,390.00	3,353.38	3,216.50	3,161.40	11.32	12.72	-179.28	-539.49	171.31	991.48	974.55	16.93	58.570		
3,420.00	3,383.00	3,244.76	3,189.06	11.43	12.85	-179.28	-544.97	173.08	1,001.54	984.46	17.09	58.615		
3,450.00	3,412.62	3,273.03	3,216.73	11.54	12.98	-179.29	-550.46	174.85	1,011.61	994.36	17.25	58.660		
3,480.00	3,442.23	3,301.29	3,244.40	11.64	13.10	-179.29	-555.94	176.61	1,021.67	1,004.26	17.40	58.703		
3,510.00	3,471.85	3,329.55	3,272.07	11.75	13.23	-179.29	-561.42	178.38	1,031.73	1,014.17	17.56	58.745		
3,540.00	3,501.47	3,357.81	3,299.74	11.86	13.36	-179.29	-566.91	180.14	1,041.79	1,024.07	17.72	58.787		
3,570.00	3,531.09	3,386.08	3,327.41	11.97	13.48	-179.29	-572.39	181.91	1,051.85	1,033.97	17.88	58.828		
3,600.00	3,560.71	3,414.34	3,355.08	12.08	13.61	-179.29	-577.87	183.68	1,061.91	1,043.88	18.04	58.868		
3,630.00	3,590.33	3,442.60	3,382.75	12.19	13.74	-179.30	-583.36	185.44	1,071.98	1,053.78	18.20	58.908		
3,660.00	3,619.95	3,470.86	3,410.42	12.30	13.87	-179.30	-588.84	187.21	1,082.04	1,063.68	18.36	58.946		
3,690.00	3,649.57	3,499.12	3,438.09	12.41	13.99	-179.30	-594.32	188.97	1,092.10	1,073.59	18.52	58.984		
3,720.00	3,679.19	3,527.39	3,465.75	12.52	14.12	-179.30	-599.81	190.74	1,102.16	1,083.49	18.67	59.021		
3,750.00	3,708.81	3,555.65	3,493.42	12.63	14.25	-179.30	-605.29	192.51	1,112.22	1,093.39	18.83	59.058		
3,780.00	3,738.43	3,583.91	3,521.09	12.74	14.37	-179.30	-610.77	194.27	1,122.29	1,103.29	18.99	59.094		
3,810.00	3,768.05	3,612.17	3,548.76	12.85	14.50	-179.30	-616.26	196.04	1,132.35	1,113.20	19.15	59.129		
3,840.00	3,797.67	3,640.44	3,576.43	12.96	14.63	-179.31	-621.74	197.80	1,142.41	1,123.10	19.31	59.164		
3,870.00	3,827.28	3,668.70	3,604.10	13.07	14.76	-179.31	-627.22	199.57	1,152.47	1,133.00	19.47	59.198		
3,900.00	3,856.90	3,696.96	3,631.77	13.18	14.88	-179.31	-632.71	201.34	1,162.53	1,142.91	19.63	59.231		
3,930.00	3,886.52	3,725.22	3,659.44	13.29	15.01	-179.31	-638.19	203.10	1,172.59	1,152.81	19.79	59.264		
3,960.00	3,916.14	3,753.49	3,687.11	13.40	15.14	-179.31	-643.67	204.87	1,182.66	1,162.71	19.94	59.296		
3,990.00	3,945.76	3,781.75	3,714.78	13.50	15.26	-179.31	-649.16	206.63	1,192.72	1,172.61	20.10	59.328		
4,020.00	3,975.38	3,810.01	3,742.44	13.61	15.39	-179.31	-654.64	208.40	1,202.78	1,182.52	20.26	59.359		
4,050.00	4,005.00	3,838.27	3,770.11	13.72	15.52	-179.31	-660.12	210.17	1,212.84	1,192.42	20.42	59.390		
4,080.00	4,034.62	3,866.54	3,797.78	13.83	15.65	-179.32	-665.61	211.93	1,222.90	1,202.32	20.58	59.420		
4,110.00	4,064.24	3,894.80	3,825.45	13.94	15.77	-179.32	-671.09	213.70	1,232.96	1,212.23	20.74	59.450		
4,140.00	4,093.86	3,923.06	3,853.12	14.05	15.90	-179.32	-676.58	215.46	1,243.03	1,222.13	20.90	59.479		
4,170.00	4,123.48	3,951.32	3,880.79	14.16	16.03	-179.32	-682.06	217.23	1,253.09	1,232.03	21.06	59.508		
4,200.00	4,153.10	3,979.58	3,908.46	14.27	16.15	-179.32	-687.54	219.00	1,263.15	1,241.93	21.22	59.536		
4,230.00	4,182.72	4,007.85	3,936.13	14.38	16.28	-179.32	-693.03	220.76	1,273.21	1,251.84	21.38	59.564		
4,260.00	4,212.33	4,036.11	3,963.80	14.49	16.41	-179.32	-698.51	222.53	1,283.27	1,261.74	21.53	59.591		
4,290.00	4,241.95	4,064.37	3,991.47	14.60	16.54	-179.32	-703.99	224.29	1,293.34	1,271.64	21.69	59.618		
4,320.00	4,271.57	4,092.63	4,019.13	14.71	16.66	-179.32	-709.48	226.06	1,303.40	1,281.54	21.85	59.644		
4,350.00	4,301.19	4,120.90	4,046.80	14.82	16.79	-179.33	-714.96	227.83	1,313.46	1,291.45	22.01	59.670		
4,380.00	4,330.81	4,149.16	4,074.47	14.93	16.92	-179.33	-720.44	229.59	1,323.52	1,301.35	22.17	59.696		
4,410.00	4,360.43	4,177.42	4,102.14	15.04	17.05	-179.33	-725.93	231.36	1,333.58	1,311.25	22.33	59.721		
4,440.00	4,390.05	4,205.68	4,129.81	15.15	17.17	-179.33	-731.41	233.12	1,343.64	1,321.15	22.49	59.746		
4,470.00	4,419.67	4,233.95	4,157.48	15.26	17.30	-179.33	-736.89	234.89	1,353.71	1,331.06	22.65	59.770		
4,500.00	4,449.29	4,262.21	4,185.15	15.37	17.43	-179.33	-742.38	236.66	1,363.77	1,340.96	22.81	59.794		
4,530.00	4,478.91	4,290.47	4,212.82	15.48	17.55	-179.33	-747.86	238.42	1,373.83	1,350.86	22.97	59.818		
4,560.00	4,508.53	4,318.73	4,240.49	15.58	17.68	-179.33	-753.34	240.19	1,383.89	1,360.77	23.13	59.841		
4,590.00	4,538.15	4,347.00	4,268.16	15.69	17.81	-179.33	-758.83	241.95	1,393.95	1,370.67	23.29	59.864		
4,620.00	4,567.77	4,375.26	4,295.82	15.80	17.94	-179.33	-764.31	243.72	1,404.01	1,380.57	23.44	59.887		

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 29-07E
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 29-07E	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 29-14E - 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	4,597.38	4,403.52	4,323.49	15.91	18.06	-179.34	-769.79	245.49	1,414.08	1,390.47	23.60	59.909		
4,680.00	4,627.00	4,431.78	4,351.16	16.02	18.19	-179.34	-775.28	247.25	1,424.14	1,400.38	23.76	59.931		
4,710.00	4,656.62	4,460.04	4,378.83	16.13	18.32	-179.34	-780.76	249.02	1,434.20	1,410.28	23.92	59.953		
4,740.00	4,686.24	4,488.31	4,406.50	16.24	18.44	-179.34	-786.24	250.78	1,444.26	1,420.18	24.08	59.974		
4,770.00	4,715.86	4,516.57	4,434.17	16.35	18.57	-179.34	-791.73	252.55	1,454.32	1,430.08	24.24	59.995		
4,800.00	4,745.48	4,544.83	4,461.84	16.46	18.70	-179.34	-797.21	254.32	1,464.39	1,439.99	24.40	60.016		
4,830.00	4,775.10	4,573.09	4,489.51	16.57	18.83	-179.34	-802.70	256.08	1,474.45	1,449.89	24.56	60.036		
4,860.00	4,804.72	4,601.36	4,517.18	16.68	18.95	-179.34	-808.18	257.85	1,484.51	1,459.79	24.72	60.056		
4,890.00	4,834.34	4,629.62	4,544.85	16.79	19.08	-179.34	-813.66	259.61	1,494.57	1,469.69	24.88	60.076		
4,920.00	4,863.96	4,657.88	4,572.51	16.90	19.21	-179.34	-819.15	261.38	1,504.63	1,479.60	25.04	60.096		
4,950.00	4,893.58	4,686.14	4,600.18	17.01	19.34	-179.34	-824.63	263.15	1,514.69	1,489.50	25.20	60.115		
4,980.00	4,923.20	4,714.41	4,627.85	17.12	19.46	-179.34	-830.11	264.91	1,524.76	1,499.40	25.36	60.134		
5,010.00	4,952.82	4,742.67	4,655.52	17.23	19.59	-179.35	-835.60	266.68	1,534.82	1,509.30	25.52	60.153		
5,040.00	4,982.43	4,770.93	4,683.19	17.34	19.72	-179.35	-841.08	268.44	1,544.88	1,519.20	25.67	60.171		
5,070.00	5,012.05	4,799.19	4,710.86	17.45	19.84	-179.35	-846.56	270.21	1,554.94	1,529.11	25.83	60.189		
5,100.00	5,041.67	4,827.45	4,738.53	17.56	19.97	-179.35	-852.05	271.98	1,565.00	1,539.01	25.99	60.207		
5,130.00	5,071.29	4,855.72	4,766.20	17.67	20.10	-179.35	-857.53	273.74	1,575.06	1,548.91	26.15	60.225		
5,160.00	5,100.91	4,883.98	4,793.87	17.77	20.23	-179.35	-863.01	275.51	1,585.13	1,558.81	26.31	60.242		
5,190.00	5,130.53	4,912.24	4,821.54	17.88	20.35	-179.35	-868.50	277.27	1,595.19	1,568.72	26.47	60.260		
5,220.00	5,160.15	4,940.50	4,849.20	17.99	20.48	-179.35	-873.98	279.04	1,605.25	1,578.62	26.63	60.277		
5,250.00	5,189.77	4,968.77	4,876.87	18.10	20.61	-179.35	-879.46	280.81	1,615.31	1,588.52	26.79	60.293		
5,280.00	5,219.39	4,997.03	4,904.54	18.21	20.74	-179.35	-884.95	282.57	1,625.37	1,598.42	26.95	60.310		
5,310.00	5,249.01	5,025.29	4,932.21	18.32	20.86	-179.35	-890.43	284.34	1,635.44	1,608.33	27.11	60.326		
5,340.00	5,278.63	5,053.55	4,959.88	18.43	20.99	-179.35	-895.91	286.10	1,645.50	1,618.22	27.27	60.334		
5,370.00	5,308.28	5,081.88	4,987.61	18.52	21.12	-179.36	-901.41	287.87	1,655.59	1,627.93	27.46	60.280		
5,400.00	5,337.97	5,110.29	5,015.43	18.62	21.25	-179.36	-906.92	289.65	1,665.01	1,637.36	27.65	60.220		
5,430.00	5,367.71	5,138.80	5,043.33	18.69	21.37	-179.38	-912.45	291.43	1,674.35	1,646.53	27.82	60.181		
5,460.00	5,397.49	5,167.39	5,071.32	18.77	21.50	-179.39	-918.00	293.22	1,683.42	1,655.43	27.99	60.137		
5,490.00	5,427.31	5,196.06	5,099.40	18.84	21.63	-179.41	-923.56	295.01	1,692.22	1,664.05	28.16	60.087		
5,520.00	5,457.15	5,224.82	5,127.55	18.91	21.76	-179.44	-929.14	296.80	1,700.74	1,672.41	28.33	60.039		
5,550.00	5,487.03	5,266.67	5,168.54	18.97	21.93	-179.49	-937.18	299.39	1,708.94	1,680.42	28.52	59.926		
5,580.00	5,516.94	5,334.02	5,234.73	19.04	22.15	-179.59	-949.00	303.20	1,716.36	1,687.60	28.75	59.698		
5,610.00	5,546.86	5,402.27	5,302.09	19.10	22.34	-179.68	-959.47	306.57	1,722.84	1,693.87	28.97	59.470		
5,640.00	5,576.81	5,471.31	5,370.47	19.15	22.51	-179.76	-968.50	309.48	1,728.36	1,699.19	29.18	59.240		
5,670.00	5,606.78	5,541.02	5,439.73	19.20	22.66	-179.82	-976.03	311.90	1,732.92	1,703.55	29.38	58.992		
5,700.00	5,636.76	5,611.28	5,509.71	19.25	22.79	-179.87	-981.99	313.82	1,736.51	1,706.94	29.57	58.729		
5,730.00	5,666.74	5,681.96	5,580.24	19.29	22.91	-179.91	-986.33	315.22	1,739.10	1,709.36	29.75	58.465		
5,760.00	5,696.74	5,752.93	5,651.15	19.33	23.00	-179.93	-989.03	316.09	1,740.71	1,710.79	29.91	58.191		
5,790.00	5,726.74	5,824.05	5,722.27	19.37	23.09	-179.94	-990.05	316.42	1,741.31	1,711.24	30.08	57.892		
5,820.00	5,756.74	5,895.53	5,796.74	19.41	23.12	-179.94	-990.06	316.42	1,741.32	1,711.13	30.19	57.682		
5,850.00	5,786.74	5,966.53	5,867.74	19.46	23.16	-179.94	-990.06	316.42	1,741.32	1,711.03	30.29	57.484		
5,880.00	5,816.74	6,037.53	5,938.74	19.50	23.19	-179.94	-990.06	316.42	1,741.32	1,710.93	30.39	57.291		
5,910.00	5,846.74	6,108.53	6,009.74	19.54	23.21	-179.94	-990.06	316.42	1,741.32	1,710.83	30.49	57.103		
5,940.00	5,876.74	6,179.53	6,080.74	19.58	23.24	-179.94	-990.06	316.42	1,741.32	1,710.73	30.59	56.916		
5,970.00	5,906.74	6,250.53	6,151.74	19.62	23.27	-179.94	-990.06	316.42	1,741.32	1,710.62	30.70	56.730		
6,000.00	5,936.74	6,321.53	6,222.74	19.67	23.30	-179.94	-990.06	316.42	1,741.32	1,710.52	30.80	56.544		
6,030.00	5,966.74	6,392.53	6,293.74	19.71	23.33	-179.94	-990.06	316.42	1,741.32	1,710.42	30.90	56.359		
6,060.00	5,996.74	6,463.53	6,364.74	19.75	23.36	-179.94	-990.06	316.42	1,741.32	1,710.32	31.00	56.175		
6,090.00	6,026.74	6,534.53	6,435.74	19.80	23.39	-179.94	-990.06	316.42	1,741.32	1,710.22	31.10	55.991		
6,120.00	6,056.74	6,605.53	6,506.74	19.84	23.42	-179.94	-990.06	316.42	1,741.32	1,710.12	31.20	55.808		
6,150.00	6,086.74	6,676.53	6,577.74	19.88	23.45	-179.94	-990.06	316.42	1,741.32	1,710.02	31.30	55.626		
6,180.00	6,116.74	6,747.53	6,648.74	19.93	23.47	-179.94	-990.06	316.42	1,741.32	1,709.91	31.41	55.445		

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 29-07E
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 29-07E	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 29-14E - 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	6,146.74	6,248.53	6,146.74	19.97	23.50	-179.94	-990.06	316.42	1,741.32	1,709.81	31.51	55.264		
6,240.00	6,176.74	6,278.53	6,176.74	20.01	23.53	-179.94	-990.06	316.42	1,741.32	1,709.71	31.61	55.084		
6,270.00	6,206.74	6,308.53	6,206.74	20.06	23.56	-179.94	-990.06	316.42	1,741.32	1,709.60	31.71	54.906		
6,300.00	6,236.74	6,338.53	6,236.74	20.10	23.59	-179.94	-990.06	316.42	1,741.32	1,709.50	31.82	54.727		
6,330.00	6,266.74	6,368.53	6,266.74	20.14	23.62	-179.94	-990.06	316.42	1,741.32	1,709.40	31.92	54.550		
6,360.00	6,296.74	6,398.53	6,296.74	20.19	23.65	-179.94	-990.06	316.42	1,741.32	1,709.29	32.03	54.373		
6,390.00	6,326.74	6,428.53	6,326.74	20.23	23.69	-179.94	-990.06	316.42	1,741.32	1,709.19	32.13	54.197		
6,420.00	6,356.74	6,458.53	6,356.74	20.28	23.72	-179.94	-990.06	316.42	1,741.32	1,709.09	32.23	54.022		
6,450.00	6,386.74	6,488.53	6,386.74	20.32	23.75	-179.94	-990.06	316.42	1,741.32	1,708.98	32.34	53.848		
6,480.00	6,416.74	6,518.53	6,416.74	20.37	23.78	-179.94	-990.06	316.42	1,741.32	1,708.88	32.44	53.674		
6,510.00	6,446.74	6,548.53	6,446.74	20.41	23.81	-179.94	-990.06	316.42	1,741.32	1,708.77	32.55	53.501		
6,540.00	6,476.74	6,578.53	6,476.74	20.46	23.84	-179.94	-990.06	316.42	1,741.32	1,708.67	32.65	53.329		
6,570.00	6,506.74	6,608.53	6,506.74	20.50	23.87	-179.94	-990.06	316.42	1,741.32	1,708.56	32.76	53.158		
6,600.00	6,536.74	6,638.53	6,536.74	20.55	23.90	-179.94	-990.06	316.42	1,741.32	1,708.46	32.86	52.987		
6,630.00	6,566.74	6,668.53	6,566.74	20.59	23.94	-179.94	-990.06	316.42	1,741.32	1,708.35	32.97	52.817		
6,660.00	6,596.74	6,698.53	6,596.74	20.64	23.97	-179.94	-990.06	316.42	1,741.32	1,708.24	33.07	52.648		
6,690.00	6,626.74	6,728.53	6,626.74	20.68	24.00	-179.94	-990.06	316.42	1,741.32	1,708.14	33.18	52.479		
6,720.00	6,656.74	6,758.53	6,656.74	20.73	24.03	-179.94	-990.06	316.42	1,741.32	1,708.03	33.29	52.312		
6,750.00	6,686.74	6,788.53	6,686.74	20.78	24.06	-179.94	-990.06	316.42	1,741.32	1,707.93	33.39	52.145		
6,780.00	6,716.74	6,818.53	6,716.74	20.82	24.10	-179.94	-990.06	316.42	1,741.32	1,707.82	33.50	51.979		
6,810.00	6,746.74	6,848.53	6,746.74	20.87	24.13	-179.94	-990.06	316.42	1,741.32	1,707.71	33.61	51.813		
6,840.00	6,776.74	6,878.53	6,776.74	20.91	24.16	-179.94	-990.06	316.42	1,741.32	1,707.61	33.71	51.649		
6,870.00	6,806.74	6,908.53	6,806.74	20.96	24.20	-179.94	-990.06	316.42	1,741.32	1,707.50	33.82	51.485		
6,900.00	6,836.74	6,938.53	6,836.74	21.01	24.23	-179.94	-990.06	316.42	1,741.32	1,707.39	33.93	51.322		
6,930.00	6,866.74	6,968.53	6,866.74	21.05	24.26	-179.94	-990.06	316.42	1,741.32	1,707.28	34.04	51.159		
6,960.00	6,896.74	6,998.53	6,896.74	21.10	24.30	-179.94	-990.06	316.42	1,741.32	1,707.17	34.14	50.998		
6,990.00	6,926.74	7,028.53	6,926.74	21.15	24.33	-179.94	-990.06	316.42	1,741.32	1,707.07	34.25	50.837		
7,020.00	6,956.74	7,058.53	6,956.74	21.19	24.36	-179.94	-990.06	316.42	1,741.32	1,706.96	34.36	50.677		
7,050.00	6,986.74	7,088.53	6,986.74	21.24	24.40	-179.94	-990.06	316.42	1,741.32	1,706.85	34.47	50.517		
7,080.00	7,016.74	7,118.53	7,016.74	21.29	24.43	-179.94	-990.06	316.42	1,741.32	1,706.74	34.58	50.359		
7,110.00	7,046.74	7,148.53	7,046.74	21.33	24.46	-179.94	-990.06	316.42	1,741.32	1,706.63	34.69	50.201		
7,140.00	7,076.74	7,178.53	7,076.74	21.38	24.50	-179.94	-990.06	316.42	1,741.32	1,706.52	34.80	50.043		
7,170.00	7,106.74	7,208.53	7,106.74	21.43	24.53	-179.94	-990.06	316.42	1,741.32	1,706.41	34.91	49.887		
7,200.00	7,136.74	7,238.53	7,136.74	21.48	24.57	-179.94	-990.06	316.42	1,741.32	1,706.30	35.01	49.731		
7,230.00	7,166.74	7,268.53	7,166.74	21.52	24.60	-179.94	-990.06	316.42	1,741.32	1,706.20	35.12	49.576		
7,260.00	7,196.74	7,298.53	7,196.74	21.57	24.64	-179.94	-990.06	316.42	1,741.32	1,706.09	35.23	49.422		
7,290.00	7,226.74	7,328.53	7,226.74	21.62	24.67	-179.94	-990.06	316.42	1,741.32	1,705.98	35.34	49.268		
7,320.00	7,256.74	7,358.53	7,256.74	21.67	24.71	-179.94	-990.06	316.42	1,741.32	1,705.87	35.45	49.115		
7,350.00	7,286.74	7,388.53	7,286.74	21.72	24.74	-179.94	-990.06	316.42	1,741.32	1,705.76	35.56	48.963		
7,380.00	7,316.74	7,418.53	7,316.74	21.76	24.78	-179.94	-990.06	316.42	1,741.32	1,705.65	35.67	48.811		
7,410.00	7,346.74	7,448.53	7,346.74	21.81	24.81	-179.94	-990.06	316.42	1,741.32	1,705.53	35.79	48.661		
7,440.00	7,376.74	7,478.53	7,376.74	21.86	24.85	-179.94	-990.06	316.42	1,741.32	1,705.42	35.90	48.511		
7,470.00	7,406.74	7,508.53	7,406.74	21.91	24.88	-179.94	-990.06	316.42	1,741.32	1,705.31	36.01	48.361		
7,500.00	7,436.74	7,538.53	7,436.74	21.96	24.92	-179.94	-990.06	316.42	1,741.32	1,705.20	36.12	48.213		
7,530.00	7,466.74	7,568.53	7,466.74	22.01	24.96	-179.94	-990.06	316.42	1,741.32	1,705.09	36.23	48.064		
7,560.00	7,496.74	7,598.53	7,496.74	22.05	24.99	-179.94	-990.06	316.42	1,741.32	1,704.98	36.34	47.917		
7,590.00	7,526.74	7,628.53	7,526.74	22.10	25.03	-179.94	-990.06	316.42	1,741.32	1,704.87	36.45	47.771		
7,620.00	7,556.74	7,658.53	7,556.74	22.15	25.06	-179.94	-990.06	316.42	1,741.32	1,704.76	36.56	47.625		
7,650.00	7,586.74	7,688.53	7,586.74	22.20	25.10	-179.94	-990.06	316.42	1,741.32	1,704.64	36.68	47.480		
7,680.00	7,616.74	7,718.53	7,616.74	22.25	25.14	-179.94	-990.06	316.42	1,741.32	1,704.53	36.79	47.335		
7,710.00	7,646.74	7,748.53	7,646.74	22.30	25.17	-179.94	-990.06	316.42	1,741.32	1,704.42	36.90	47.191		
7,740.00	7,676.74	7,778.53	7,676.74	22.35	25.21	-179.94	-990.06	316.42	1,741.32	1,704.31	37.01	47.048		

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 29-07E
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 29-07E	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 29-14E - 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							
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	Warning
7,743.26	7,680.00	7,781.79	7,680.00	22.35	25.22	-179.94	-990.06	316.42	1,741.32	1,704.30	37.02	47.033	



# Archer

## Anticollision Report



<b>Company:</b>	Piceance Energy, LLC	<b>Local Co-ordinate Reference:</b>	Well Gunderson 29-07E
<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 29-07E	<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 29-15E - 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	-141.50	-11.07	-8.81	14.15					
30.00	30.00	30.00	30.00	0.01	0.03	-141.50	-11.07	-8.81	14.15	14.12	0.03	437.115		
60.00	60.00	60.00	60.00	0.04	0.05	-141.50	-11.07	-8.81	14.15	14.06	0.09	154.276		
90.00	90.00	90.00	90.00	0.07	0.08	-141.50	-11.07	-8.81	14.15	14.00	0.15	93.668		
120.00	120.00	120.00	120.00	0.13	0.13	-141.50	-11.07	-8.81	14.15	13.89	0.26	54.263		
150.00	150.00	150.00	150.00	0.20	0.20	-141.50	-11.07	-8.81	14.15	13.75	0.40	35.764		
180.00	180.00	180.00	180.00	0.27	0.27	-141.50	-11.07	-8.81	14.15	13.62	0.53	26.671 CC		
189.45	189.45	189.45	189.45	0.29	0.29	-141.51	-11.07	-8.81	14.15	13.58	0.57	24.700		
210.00	210.00	210.00	210.00	0.33	0.33	-141.52	-11.07	-8.81	14.16	13.50	0.67	21.282 ES		
240.00	240.00	240.00	240.00	0.40	0.40	-141.80	-11.07	-8.81	14.42	13.61	0.80	17.964		
270.00	269.99	269.99	269.99	0.47	0.47	-142.38	-11.07	-8.81	14.97	14.03	0.94	15.929		
300.00	299.98	299.98	299.98	0.54	0.53	-143.19	-11.07	-8.81	15.84	14.76	1.08	14.706		
330.00	329.96	329.96	329.96	0.61	0.60	-144.16	-11.07	-8.81	17.01	15.79	1.22	13.984		
360.00	359.92	359.92	359.92	0.68	0.67	-145.21	-11.07	-8.81	18.49	17.14	1.35	13.648		
390.00	389.86	389.86	389.86	0.75	0.74	-146.27	-11.07	-8.81	20.29	18.79	1.49	13.594 SF		
420.00	419.78	419.78	419.78	0.82	0.80	-147.30	-11.07	-8.81	22.40	20.77	1.63	13.738		
450.00	449.68	449.68	449.68	0.89	0.87	-148.26	-11.07	-8.81	24.82	23.05	1.77	14.028		
480.00	479.55	479.55	479.55	0.97	0.94	-149.14	-11.07	-8.81	27.56	25.66	1.91	14.445		
510.00	509.40	509.40	509.40	1.04	1.01	-149.93	-11.07	-8.81	30.62	28.58	2.05	14.962		
540.00	539.20	539.20	539.20	1.13	1.07	-150.64	-11.07	-8.81	33.99	31.81	2.19	15.546		
570.00	568.97	568.97	568.97	1.21	1.14	-151.27	-11.07	-8.81	37.68	35.36	2.33	16.207		
600.00	598.70	598.70	598.70	1.30	1.21	-151.82	-11.07	-8.81	41.68	39.22	2.46	16.932		
630.00	628.39	628.39	628.39	1.39	1.27	-152.31	-11.07	-8.81	46.00	43.40	2.60	17.683		
660.00	658.03	658.03	658.03	1.48	1.34	-152.75	-11.07	-8.81	50.62	47.88	2.74	18.483		
690.00	687.65	687.65	687.65	1.58	1.41	-153.11	-11.07	-8.81	55.38	52.50	2.87	19.264		
720.00	717.26	717.00	717.00	1.68	1.47	-153.46	-11.12	-8.79	60.17	57.16	3.01	20.010		
750.00	746.88	746.09	746.09	1.79	1.53	-153.91	-11.43	-8.71	65.17	62.03	3.14	20.778		
780.00	776.50	775.11	775.10	1.89	1.58	-154.44	-12.02	-8.56	70.40	67.14	3.27	21.555		
810.00	806.12	804.03	804.00	1.99	1.64	-155.05	-12.90	-8.32	75.87	72.48	3.40	22.339		
840.00	835.74	832.85	832.81	2.09	1.69	-155.70	-14.05	-8.02	81.58	78.05	3.52	23.148		
870.00	865.36	861.58	861.49	2.20	1.75	-156.39	-15.48	-7.64	87.52	83.87	3.65	23.968		
900.00	894.98	890.20	890.06	2.30	1.80	-157.09	-17.17	-7.19	93.71	89.94	3.78	24.799		
930.00	924.60	918.71	918.49	2.41	1.85	-157.80	-19.14	-6.67	100.15	96.24	3.91	25.615		
960.00	954.22	947.10	946.79	2.51	1.91	-158.51	-21.37	-6.08	106.84	102.80	4.04	26.436		
990.00	983.84	975.37	974.95	2.62	1.97	-159.22	-23.86	-5.42	113.77	109.60	4.17	27.265		
1,020.00	1,013.46	1,003.52	1,002.95	2.72	2.02	-159.92	-26.60	-4.70	120.96	116.65	4.31	28.093		
1,050.00	1,043.08	1,031.53	1,030.79	2.83	2.09	-160.61	-29.60	-3.90	128.40	123.96	4.44	28.910		
1,080.00	1,072.70	1,059.41	1,058.47	2.94	2.15	-161.28	-32.84	-3.05	136.09	131.52	4.58	29.736		
1,110.00	1,102.31	1,087.15	1,085.97	3.04	2.22	-161.94	-36.32	-2.12	144.04	139.33	4.71	30.567		
1,140.00	1,131.93	1,114.75	1,113.30	3.15	2.29	-162.57	-40.04	-1.14	152.25	147.40	4.85	31.386		
1,170.00	1,161.55	1,142.20	1,140.45	3.26	2.36	-163.19	-44.00	-0.09	160.71	155.72	4.99	32.205		
1,200.00	1,191.17	1,169.50	1,167.40	3.36	2.44	-163.79	-48.18	1.02	169.42	164.29	5.13	33.035		
1,230.00	1,220.79	1,196.65	1,194.16	3.47	2.51	-164.38	-52.58	2.18	178.39	173.12	5.27	33.862		
1,260.00	1,250.41	1,223.63	1,220.72	3.58	2.60	-164.94	-57.21	3.40	187.61	182.20	5.41	34.688		
1,290.00	1,280.03	1,250.46	1,247.08	3.69	2.68	-165.48	-62.04	4.68	197.08	191.53	5.55	35.497		
1,320.00	1,309.65	1,277.12	1,273.23	3.80	2.77	-166.00	-67.08	6.02	206.80	201.11	5.70	36.311		
1,350.00	1,339.27	1,303.62	1,299.16	3.90	2.86	-166.50	-72.32	7.40	216.78	210.94	5.84	37.132		
1,380.00	1,368.89	1,329.94	1,324.87	4.01	2.96	-166.99	-77.76	8.84	227.00	221.02	5.98	37.934		
1,410.00	1,398.51	1,356.09	1,350.37	4.12	3.06	-167.46	-83.38	10.33	237.47	231.34	6.13	38.741		
1,440.00	1,428.13	1,382.06	1,375.64	4.23	3.15	-167.90	-89.19	11.87	248.19	241.91	6.27	39.552		
1,470.00	1,457.75	1,407.86	1,400.68	4.34	3.26	-168.34	-95.18	13.46	259.15	252.72	6.42	40.359		
1,500.00	1,487.36	1,433.47	1,425.48	4.44	3.37	-168.75	-101.35	15.09	270.35	263.78	6.57	41.154		

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 29-07E
<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 29-07E	<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 29-15E - 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	1,516.98	1,458.90	1,450.06	4.55	3.48	-169.15	-107.68	16.76	281.79	275.07	6.72	41.952		
1,560.00	1,546.60	1,484.15	1,474.39	4.66	3.59	-169.54	-114.17	18.48	293.47	286.60	6.86	42.753		
1,590.00	1,576.22	1,509.21	1,498.49	4.77	3.71	-169.91	-120.82	20.24	305.38	298.37	7.01	43.544		
1,620.00	1,605.84	1,534.08	1,522.35	4.88	3.83	-170.26	-127.62	22.04	317.53	310.36	7.16	44.318		
1,650.00	1,635.46	1,560.18	1,547.33	4.99	3.96	-170.63	-134.94	23.98	329.87	322.56	7.32	45.080		
1,680.00	1,665.08	1,587.43	1,573.39	5.09	4.10	-171.00	-142.60	26.01	342.26	334.79	7.47	45.808		
1,710.00	1,694.70	1,614.67	1,599.46	5.20	4.24	-171.35	-150.26	28.03	354.65	347.03	7.62	46.515		
1,740.00	1,724.32	1,641.91	1,625.53	5.31	4.38	-171.67	-157.92	30.06	367.06	359.28	7.78	47.199		
1,770.00	1,753.94	1,669.16	1,651.59	5.42	4.52	-171.97	-165.58	32.09	379.48	371.55	7.93	47.851		
1,800.00	1,783.56	1,696.40	1,677.66	5.53	4.66	-172.25	-173.24	34.12	391.90	383.82	8.08	48.473		
1,830.00	1,813.18	1,723.65	1,703.73	5.64	4.81	-172.51	-180.90	36.14	404.34	396.09	8.24	49.058		
1,860.00	1,842.80	1,750.89	1,729.79	5.75	4.96	-172.76	-188.56	38.17	416.78	408.38	8.40	49.622		
1,890.00	1,872.41	1,778.14	1,755.86	5.86	5.11	-173.00	-196.21	40.20	429.23	420.67	8.55	50.186		
1,920.00	1,902.03	1,805.38	1,781.93	5.97	5.25	-173.22	-203.87	42.23	441.68	432.98	8.70	50.743		
1,950.00	1,931.65	1,832.62	1,807.99	6.07	5.40	-173.42	-211.53	44.25	454.14	445.28	8.86	51.253		
1,980.00	1,961.27	1,859.87	1,834.06	6.18	5.56	-173.62	-219.19	46.28	466.61	457.59	9.02	51.749		
2,010.00	1,990.89	1,887.11	1,860.13	6.29	5.71	-173.81	-226.85	48.31	479.08	469.91	9.17	52.231		
2,040.00	2,020.51	1,914.36	1,886.19	6.40	5.86	-173.99	-234.51	50.33	491.55	482.23	9.33	52.693		
2,070.00	2,050.13	1,941.60	1,912.26	6.51	6.01	-174.16	-242.17	52.36	504.03	494.55	9.49	53.136		
2,100.00	2,079.75	1,968.84	1,938.33	6.62	6.16	-174.32	-249.83	54.39	516.52	506.88	9.64	53.567		
2,130.00	2,109.37	1,996.09	1,964.39	6.73	6.32	-174.47	-257.49	56.42	529.01	519.21	9.80	53.985		
2,160.00	2,138.99	2,023.33	1,990.46	6.84	6.47	-174.62	-265.15	58.44	541.50	531.54	9.96	54.384		
2,190.00	2,168.61	2,050.58	2,016.53	6.95	6.63	-174.76	-272.80	60.47	553.99	543.88	10.11	54.771		
2,220.00	2,198.23	2,077.82	2,042.59	7.06	6.78	-174.89	-280.46	62.50	566.49	556.21	10.27	55.147		
2,250.00	2,227.85	2,105.06	2,068.66	7.16	6.94	-175.02	-288.12	64.53	578.99	568.56	10.43	55.512		
2,280.00	2,257.47	2,132.31	2,094.73	7.27	7.09	-175.14	-295.78	66.55	591.49	580.90	10.59	55.861		
2,310.00	2,287.08	2,159.55	2,120.79	7.38	7.25	-175.26	-303.44	68.58	603.99	593.25	10.75	56.201		
2,340.00	2,316.70	2,186.80	2,146.86	7.49	7.40	-175.37	-311.10	70.61	616.50	605.59	10.91	56.532		
2,370.00	2,346.32	2,214.04	2,172.93	7.60	7.56	-175.48	-318.76	72.63	629.01	617.94	11.06	56.852		
2,400.00	2,375.94	2,241.28	2,198.99	7.71	7.72	-175.58	-326.42	74.66	641.52	630.30	11.22	57.161		
2,430.00	2,405.56	2,268.53	2,225.06	7.82	7.87	-175.68	-334.08	76.69	654.03	642.65	11.38	57.461		
2,460.00	2,435.18	2,295.77	2,251.13	7.93	8.03	-175.78	-341.74	78.72	666.55	655.01	11.54	57.755		
2,490.00	2,464.80	2,323.02	2,277.19	8.04	8.19	-175.87	-349.40	80.74	679.06	667.36	11.70	58.037		
2,520.00	2,494.42	2,350.26	2,303.26	8.15	8.35	-175.96	-357.05	82.77	691.58	679.72	11.86	58.311		
2,550.00	2,524.04	2,377.51	2,329.33	8.26	8.50	-176.05	-364.71	84.80	704.10	692.08	12.02	58.579		
2,580.00	2,553.66	2,404.75	2,355.39	8.36	8.66	-176.13	-372.37	86.83	716.62	704.44	12.18	58.840		
2,610.00	2,583.28	2,431.99	2,381.46	8.47	8.82	-176.21	-380.03	88.85	729.14	716.80	12.34	59.091		
2,640.00	2,612.90	2,459.24	2,407.53	8.58	8.98	-176.29	-387.69	90.88	741.67	729.17	12.50	59.337		
2,670.00	2,642.52	2,486.48	2,433.59	8.69	9.14	-176.36	-395.35	92.91	754.19	741.53	12.66	59.577		
2,700.00	2,672.13	2,513.73	2,459.66	8.80	9.30	-176.43	-403.01	94.94	766.72	753.90	12.82	59.809		
2,730.00	2,701.75	2,540.97	2,485.73	8.91	9.46	-176.50	-410.67	96.96	779.24	766.26	12.98	60.035		
2,760.00	2,731.37	2,568.21	2,511.79	9.02	9.62	-176.57	-418.33	98.99	791.77	778.63	13.14	60.256		
2,790.00	2,760.99	2,595.46	2,537.86	9.13	9.78	-176.64	-425.99	101.02	804.30	791.00	13.30	60.471		
2,820.00	2,790.61	2,622.70	2,563.93	9.24	9.94	-176.70	-433.65	103.04	816.83	803.37	13.46	60.680		
2,850.00	2,820.23	2,649.95	2,589.99	9.35	10.10	-176.76	-441.30	105.07	829.36	815.74	13.62	60.884		
2,880.00	2,849.85	2,677.19	2,616.06	9.46	10.26	-176.82	-448.96	107.10	841.89	828.11	13.78	61.083		
2,910.00	2,879.47	2,704.43	2,642.13	9.57	10.41	-176.88	-456.62	109.13	854.43	840.48	13.94	61.278		
2,940.00	2,909.09	2,731.68	2,668.19	9.68	10.58	-176.94	-464.28	111.15	866.96	852.85	14.10	61.467		
2,970.00	2,938.71	2,758.92	2,694.26	9.79	10.74	-176.99	-471.94	113.18	879.49	865.23	14.27	61.651		
3,000.00	2,968.33	2,786.17	2,720.33	9.89	10.90	-177.05	-479.60	115.21	892.03	877.60	14.43	61.832		
3,030.00	2,997.95	2,813.41	2,746.39	10.00	11.06	-177.10	-487.26	117.24	904.56	889.98	14.59	62.008		
3,060.00	3,027.57	2,840.66	2,772.46	10.11	11.22	-177.15	-494.92	119.26	917.10	902.35	14.75	62.180		

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 29-07E
<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 29-07E	<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 29-15E - 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	3,057.18	2,867.90	2,798.53	10.22	11.38	-177.20	-502.58	121.29	929.64	914.73	14.91	62.348		
3,120.00	3,086.80	2,895.14	2,824.59	10.33	11.54	-177.25	-510.24	123.32	942.17	927.10	15.07	62.512		
3,150.00	3,116.42	2,922.39	2,850.66	10.44	11.70	-177.29	-517.90	125.34	954.71	939.48	15.23	62.672		
3,180.00	3,146.04	2,949.63	2,876.73	10.55	11.86	-177.34	-525.55	127.37	967.25	951.86	15.39	62.829		
3,210.00	3,175.66	2,976.88	2,902.79	10.66	12.02	-177.38	-533.21	129.40	979.79	964.23	15.56	62.983		
3,240.00	3,205.28	3,004.12	2,928.86	10.77	12.18	-177.43	-540.87	131.43	992.33	976.61	15.72	63.133		
3,270.00	3,234.90	3,031.36	2,954.93	10.88	12.34	-177.47	-548.53	133.45	1,004.87	988.99	15.88	63.279		
3,300.00	3,264.52	3,058.61	2,980.99	10.99	12.50	-177.51	-556.19	135.48	1,017.41	1,001.37	16.04	63.423		
3,330.00	3,294.14	3,085.85	3,007.06	11.10	12.66	-177.55	-563.85	137.51	1,029.95	1,013.75	16.20	63.563		
3,360.00	3,323.76	3,113.10	3,033.12	11.21	12.82	-177.59	-571.51	139.54	1,042.49	1,026.13	16.37	63.701		
3,390.00	3,353.38	3,140.34	3,059.19	11.32	12.99	-177.63	-579.17	141.56	1,055.04	1,038.51	16.53	63.835		
3,420.00	3,383.00	3,167.58	3,085.26	11.43	13.15	-177.66	-586.83	143.59	1,067.58	1,050.89	16.69	63.967		
3,450.00	3,412.62	3,194.83	3,111.32	11.54	13.31	-177.70	-594.49	145.62	1,080.12	1,063.27	16.85	64.096		
3,480.00	3,442.23	3,222.07	3,137.39	11.64	13.47	-177.74	-602.15	147.64	1,092.66	1,075.65	17.01	64.223		
3,510.00	3,471.85	3,249.32	3,163.46	11.75	13.63	-177.77	-609.80	149.67	1,105.21	1,088.03	17.18	64.346		
3,540.00	3,501.47	3,276.56	3,189.52	11.86	13.79	-177.81	-617.46	151.70	1,117.75	1,100.41	17.34	64.468		
3,570.00	3,531.09	3,303.80	3,215.59	11.97	13.95	-177.84	-625.12	153.73	1,130.30	1,112.80	17.50	64.587		
3,600.00	3,560.71	3,331.05	3,241.66	12.08	14.12	-177.87	-632.78	155.75	1,142.84	1,125.18	17.66	64.703		
3,630.00	3,590.33	3,358.29	3,267.72	12.19	14.28	-177.90	-640.44	157.78	1,155.39	1,137.56	17.83	64.818		
3,660.00	3,619.95	3,385.54	3,293.79	12.30	14.44	-177.93	-648.10	159.81	1,167.93	1,149.94	17.99	64.930		
3,690.00	3,649.57	3,412.78	3,319.86	12.41	14.60	-177.96	-655.76	161.84	1,180.48	1,162.33	18.15	65.040		
3,720.00	3,679.19	3,440.03	3,345.92	12.52	14.76	-177.99	-663.42	163.86	1,193.02	1,174.71	18.31	65.148		
3,750.00	3,708.81	3,467.27	3,371.99	12.63	14.92	-178.02	-671.08	165.89	1,205.57	1,187.10	18.48	65.254		
3,780.00	3,738.43	3,494.51	3,398.06	12.74	15.09	-178.05	-678.74	167.92	1,218.12	1,199.48	18.64	65.358		
3,810.00	3,768.05	3,521.76	3,424.12	12.85	15.25	-178.08	-686.40	169.94	1,230.66	1,211.86	18.80	65.460		
3,840.00	3,797.67	3,549.00	3,450.19	12.96	15.41	-178.11	-694.05	171.97	1,243.21	1,224.25	18.96	65.560		
3,870.00	3,827.28	3,576.25	3,476.26	13.07	15.57	-178.13	-701.71	174.00	1,255.76	1,236.63	19.13	65.658		
3,900.00	3,856.90	3,603.49	3,502.32	13.18	15.73	-178.16	-709.37	176.03	1,268.31	1,249.02	19.29	65.755		
3,930.00	3,886.52	3,630.73	3,528.39	13.29	15.90	-178.19	-717.03	178.05	1,280.85	1,261.40	19.45	65.850		
3,960.00	3,916.14	3,657.98	3,554.46	13.40	16.06	-178.21	-724.69	180.08	1,293.40	1,273.79	19.61	65.943		
3,990.00	3,945.76	3,685.22	3,580.52	13.50	16.22	-178.24	-732.35	182.11	1,305.95	1,286.17	19.78	66.034		
4,020.00	3,975.38	3,712.47	3,606.59	13.61	16.38	-178.26	-740.01	184.14	1,318.50	1,298.56	19.94	66.124		
4,050.00	4,005.00	3,739.71	3,632.66	13.72	16.54	-178.29	-747.67	186.16	1,331.05	1,310.95	20.10	66.212		
4,080.00	4,034.62	3,766.95	3,658.72	13.83	16.71	-178.31	-755.33	188.19	1,343.60	1,323.33	20.27	66.299		
4,110.00	4,064.24	3,794.20	3,684.79	13.94	16.87	-178.33	-762.99	190.22	1,356.15	1,335.72	20.43	66.384		
4,140.00	4,093.86	3,821.44	3,710.86	14.05	17.03	-178.35	-770.65	192.24	1,368.70	1,348.11	20.59	66.468		
4,170.00	4,123.48	3,848.69	3,736.92	14.16	17.19	-178.38	-778.30	194.27	1,381.25	1,360.49	20.75	66.551		
4,200.00	4,153.10	3,875.93	3,762.99	14.27	17.35	-178.40	-785.96	196.30	1,393.80	1,372.88	20.92	66.632		
4,230.00	4,182.72	3,903.17	3,789.06	14.38	17.52	-178.42	-793.62	198.33	1,406.35	1,385.27	21.08	66.711		
4,260.00	4,212.33	3,930.42	3,815.12	14.49	17.68	-178.44	-801.28	200.35	1,418.90	1,397.65	21.24	66.790		
4,290.00	4,241.95	3,957.66	3,841.19	14.60	17.84	-178.46	-808.94	202.38	1,431.45	1,410.04	21.41	66.867		
4,320.00	4,271.57	3,984.91	3,867.26	14.71	18.00	-178.48	-816.60	204.41	1,444.00	1,422.43	21.57	66.943		
4,350.00	4,301.19	4,012.15	3,893.32	14.82	18.17	-178.50	-824.26	206.44	1,456.55	1,434.81	21.73	67.017		
4,380.00	4,330.81	4,039.40	3,919.39	14.93	18.33	-178.52	-831.92	208.46	1,469.10	1,447.20	21.90	67.091		
4,410.00	4,360.43	4,066.64	3,945.46	15.04	18.49	-178.54	-839.58	210.49	1,481.65	1,459.59	22.06	67.163		
4,440.00	4,390.05	4,093.88	3,971.52	15.15	18.65	-178.56	-847.24	212.52	1,494.20	1,471.98	22.22	67.234		
4,470.00	4,419.67	4,121.13	3,997.59	15.26	18.81	-178.58	-854.90	214.55	1,506.75	1,484.37	22.39	67.304		
4,500.00	4,449.29	4,148.37	4,023.66	15.37	18.98	-178.60	-862.55	216.57	1,519.30	1,496.75	22.55	67.373		
4,530.00	4,478.91	4,175.62	4,049.72	15.48	19.14	-178.62	-870.21	218.60	1,531.86	1,509.14	22.71	67.441		
4,560.00	4,508.53	4,202.86	4,075.79	15.58	19.30	-178.63	-877.87	220.63	1,544.41	1,521.53	22.88	67.508		
4,590.00	4,538.15	4,230.10	4,101.86	15.69	19.46	-178.65	-885.53	222.65	1,556.96	1,533.92	23.04	67.573		
4,620.00	4,567.77	4,257.35	4,127.92	15.80	19.63	-178.67	-893.19	224.68	1,569.51	1,546.31	23.20	67.638		

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 29-07E
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 29-07E	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 29-15E - 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	4,597.38	4,284.59	4,153.99	15.91	19.79	-178.68	-900.85	226.71	1,582.06	1,558.70	23.37	67.702		
4,680.00	4,627.00	4,311.84	4,180.06	16.02	19.95	-178.70	-908.51	228.74	1,594.62	1,571.09	23.53	67.765		
4,710.00	4,656.62	4,339.08	4,206.12	16.13	20.11	-178.72	-916.17	230.76	1,607.17	1,583.47	23.70	67.827		
4,740.00	4,686.24	4,366.32	4,232.19	16.24	20.28	-178.73	-923.83	232.79	1,619.72	1,595.86	23.86	67.888		
4,770.00	4,715.86	4,393.57	4,258.26	16.35	20.44	-178.75	-931.49	234.82	1,632.27	1,608.25	24.02	67.948		
4,800.00	4,745.48	4,420.81	4,284.32	16.46	20.60	-178.77	-939.14	236.85	1,644.83	1,620.64	24.19	68.007		
4,830.00	4,775.10	4,448.06	4,310.39	16.57	20.76	-178.78	-946.80	238.87	1,657.38	1,633.03	24.35	68.065		
4,860.00	4,804.72	4,475.30	4,336.46	16.68	20.93	-178.80	-954.46	240.90	1,669.93	1,645.42	24.51	68.123		
4,890.00	4,834.34	4,502.55	4,362.52	16.79	21.09	-178.81	-962.12	242.93	1,682.49	1,657.81	24.68	68.179		
4,920.00	4,863.96	4,529.79	4,388.59	16.90	21.25	-178.83	-969.78	244.95	1,695.04	1,670.20	24.84	68.235		
4,950.00	4,893.58	4,557.03	4,414.66	17.01	21.42	-178.84	-977.44	246.98	1,707.59	1,682.59	25.00	68.290		
4,980.00	4,923.20	4,584.28	4,440.72	17.12	21.58	-178.85	-985.10	249.01	1,720.15	1,694.98	25.17	68.345		
5,010.00	4,952.82	4,611.52	4,466.79	17.23	21.74	-178.87	-992.76	251.04	1,732.70	1,707.37	25.33	68.398		
5,040.00	4,982.43	4,638.77	4,492.86	17.34	21.90	-178.88	-1,000.42	253.06	1,745.25	1,719.76	25.50	68.451		
5,070.00	5,012.05	4,666.01	4,518.92	17.45	22.07	-178.90	-1,008.08	255.09	1,757.81	1,732.15	25.66	68.503		
5,100.00	5,041.67	4,693.25	4,544.99	17.56	22.23	-178.91	-1,015.74	257.12	1,770.36	1,744.54	25.82	68.554		
5,130.00	5,071.29	4,720.50	4,571.06	17.67	22.39	-178.92	-1,023.39	259.15	1,782.92	1,756.93	25.99	68.605		
5,160.00	5,100.91	4,747.74	4,597.12	17.77	22.55	-178.94	-1,031.05	261.17	1,795.47	1,769.32	26.15	68.655		
5,190.00	5,130.53	4,774.99	4,623.19	17.88	22.72	-178.95	-1,038.71	263.20	1,808.02	1,781.71	26.32	68.704		
5,220.00	5,160.15	4,802.23	4,649.26	17.99	22.88	-178.96	-1,046.37	265.23	1,820.58	1,794.10	26.48	68.753		
5,250.00	5,189.77	4,829.47	4,675.32	18.10	23.04	-178.97	-1,054.03	267.25	1,833.13	1,806.49	26.64	68.801		
5,280.00	5,219.39	4,856.72	4,701.39	18.21	23.21	-178.99	-1,061.69	269.28	1,845.69	1,818.88	26.81	68.848		
5,310.00	5,249.01	4,883.96	4,727.46	18.32	23.37	-179.00	-1,069.35	271.31	1,858.24	1,831.27	26.97	68.895		
5,340.00	5,278.63	4,911.21	4,753.52	18.43	23.53	-179.01	-1,077.01	273.34	1,870.79	1,843.65	27.14	68.928		
5,370.00	5,308.28	4,938.52	4,779.66	18.52	23.69	-179.03	-1,084.69	275.37	1,883.18	1,855.84	27.34	68.868		
5,400.00	5,337.97	4,965.96	4,805.91	18.62	23.86	-179.04	-1,092.40	277.41	1,895.31	1,867.77	27.55	68.803		
5,430.00	5,367.71	4,993.50	4,832.26	18.69	24.02	-179.07	-1,100.14	279.46	1,907.18	1,879.44	27.73	68.764		
5,460.00	5,397.49	5,021.16	4,858.72	18.77	24.19	-179.09	-1,107.92	281.52	1,918.77	1,890.85	27.92	68.720		
5,490.00	5,427.31	5,048.92	4,885.29	18.84	24.35	-179.12	-1,115.72	283.58	1,930.10	1,902.00	28.11	68.671		
5,520.00	5,457.15	5,106.58	4,940.56	18.91	24.65	-179.22	-1,131.60	287.79	1,941.05	1,912.68	28.36	68.431		
5,550.00	5,487.03	5,188.81	5,019.92	18.97	24.98	-179.37	-1,152.40	293.29	1,951.02	1,922.35	28.66	68.065		
5,580.00	5,516.94	5,272.88	5,101.66	19.04	25.29	-179.50	-1,171.39	298.32	1,959.92	1,930.96	28.96	67.685		
5,610.00	5,546.86	5,358.63	5,185.59	19.10	25.57	-179.61	-1,188.36	302.81	1,967.72	1,938.48	29.24	67.296		
5,640.00	5,576.81	5,445.86	5,271.47	19.15	25.83	-179.71	-1,203.12	306.72	1,974.39	1,944.87	29.51	66.902		
5,670.00	5,606.78	5,534.37	5,359.04	19.20	26.06	-179.79	-1,215.51	310.00	1,979.90	1,950.13	29.77	66.501		
5,700.00	5,636.76	5,623.93	5,448.01	19.25	26.27	-179.85	-1,225.38	312.61	1,984.24	1,954.22	30.02	66.095		
5,730.00	5,666.74	5,714.30	5,538.07	19.29	26.43	-179.90	-1,232.60	314.52	1,987.39	1,957.14	30.25	65.695		
5,760.00	5,696.74	5,805.23	5,628.87	19.33	26.57	-179.93	-1,237.10	315.71	1,989.34	1,958.87	30.47	65.294		
5,790.00	5,726.74	5,896.45	5,720.08	19.37	26.67	-179.94	-1,238.81	316.16	1,990.08	1,959.40	30.68	64.876		
5,820.00	5,756.74	5,933.11	5,756.74	19.41	26.71	-179.94	-1,238.83	316.17	1,990.09	1,959.30	30.79	64.640		
5,850.00	5,786.74	5,963.11	5,786.74	19.46	26.74	-179.94	-1,238.83	316.17	1,990.09	1,959.20	30.89	64.427		
5,880.00	5,816.74	5,993.11	5,816.74	19.50	26.77	-179.94	-1,238.83	316.17	1,990.09	1,959.09	30.99	64.215		
5,910.00	5,846.74	6,023.11	5,846.74	19.54	26.79	-179.94	-1,238.83	316.17	1,990.09	1,958.99	31.09	64.007		
5,940.00	5,876.74	6,053.11	5,876.74	19.58	26.82	-179.94	-1,238.83	316.17	1,990.09	1,958.89	31.19	63.802		
5,970.00	5,906.74	6,083.11	5,906.74	19.62	26.84	-179.94	-1,238.83	316.17	1,990.09	1,958.79	31.29	63.599		
6,000.00	5,936.74	6,113.11	5,936.74	19.67	26.87	-179.94	-1,238.83	316.17	1,990.09	1,958.69	31.39	63.396		
6,030.00	5,966.74	6,143.11	5,966.74	19.71	26.89	-179.94	-1,238.83	316.17	1,990.09	1,958.59	31.49	63.193		
6,060.00	5,996.74	6,173.11	5,996.74	19.75	26.92	-179.94	-1,238.83	316.17	1,990.09	1,958.49	31.59	62.991		
6,090.00	6,026.74	6,203.11	6,026.74	19.80	26.94	-179.94	-1,238.83	316.17	1,990.09	1,958.39	31.69	62.791		
6,120.00	6,056.74	6,233.11	6,056.74	19.84	26.97	-179.94	-1,238.83	316.17	1,990.09	1,958.29	31.80	62.590		
6,150.00	6,086.74	6,263.11	6,086.74	19.88	27.00	-179.94	-1,238.83	316.17	1,990.09	1,958.19	31.90	62.391		
6,180.00	6,116.74	6,293.11	6,116.74	19.93	27.02	-179.94	-1,238.83	316.17	1,990.09	1,958.09	32.00	62.193		

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 29-07E
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 29-07E	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 29-15E - 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	6,146.74	6,323.11	6,146.74	19.97	27.05	-179.94	-1,238.83	316.17	1,990.09	1,957.98	32.10	61.995		
6,240.00	6,176.74	6,353.11	6,176.74	20.01	27.08	-179.94	-1,238.83	316.17	1,990.09	1,957.88	32.20	61.798		
6,270.00	6,206.74	6,383.11	6,206.74	20.06	27.10	-179.94	-1,238.83	316.17	1,990.09	1,957.78	32.31	61.602		
6,300.00	6,236.74	6,413.11	6,236.74	20.10	27.13	-179.94	-1,238.83	316.17	1,990.09	1,957.68	32.41	61.407		
6,330.00	6,266.74	6,443.11	6,266.74	20.14	27.16	-179.94	-1,238.83	316.17	1,990.09	1,957.57	32.51	61.212		
6,360.00	6,296.74	6,473.11	6,296.74	20.19	27.18	-179.94	-1,238.83	316.17	1,990.09	1,957.47	32.61	61.019		
6,390.00	6,326.74	6,503.11	6,326.74	20.23	27.21	-179.94	-1,238.83	316.17	1,990.09	1,957.37	32.72	60.826		
6,420.00	6,356.74	6,533.11	6,356.74	20.28	27.24	-179.94	-1,238.83	316.17	1,990.09	1,957.26	32.82	60.634		
6,450.00	6,386.74	6,563.11	6,386.74	20.32	27.27	-179.94	-1,238.83	316.17	1,990.09	1,957.16	32.93	60.443		
6,480.00	6,416.74	6,593.11	6,416.74	20.37	27.29	-179.94	-1,238.83	316.17	1,990.09	1,957.06	33.03	60.253		
6,510.00	6,446.74	6,623.11	6,446.74	20.41	27.32	-179.94	-1,238.83	316.17	1,990.09	1,956.95	33.13	60.063		
6,540.00	6,476.74	6,653.11	6,476.74	20.46	27.35	-179.94	-1,238.83	316.17	1,990.09	1,956.85	33.24	59.874		
6,570.00	6,506.74	6,683.11	6,506.74	20.50	27.38	-179.94	-1,238.83	316.17	1,990.09	1,956.74	33.34	59.686		
6,600.00	6,536.74	6,713.11	6,536.74	20.55	27.41	-179.94	-1,238.83	316.17	1,990.09	1,956.64	33.45	59.499		
6,630.00	6,566.74	6,743.11	6,566.74	20.59	27.44	-179.94	-1,238.83	316.17	1,990.09	1,956.53	33.55	59.312		
6,660.00	6,596.74	6,773.11	6,596.74	20.64	27.46	-179.94	-1,238.83	316.17	1,990.09	1,956.43	33.66	59.127		
6,690.00	6,626.74	6,803.11	6,626.74	20.68	27.49	-179.94	-1,238.83	316.17	1,990.09	1,956.32	33.76	58.942		
6,720.00	6,656.74	6,833.11	6,656.74	20.73	27.52	-179.94	-1,238.83	316.17	1,990.09	1,956.22	33.87	58.758		
6,750.00	6,686.74	6,863.11	6,686.74	20.78	27.55	-179.94	-1,238.83	316.17	1,990.09	1,956.11	33.98	58.575		
6,780.00	6,716.74	6,893.11	6,716.74	20.82	27.58	-179.94	-1,238.83	316.17	1,990.09	1,956.00	34.08	58.393		
6,810.00	6,746.74	6,923.11	6,746.74	20.87	27.61	-179.94	-1,238.83	316.17	1,990.09	1,955.90	34.19	58.211		
6,840.00	6,776.74	6,953.11	6,776.74	20.91	27.64	-179.94	-1,238.83	316.17	1,990.09	1,955.79	34.29	58.030		
6,870.00	6,806.74	6,983.11	6,806.74	20.96	27.67	-179.94	-1,238.83	316.17	1,990.09	1,955.68	34.40	57.850		
6,900.00	6,836.74	7,013.11	6,836.74	21.01	27.70	-179.94	-1,238.83	316.17	1,990.09	1,955.58	34.51	57.671		
6,930.00	6,866.74	7,043.11	6,866.74	21.05	27.73	-179.94	-1,238.83	316.17	1,990.09	1,955.47	34.61	57.492		
6,960.00	6,896.74	7,073.11	6,896.74	21.10	27.76	-179.94	-1,238.83	316.17	1,990.09	1,955.36	34.72	57.315		
6,990.00	6,926.74	7,103.11	6,926.74	21.15	27.79	-179.94	-1,238.83	316.17	1,990.09	1,955.26	34.83	57.138		
7,020.00	6,956.74	7,133.11	6,956.74	21.19	27.82	-179.94	-1,238.83	316.17	1,990.09	1,955.15	34.94	56.962		
7,050.00	6,986.74	7,163.11	6,986.74	21.24	27.85	-179.94	-1,238.83	316.17	1,990.09	1,955.04	35.04	56.787		
7,080.00	7,016.74	7,193.11	7,016.74	21.29	27.88	-179.94	-1,238.83	316.17	1,990.09	1,954.93	35.15	56.612		
7,110.00	7,046.74	7,223.11	7,046.74	21.33	27.91	-179.94	-1,238.83	316.17	1,990.09	1,954.82	35.26	56.439		
7,140.00	7,076.74	7,253.11	7,076.74	21.38	27.94	-179.94	-1,238.83	316.17	1,990.09	1,954.72	35.37	56.265		
7,170.00	7,106.74	7,283.11	7,106.74	21.43	27.97	-179.94	-1,238.83	316.17	1,990.09	1,954.61	35.48	56.093		
7,200.00	7,136.74	7,313.11	7,136.74	21.48	28.00	-179.94	-1,238.83	316.17	1,990.09	1,954.50	35.59	55.922		
7,230.00	7,166.74	7,343.11	7,166.74	21.52	28.03	-179.94	-1,238.83	316.17	1,990.09	1,954.39	35.70	55.751		
7,260.00	7,196.74	7,373.11	7,196.74	21.57	28.06	-179.94	-1,238.83	316.17	1,990.09	1,954.28	35.80	55.581		
7,290.00	7,226.74	7,403.11	7,226.74	21.62	28.10	-179.94	-1,238.83	316.17	1,990.09	1,954.17	35.91	55.413		
7,320.00	7,256.74	7,433.11	7,256.74	21.67	28.13	-179.94	-1,238.83	316.17	1,990.09	1,954.06	36.02	55.244		
7,350.00	7,286.74	7,463.11	7,286.74	21.72	28.16	-179.94	-1,238.83	316.17	1,990.09	1,953.95	36.13	55.076		
7,380.00	7,316.74	7,493.11	7,316.74	21.76	28.19	-179.94	-1,238.83	316.17	1,990.09	1,953.84	36.24	54.910		
7,410.00	7,346.74	7,523.11	7,346.74	21.81	28.22	-179.94	-1,238.83	316.17	1,990.09	1,953.73	36.35	54.744		
7,440.00	7,376.74	7,553.11	7,376.74	21.86	28.25	-179.94	-1,238.83	316.17	1,990.09	1,953.62	36.46	54.578		
7,470.00	7,406.74	7,583.11	7,406.74	21.91	28.29	-179.94	-1,238.83	316.17	1,990.09	1,953.51	36.57	54.414		
7,500.00	7,436.74	7,613.11	7,436.74	21.96	28.32	-179.94	-1,238.83	316.17	1,990.09	1,953.40	36.68	54.250		
7,530.00	7,466.74	7,643.11	7,466.74	22.01	28.35	-179.94	-1,238.83	316.17	1,990.09	1,953.29	36.79	54.087		
7,560.00	7,496.74	7,673.11	7,496.74	22.05	28.38	-179.94	-1,238.83	316.17	1,990.09	1,953.18	36.90	53.925		
7,590.00	7,526.74	7,703.11	7,526.74	22.10	28.42	-179.94	-1,238.83	316.17	1,990.09	1,953.07	37.02	53.763		
7,620.00	7,556.74	7,733.11	7,556.74	22.15	28.45	-179.94	-1,238.83	316.17	1,990.09	1,952.96	37.13	53.602		
7,650.00	7,586.74	7,763.11	7,586.74	22.20	28.48	-179.94	-1,238.83	316.17	1,990.09	1,952.85	37.24	53.442		
7,680.00	7,616.74	7,793.11	7,616.74	22.25	28.51	-179.94	-1,238.83	316.17	1,990.09	1,952.74	37.35	53.283		
7,710.00	7,646.74	7,823.11	7,646.74	22.30	28.55	-179.94	-1,238.83	316.17	1,990.09	1,952.62	37.46	53.125		
7,740.00	7,676.74	7,853.11	7,676.74	22.35	28.58	-179.94	-1,238.83	316.17	1,990.09	1,952.51	37.57	52.967		

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 29-07E
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 29-07E	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

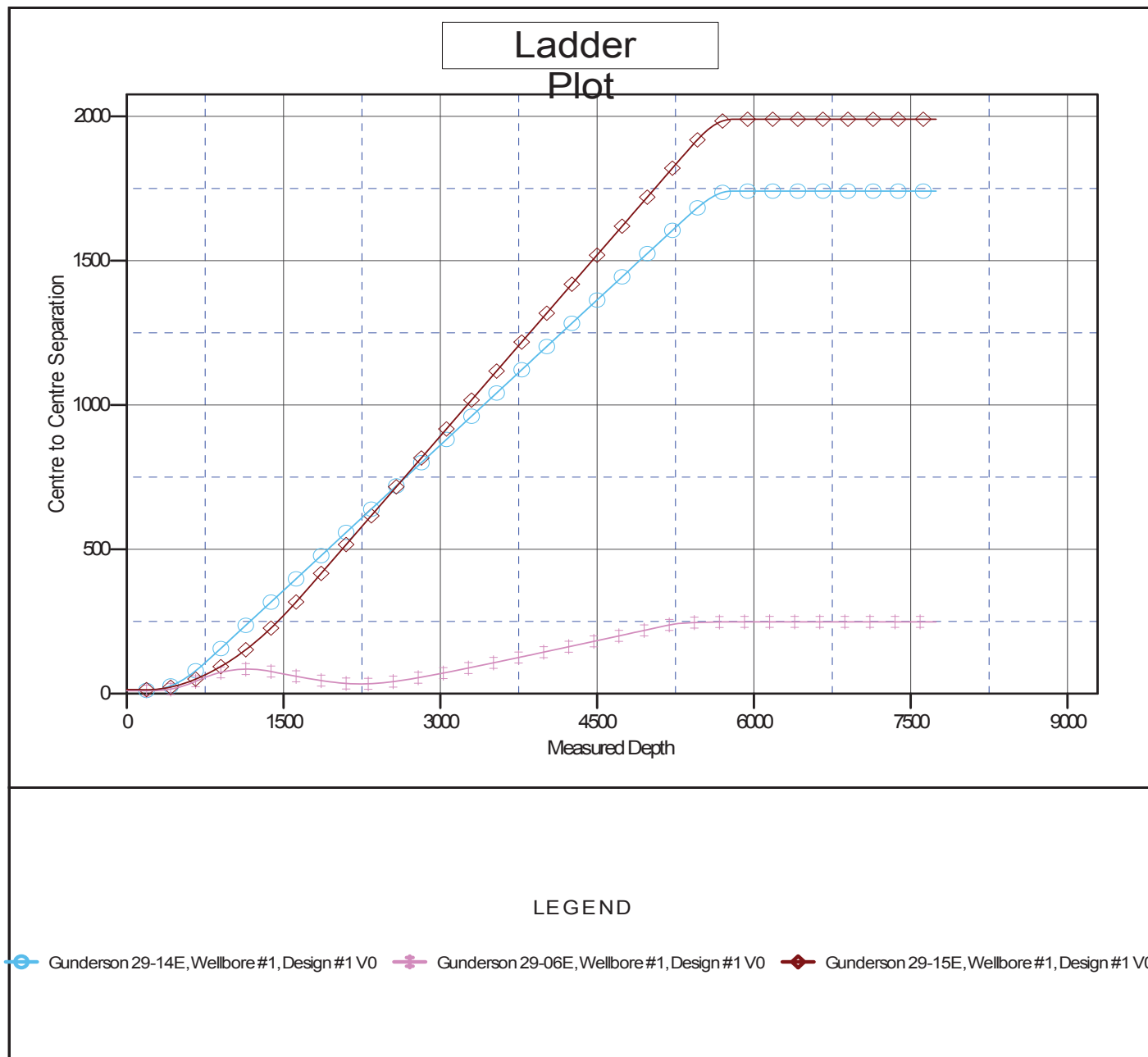
Offset Design		Gunderson - Gunderson 29-15E - Wellbore #1 - Design #1										Offset Site Error:	0.00 usft
Survey Program:		0-MWD										Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical 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	
7,743.26	7,680.00	7,856.37	7,680.00	22.35	28.58	-179.94	-1,238.83	316.17	1,990.09	1,952.50	37.58	52.950	



Company:	Piceance Energy, LLC	Local Co-ordinate Reference:	Well Gunderson 29-07E
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 29-07E	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 29-07E  
Coordinate System is US State Plane 1983, Colorado Central Zone  
Grid Convergence at Surface is: -1.44°





<b>Company:</b>	Piceance Energy, LLC	<b>Local Co-ordinate Reference:</b>	Well Gunderson 29-07E
<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 29-07E	<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

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 29-07E  
Coordinate System is US State Plane 1983, Colorado Central Zone  
Grid Convergence at Surface is: -1.44°

