



# **Piceance Energy, LLC**

**Mesa County, CO  
Gunderson  
Gunderson 29-14E**

**Wellbore #1**

**Plan: Design #1**

## **Standard Planning Report**

**03 October, 2014**

# **Archer**



Project: Mesa County, CO  
Site: Gunderson  
Well: Gunderson 29-14E  
Wellbore: Wellbore #1  
Design: Design #1  
Latitude: 39.248801  
Longitude: -107.787901  
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 29-14E, 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 29-14E

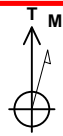
+N/-S	+E/-W	Northing	Ground Level: Easting	Latitude	Longitude	Slot
0.00	0.00	1523668.288	2352154.262	39.248801	-107.787901	

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

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
Gunderson 29-14E tgt	7680.00	-978.99	315.29	1522681.671	2352444.800	39.246113	-107.786788	Circle (Radius: 50.00)

### SECTION DETAILS

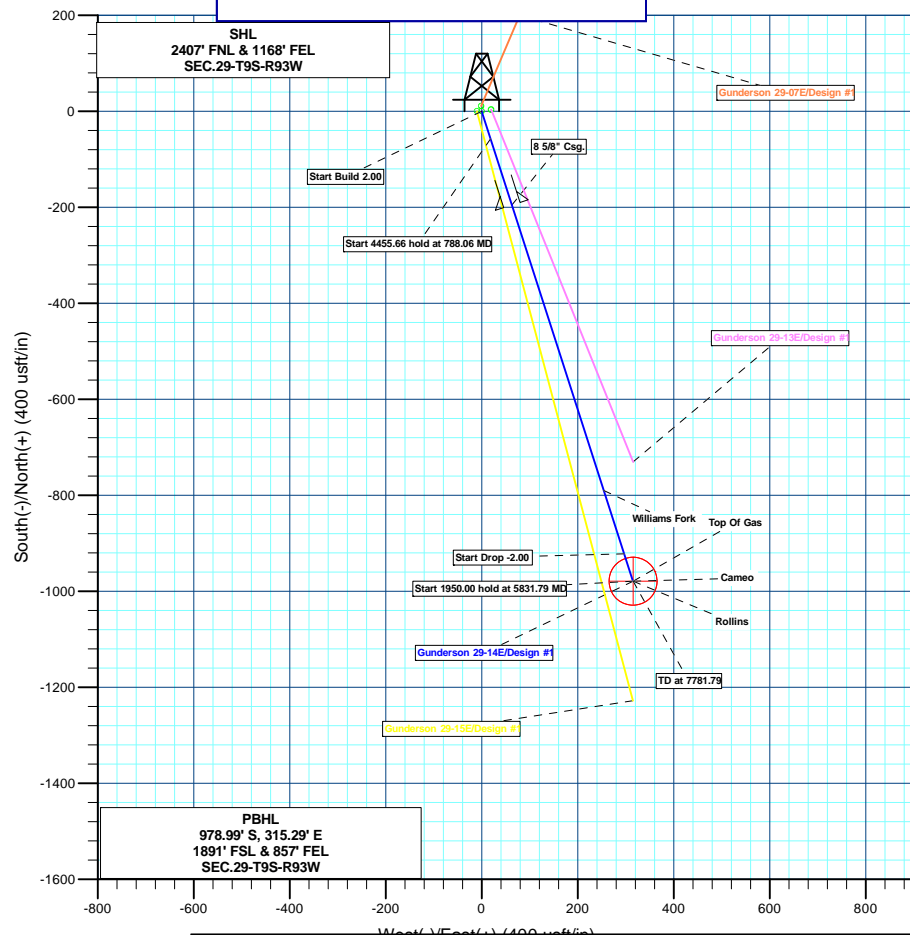
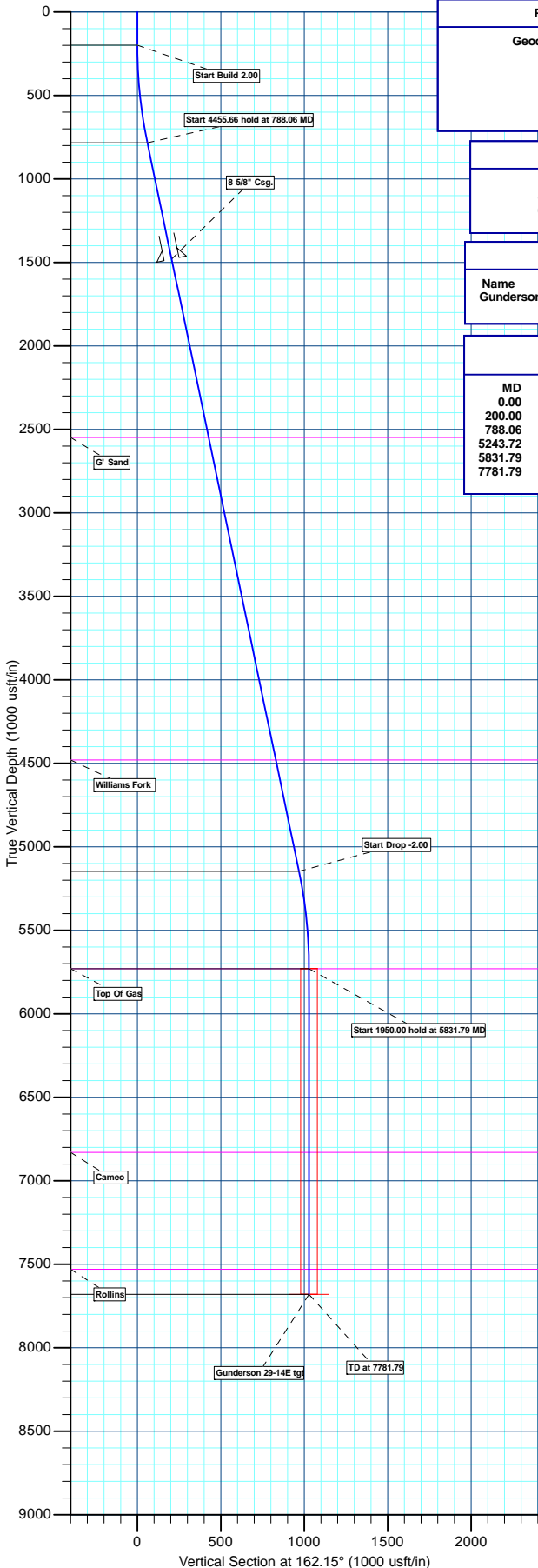
MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Annotation
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	Start Build 2.00
788.06	11.76	162.15	783.94	-57.25	18.44	2.00	162.15	60.15	Start 4455.66 hold at 788.06 MD
5243.72	11.76	162.15	5146.06	-921.74	296.85	0.00	0.00	968.36	Start Drop -2.00
5831.79	0.00	0.00	5730.00	-978.99	315.29	2.00	180.00	1028.51	Start 1950.00 hold at 5831.79 MD
7781.79	0.00	0.00	7680.00	-978.99	315.29	0.00	0.00	1028.51	TD at 7781.79



Azimuths to True North  
Magnetic North: 9.80°  
Magnetic Field  
Strength: 51796.9snT  
Dip Angle: 65.48°  
Date: 10/02/2014  
Model: IGRF2010

### FORMATION TOP DETAILS

TVDPATH	MDPATH	Formation
2548.00	2589.95	G' Sand
4480.00	4563.38	Williams Fork
5730.00	5831.79	Top Of Gas
6830.00	6931.79	Cameo
7530.00	7631.79	Rollins



Plan: Design #1 (Gunderson 29-14E/Wellbore #1)

Created By: Ricky Osburn Date: 6:19, October 03 2014



<b>Database:</b>	EDMDBBW	<b>Local Co-ordinate Reference:</b>	Well Gunderson 29-14E
<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 29-14E	<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 29-14E					
Well Position	+N/-S	-0.85 usft	Northing:	1,523,668.288 usft	Latitude:	39.248801
	+E/-W	90.56 usft	Easting:	2,352,154.262 usft	Longitude:	-107.787901
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	10/02/14	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	162.15

<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	
788.06	11.76	162.15	783.94	-57.25	18.44	2.00	2.00	0.00	162.15	
5,243.72	11.76	162.15	5,146.06	-921.74	296.85	0.00	0.00	0.00	0.00	
5,831.79	0.00	0.00	5,730.00	-978.99	315.29	2.00	-2.00	0.00	180.00	
7,781.79	0.00	0.00	7,680.00	-978.99	315.29	0.00	0.00	0.00	0.00	Gunderson 29-14E tg



<b>Database:</b>	EDMDBBW	<b>Local Co-ordinate Reference:</b>	Well Gunderson 29-14E
<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 29-14E	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	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
<b>Start Build 2.00</b>									
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	2.00	162.15	299.98	-1.66	0.53	1.75	2.00	2.00	0.00
400.00	4.00	162.15	399.84	-6.64	2.14	6.98	2.00	2.00	0.00
500.00	6.00	162.15	499.45	-14.94	4.81	15.69	2.00	2.00	0.00
600.00	8.00	162.15	598.70	-26.54	8.55	27.88	2.00	2.00	0.00
700.00	10.00	162.15	697.47	-41.43	13.34	43.52	2.00	2.00	0.00
<b>Start 4455.66 hold at 788.06 MD</b>									
788.06	11.76	162.15	783.94	-57.25	18.44	60.15	2.00	2.00	0.00
800.00	11.76	162.15	795.63	-59.57	19.18	62.58	0.00	0.00	0.00
900.00	11.76	162.15	893.53	-78.97	25.43	82.96	0.00	0.00	0.00
1,000.00	11.76	162.15	991.43	-98.37	31.68	103.35	0.00	0.00	0.00
1,100.00	11.76	162.15	1,089.33	-117.77	37.93	123.73	0.00	0.00	0.00
1,200.00	11.76	162.15	1,187.23	-137.17	44.18	144.11	0.00	0.00	0.00
1,300.00	11.76	162.15	1,285.13	-156.58	50.43	164.50	0.00	0.00	0.00
1,400.00	11.76	162.15	1,383.03	-175.98	56.67	184.88	0.00	0.00	0.00
<b>8 5/8" Csg.</b>									
1,500.00	11.76	162.15	1,480.93	-195.38	62.92	205.26	0.00	0.00	0.00
1,600.00	11.76	162.15	1,578.83	-214.78	69.17	225.65	0.00	0.00	0.00
1,700.00	11.76	162.15	1,676.73	-234.18	75.42	246.03	0.00	0.00	0.00
1,800.00	11.76	162.15	1,774.63	-253.59	81.67	266.41	0.00	0.00	0.00
1,900.00	11.76	162.15	1,872.53	-272.99	87.92	286.80	0.00	0.00	0.00
2,000.00	11.76	162.15	1,970.43	-292.39	94.17	307.18	0.00	0.00	0.00
2,100.00	11.76	162.15	2,068.34	-311.79	100.42	327.56	0.00	0.00	0.00
2,200.00	11.76	162.15	2,166.24	-331.19	106.66	347.95	0.00	0.00	0.00
2,300.00	11.76	162.15	2,264.14	-350.60	112.91	368.33	0.00	0.00	0.00
2,400.00	11.76	162.15	2,362.04	-370.00	119.16	388.71	0.00	0.00	0.00
2,500.00	11.76	162.15	2,459.94	-389.40	125.41	409.10	0.00	0.00	0.00
<b>G' Sand</b>									
2,589.95	11.76	162.15	2,548.00	-406.85	131.03	427.43	0.00	0.00	0.00
2,600.00	11.76	162.15	2,557.84	-408.80	131.66	429.48	0.00	0.00	0.00
2,700.00	11.76	162.15	2,655.74	-428.20	137.91	449.86	0.00	0.00	0.00
2,800.00	11.76	162.15	2,753.64	-447.61	144.16	470.25	0.00	0.00	0.00
2,900.00	11.76	162.15	2,851.54	-467.01	150.40	490.63	0.00	0.00	0.00
3,000.00	11.76	162.15	2,949.44	-486.41	156.65	511.01	0.00	0.00	0.00
3,100.00	11.76	162.15	3,047.34	-505.81	162.90	531.40	0.00	0.00	0.00
3,200.00	11.76	162.15	3,145.24	-525.21	169.15	551.78	0.00	0.00	0.00
3,300.00	11.76	162.15	3,243.14	-544.62	175.40	572.16	0.00	0.00	0.00
3,400.00	11.76	162.15	3,341.04	-564.02	181.65	592.55	0.00	0.00	0.00
3,500.00	11.76	162.15	3,438.94	-583.42	187.90	612.93	0.00	0.00	0.00
3,600.00	11.76	162.15	3,536.84	-602.82	194.14	633.31	0.00	0.00	0.00
3,700.00	11.76	162.15	3,634.74	-622.22	200.39	653.70	0.00	0.00	0.00
3,800.00	11.76	162.15	3,732.64	-641.63	206.64	674.08	0.00	0.00	0.00
3,900.00	11.76	162.15	3,830.54	-661.03	212.89	694.46	0.00	0.00	0.00
4,000.00	11.76	162.15	3,928.45	-680.43	219.14	714.85	0.00	0.00	0.00
4,100.00	11.76	162.15	4,026.35	-699.83	225.39	735.23	0.00	0.00	0.00
4,200.00	11.76	162.15	4,124.25	-719.23	231.64	755.61	0.00	0.00	0.00
4,300.00	11.76	162.15	4,222.15	-738.64	237.88	776.00	0.00	0.00	0.00
4,400.00	11.76	162.15	4,320.05	-758.04	244.13	796.38	0.00	0.00	0.00
4,500.00	11.76	162.15	4,417.95	-777.44	250.38	816.77	0.00	0.00	0.00
<b>Williams Fork</b>									
4,563.38	11.76	162.15	4,480.00	-789.74	254.34	829.68	0.00	0.00	0.00



Database:	EDMDBBW	Local Co-ordinate Reference:	Well Gunderson 29-14E
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 29-14E	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	11.76	162.15	4,515.85	-796.84	256.63	837.15	0.00	0.00	0.00
4,700.00	11.76	162.15	4,613.75	-816.25	262.88	857.53	0.00	0.00	0.00
4,800.00	11.76	162.15	4,711.65	-835.65	269.13	877.92	0.00	0.00	0.00
4,900.00	11.76	162.15	4,809.55	-855.05	275.38	898.30	0.00	0.00	0.00
5,000.00	11.76	162.15	4,907.45	-874.45	281.62	918.68	0.00	0.00	0.00
5,100.00	11.76	162.15	5,005.35	-893.85	287.87	939.07	0.00	0.00	0.00
5,200.00	11.76	162.15	5,103.25	-913.26	294.12	959.45	0.00	0.00	0.00
Start Drop -2.00									
5,243.72	11.76	162.15	5,146.06	-921.74	296.85	968.36	0.00	0.00	0.00
5,300.00	10.64	162.15	5,201.26	-932.14	300.20	979.29	2.00	-2.00	0.00
5,400.00	8.64	162.15	5,299.85	-948.07	305.33	996.03	2.00	-2.00	0.00
5,500.00	6.64	162.15	5,398.95	-960.72	309.41	1,009.32	2.00	-2.00	0.00
5,600.00	4.64	162.15	5,498.47	-970.07	312.42	1,019.14	2.00	-2.00	0.00
5,700.00	2.64	162.15	5,598.26	-976.10	314.36	1,025.48	2.00	-2.00	0.00
5,800.00	0.64	162.15	5,698.21	-978.82	315.24	1,028.33	2.00	-2.00	0.00
Start 1950.00 hold at 5831.79 MD - Top Of Gas									
5,831.79	0.00	0.00	5,730.00	-978.99	315.29	1,028.51	2.00	-2.00	0.00
5,900.00	0.00	0.00	5,798.21	-978.99	315.29	1,028.51	0.00	0.00	0.00
6,000.00	0.00	0.00	5,898.21	-978.99	315.29	1,028.51	0.00	0.00	0.00
6,100.00	0.00	0.00	5,998.21	-978.99	315.29	1,028.51	0.00	0.00	0.00
6,200.00	0.00	0.00	6,098.21	-978.99	315.29	1,028.51	0.00	0.00	0.00
6,300.00	0.00	0.00	6,198.21	-978.99	315.29	1,028.51	0.00	0.00	0.00
6,400.00	0.00	0.00	6,298.21	-978.99	315.29	1,028.51	0.00	0.00	0.00
6,500.00	0.00	0.00	6,398.21	-978.99	315.29	1,028.51	0.00	0.00	0.00
6,600.00	0.00	0.00	6,498.21	-978.99	315.29	1,028.51	0.00	0.00	0.00
6,700.00	0.00	0.00	6,598.21	-978.99	315.29	1,028.51	0.00	0.00	0.00
6,800.00	0.00	0.00	6,698.21	-978.99	315.29	1,028.51	0.00	0.00	0.00
6,900.00	0.00	0.00	6,798.21	-978.99	315.29	1,028.51	0.00	0.00	0.00
Cameo									
6,931.79	0.00	0.00	6,830.00	-978.99	315.29	1,028.51	0.00	0.00	0.00
7,000.00	0.00	0.00	6,898.21	-978.99	315.29	1,028.51	0.00	0.00	0.00
7,100.00	0.00	0.00	6,998.21	-978.99	315.29	1,028.51	0.00	0.00	0.00
7,200.00	0.00	0.00	7,098.21	-978.99	315.29	1,028.51	0.00	0.00	0.00
7,300.00	0.00	0.00	7,198.21	-978.99	315.29	1,028.51	0.00	0.00	0.00
7,400.00	0.00	0.00	7,298.21	-978.99	315.29	1,028.51	0.00	0.00	0.00
7,500.00	0.00	0.00	7,398.21	-978.99	315.29	1,028.51	0.00	0.00	0.00
7,600.00	0.00	0.00	7,498.21	-978.99	315.29	1,028.51	0.00	0.00	0.00
Rollins									
7,631.79	0.00	0.00	7,530.00	-978.99	315.29	1,028.51	0.00	0.00	0.00
7,700.00	0.00	0.00	7,598.21	-978.99	315.29	1,028.51	0.00	0.00	0.00
TD at 7781.79									
7,781.79	0.00	0.00	7,680.00	-978.99	315.29	1,028.51	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 29-14E tgt	0.00	0.00	7,680.00	-978.99	315.29	1,522,681.671	2,352,444.800	39.246113	-107.786788
- plan hits target center									
- Circle (radius 50.00)									



Database:	EDMDBBW	Local Co-ordinate Reference:	Well Gunderson 29-14E
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 29-14E	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	1,480.93	8 5/8" Csg.	8-5/8	12-1/4	

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
2,589.95	2,548.00	G' Sand		0.00	
4,563.38	4,480.00	Williams Fork		0.00	
5,831.79	5,730.00	Top Of Gas		0.00	
6,931.79	6,830.00	Cameo		0.00	
7,631.79	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	
788.06	783.94	-57.25	18.44	Start 4455.66 hold at 788.06 MD	
5,243.72	5,146.06	-921.74	296.85	Start Drop -2.00	
5,831.79	5,730.00	-978.99	315.29	Start 1950.00 hold at 5831.79 MD	
7,781.79	7,680.00	-978.99	315.29	TD at 7781.79	



# **Piceance Energy, LLC**

**Mesa County, CO**

**Gunderson**

**Gunderson 29-14E**

**Wellbore #1**

**Design #1**

## **Anticollision Report**

**03 October, 2014**

# **Archer**



<b>Company:</b>	Piceance Energy, LLC	<b>Local Co-ordinate Reference:</b>	Well Gunderson 29-14E
<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 29-14E	<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	7,781.79	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 29-07E - Wellbore #1 - Design #1	180.00	180.00	11.13	10.60	20.982	CC
Gunderson 29-07E - Wellbore #1 - Design #1	210.00	209.97	11.16	10.50	16.822	ES
Gunderson 29-07E - Wellbore #1 - Design #1	300.00	299.55	14.37	13.31	13.547	SF
Gunderson 29-13E - Wellbore #1 - Design #1	328.25	328.20	19.96	18.79	17.066	CC
Gunderson 29-13E - Wellbore #1 - Design #1	360.00	359.92	20.03	18.72	15.315	ES
Gunderson 29-13E - Wellbore #1 - Design #1	7,781.79	7,743.17	248.76	212.57	6.874	SF
Gunderson 29-15E - Wellbore #1 - Design #1	180.00	180.00	9.94	9.41	18.739	CC
Gunderson 29-15E - Wellbore #1 - Design #1	240.00	240.00	10.03	9.24	12.674	ES
Gunderson 29-15E - Wellbore #1 - Design #1	2,580.00	2,595.30	32.12	12.50	1.637	SF

<b>Offset Design</b>													<b>Offset Site Error:</b>	0.00 usft
Gunderson - Gunderson 29-07E - 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>Warning</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>		
0.00	0.00	0.00	0.00	0.00	0.00	-5.84	11.07	-1.13	11.13					
30.00	30.00	30.00	30.00	0.01	0.03	-5.84	11.07	-1.13	11.13	11.10	0.03	343.875		
60.00	60.00	60.00	60.00	0.04	0.05	-5.84	11.07	-1.13	11.13	11.04	0.09	121.368		
90.00	90.00	90.00	90.00	0.07	0.08	-5.84	11.07	-1.13	11.13	10.98	0.15	73.688		
120.00	120.00	120.00	120.00	0.13	0.13	-5.84	11.07	-1.13	11.13	10.87	0.26	42.688		
150.00	150.00	150.00	150.00	0.20	0.20	-5.84	11.07	-1.13	11.13	10.73	0.40	28.135		
180.00	180.00	180.00	180.00	0.27	0.27	-5.84	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	-5.85	11.07	-1.13	11.14	10.56	0.57	19.456		
210.00	210.00	209.97	209.97	0.33	0.33	-5.82	11.09	-1.13	11.16	10.50	0.66	16.822	ES	
240.00	240.00	239.86	239.86	0.39	0.40	-5.47	11.33	-1.02	11.65	10.85	0.79	14.654		
270.00	269.99	269.73	269.72	0.45	0.47	-4.80	11.85	-0.80	12.72	11.79	0.93	13.711		
300.00	299.98	299.55	299.53	0.51	0.54	-3.97	12.66	-0.46	14.37	13.31	1.06	13.547	SF	
330.00	329.96	329.33	329.28	0.58	0.61	-3.10	13.76	0.01	16.60	15.41	1.20	13.852		
360.00	359.92	359.02	358.94	0.64	0.68	-2.31	15.14	0.59	19.43	18.09	1.34	14.532		
390.00	389.86	388.63	388.49	0.71	0.75	-1.61	16.79	1.29	22.83	21.36	1.47	15.485		
420.00	419.78	418.13	417.92	0.77	0.82	-1.03	18.71	2.11	26.82	25.20	1.62	16.590		
450.00	449.68	447.51	447.20	0.84	0.89	-0.56	20.91	3.04	31.39	29.63	1.76	17.827		
480.00	479.55	476.74	476.31	0.92	0.96	-0.18	23.37	4.08	36.53	34.63	1.90	19.186		

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 29-14E
<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 29-14E	<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 29-07E - 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		
510.00	509.40	505.82	505.24	1.00	1.03	0.13	26.09	5.23	42.24	40.19	2.05	20.621		
540.00	539.20	534.74	533.97	1.08	1.11	0.37	29.06	6.49	48.52	46.33	2.20	22.090		
570.00	568.97	563.46	562.49	1.17	1.19	0.56	32.27	7.85	55.37	53.03	2.34	23.623		
600.00	598.70	591.99	590.77	1.26	1.27	0.70	35.73	9.31	62.77	60.28	2.49	25.210		
630.00	628.39	620.30	618.80	1.36	1.36	0.82	39.41	10.87	70.73	68.09	2.64	26.757		
660.00	658.03	648.39	646.56	1.46	1.45	0.90	43.32	12.53	79.24	76.44	2.80	28.328		
690.00	687.61	676.79	674.60	1.56	1.54	0.96	47.46	14.28	88.23	85.28	2.95	29.939		
720.00	717.15	705.31	702.77	1.67	1.63	0.96	51.63	16.05	97.51	94.41	3.10	31.489		
750.00	746.63	733.75	730.84	1.78	1.73	0.91	55.79	17.81	107.07	103.83	3.24	33.019		
780.00	776.05	762.09	758.82	1.90	1.83	0.81	59.93	19.57	116.92	113.53	3.39	34.512		
810.00	805.42	790.35	786.72	2.02	1.92	0.69	64.07	21.32	126.96	123.43	3.53	35.953		
840.00	834.79	818.62	814.63	2.15	2.02	0.59	68.20	23.07	137.02	133.35	3.68	37.272		
870.00	864.16	846.88	842.53	2.27	2.12	0.50	72.33	24.82	147.08	143.26	3.82	38.489		
900.00	893.53	875.14	870.44	2.40	2.21	0.42	76.46	26.57	157.14	153.18	3.97	39.616		
930.00	922.90	903.40	898.34	2.53	2.31	0.35	80.60	28.32	167.20	163.09	4.11	40.634		
960.00	952.27	931.66	926.24	2.65	2.41	0.29	84.73	30.07	177.26	173.00	4.26	41.581		
990.00	981.64	959.93	954.15	2.78	2.51	0.24	88.86	31.82	187.32	182.91	4.41	42.464		
1,020.00	1,011.01	988.19	982.05	2.91	2.61	0.19	93.00	33.57	197.38	192.82	4.56	43.273		
1,050.00	1,040.38	1,016.45	1,009.95	3.04	2.71	0.15	97.13	35.33	207.44	202.73	4.71	44.026		
1,080.00	1,069.75	1,044.71	1,037.86	3.17	2.81	0.11	101.26	37.08	217.50	212.64	4.86	44.734		
1,110.00	1,099.12	1,072.98	1,065.76	3.30	2.91	0.07	105.39	38.83	227.56	222.55	5.01	45.390		
1,140.00	1,128.49	1,101.24	1,093.66	3.43	3.01	0.04	109.53	40.58	237.63	232.46	5.17	45.995		
1,170.00	1,157.86	1,129.50	1,121.57	3.57	3.11	0.01	113.66	42.33	247.69	242.37	5.32	46.577		
1,200.00	1,187.23	1,157.76	1,149.47	3.70	3.21	-0.02	117.79	44.08	257.75	252.28	5.47	47.127		
1,230.00	1,216.60	1,186.03	1,177.38	3.83	3.31	-0.05	121.93	45.83	267.81	262.18	5.63	47.605		
1,260.00	1,245.97	1,214.29	1,205.28	3.96	3.42	-0.07	126.06	47.58	277.87	272.09	5.78	48.103		
1,290.00	1,275.34	1,242.55	1,233.18	4.09	3.52	-0.09	130.19	49.33	287.93	282.00	5.93	48.547		
1,320.00	1,304.71	1,270.81	1,261.09	4.23	3.62	-0.12	134.33	51.08	297.99	291.91	6.09	48.961		
1,350.00	1,334.08	1,299.08	1,288.99	4.36	3.72	-0.13	138.46	52.84	308.05	301.82	6.24	49.383		
1,380.00	1,363.45	1,327.34	1,316.89	4.49	3.82	-0.15	142.59	54.59	318.12	311.72	6.39	49.757		
1,410.00	1,392.82	1,355.60	1,344.80	4.63	3.92	-0.17	146.72	56.34	328.18	321.63	6.55	50.114		
1,440.00	1,422.19	1,383.86	1,372.70	4.76	4.03	-0.19	150.86	58.09	338.24	331.53	6.70	50.459		
1,470.00	1,451.56	1,412.12	1,400.60	4.89	4.13	-0.20	154.99	59.84	348.30	341.44	6.86	50.785		
1,500.00	1,480.93	1,440.39	1,428.51	5.03	4.23	-0.22	159.12	61.59	358.36	351.35	7.01	51.091		
1,530.00	1,510.30	1,468.65	1,456.41	5.16	4.33	-0.23	163.26	63.34	368.42	361.25	7.17	51.387		
1,560.00	1,539.67	1,496.91	1,484.32	5.29	4.43	-0.24	167.39	65.09	378.48	371.16	7.33	51.669		
1,590.00	1,569.04	1,525.17	1,512.22	5.43	4.53	-0.25	171.52	66.84	388.54	381.06	7.48	51.936		
1,620.00	1,598.41	1,553.44	1,540.12	5.56	4.64	-0.27	175.66	68.59	398.61	390.97	7.64	52.191		
1,650.00	1,627.78	1,581.70	1,568.03	5.69	4.74	-0.28	179.79	70.34	408.67	400.87	7.79	52.437		
1,680.00	1,657.15	1,609.96	1,595.93	5.83	4.84	-0.29	183.92	72.10	418.73	410.78	7.95	52.671		
1,710.00	1,686.52	1,638.22	1,623.83	5.96	4.94	-0.30	188.05	73.85	428.79	420.68	8.11	52.895		
1,740.00	1,715.89	1,666.49	1,651.74	6.10	5.05	-0.31	192.19	75.60	438.85	430.59	8.26	53.110		
1,770.00	1,745.26	1,694.75	1,679.64	6.23	5.15	-0.32	196.32	77.35	448.91	440.49	8.42	53.317		
1,800.00	1,774.63	1,723.01	1,707.54	6.36	5.25	-0.32	200.45	79.10	458.98	450.40	8.58	53.515		
1,830.00	1,804.00	1,751.27	1,735.45	6.50	5.35	-0.33	204.59	80.85	469.04	460.30	8.73	53.705		
1,860.00	1,833.37	1,779.54	1,763.35	6.63	5.46	-0.34	208.72	82.60	479.10	470.21	8.89	53.889		
1,890.00	1,862.74	1,807.80	1,791.26	6.77	5.56	-0.35	212.85	84.35	489.16	480.11	9.05	54.065		
1,920.00	1,892.11	1,836.06	1,819.16	6.90	5.66	-0.36	216.98	86.10	499.22	490.02	9.20	54.234		
1,950.00	1,921.48	1,864.32	1,847.06	7.04	5.76	-0.36	221.12	87.85	509.28	499.92	9.36	54.398		
1,980.00	1,950.85	1,892.58	1,874.97	7.17	5.87	-0.37	225.25	89.61	519.35	509.83	9.52	54.556		
2,010.00	1,980.22	1,920.85	1,902.87	7.30	5.97	-0.38	229.38	91.36	529.41	519.73	9.68	54.708		
2,040.00	2,009.59	1,949.11	1,930.77	7.44	6.07	-0.38	233.52	93.11	539.47	529.63	9.83	54.855		

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 29-14E
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 29-14E	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 29-07E - 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	2,038.97	1,977.37	1,958.68	7.57	6.17	-0.39	237.65	94.86	549.53	539.54	9.99	54.996		
2,100.00	2,068.34	2,005.63	1,986.58	7.71	6.28	-0.39	241.78	96.61	559.59	549.44	10.15	55.134		
2,130.00	2,097.71	2,033.90	2,014.48	7.84	6.38	-0.40	245.92	98.36	569.65	559.35	10.31	55.266		
2,160.00	2,127.08	2,062.16	2,042.39	7.98	6.48	-0.40	250.05	100.11	579.71	569.25	10.47	55.394		
2,190.00	2,156.45	2,090.42	2,070.29	8.11	6.58	-0.41	254.18	101.86	589.78	579.15	10.62	55.518		
2,220.00	2,185.82	2,118.68	2,098.20	8.24	6.69	-0.42	258.31	103.61	599.84	589.06	10.78	55.638		
2,250.00	2,215.19	2,146.95	2,126.10	8.38	6.79	-0.42	262.45	105.36	609.90	598.96	10.94	55.755		
2,280.00	2,244.56	2,175.21	2,154.00	8.51	6.89	-0.42	266.58	107.11	619.96	608.86	11.10	55.868		
2,310.00	2,273.93	2,203.47	2,181.91	8.65	6.99	-0.43	270.71	108.87	630.02	618.77	11.25	55.977		
2,340.00	2,303.30	2,231.73	2,209.81	8.78	7.10	-0.43	274.85	110.62	640.08	628.67	11.41	56.083		
2,370.00	2,332.67	2,260.00	2,237.71	8.92	7.20	-0.44	278.98	112.37	650.15	638.58	11.57	56.186		
2,400.00	2,362.04	2,288.26	2,265.62	9.05	7.30	-0.44	283.11	114.12	660.21	648.48	11.73	56.286		
2,430.00	2,391.41	2,316.52	2,293.52	9.19	7.41	-0.45	287.25	115.87	670.27	658.38	11.89	56.383		
2,460.00	2,420.78	2,344.78	2,321.42	9.32	7.51	-0.45	291.38	117.62	680.33	668.29	12.05	56.478		
2,490.00	2,450.15	2,373.04	2,349.33	9.46	7.61	-0.45	295.51	119.37	690.39	678.19	12.20	56.570		
2,520.00	2,479.52	2,401.31	2,377.23	9.59	7.71	-0.46	299.64	121.12	700.46	688.09	12.36	56.659		
2,550.00	2,508.89	2,429.57	2,405.14	9.73	7.82	-0.46	303.78	122.87	710.52	698.00	12.52	56.746		
2,580.00	2,538.26	2,457.83	2,433.04	9.86	7.92	-0.46	307.91	124.62	720.58	707.90	12.68	56.830		
2,610.00	2,567.63	2,486.09	2,460.94	10.00	8.02	-0.47	312.04	126.38	730.64	717.80	12.84	56.912		
2,640.00	2,597.00	2,514.36	2,488.85	10.13	8.13	-0.47	316.18	128.13	740.70	727.71	13.00	56.992		
2,670.00	2,626.37	2,542.62	2,516.75	10.26	8.23	-0.47	320.31	129.88	750.76	737.61	13.16	57.070		
2,700.00	2,655.74	2,570.88	2,544.65	10.40	8.33	-0.48	324.44	131.63	760.83	747.51	13.31	57.146		
2,730.00	2,685.11	2,599.14	2,572.56	10.53	8.43	-0.48	328.57	133.38	770.89	757.41	13.47	57.220		
2,760.00	2,714.48	2,627.41	2,600.46	10.67	8.54	-0.48	332.71	135.13	780.95	767.32	13.63	57.293		
2,790.00	2,743.85	2,655.67	2,628.36	10.80	8.64	-0.49	336.84	136.88	791.01	777.22	13.79	57.363		
2,820.00	2,773.22	2,683.93	2,656.27	10.94	8.74	-0.49	340.97	138.63	801.07	787.12	13.95	57.432		
2,850.00	2,802.59	2,712.19	2,684.17	11.07	8.85	-0.49	345.11	140.38	811.13	797.03	14.11	57.499		
2,880.00	2,831.96	2,740.46	2,712.08	11.21	8.95	-0.50	349.24	142.13	821.20	806.93	14.27	57.564		
2,910.00	2,861.33	2,768.72	2,739.98	11.34	9.05	-0.50	353.37	143.88	831.26	816.83	14.42	57.628		
2,940.00	2,890.70	2,796.98	2,767.88	11.48	9.16	-0.50	357.51	145.64	841.32	826.74	14.58	57.691		
2,970.00	2,920.07	2,825.24	2,795.79	11.61	9.26	-0.50	361.64	147.39	851.38	836.64	14.74	57.751		
3,000.00	2,949.44	2,853.50	2,823.69	11.75	9.36	-0.51	365.77	149.14	861.44	846.54	14.90	57.811		
3,030.00	2,978.81	2,881.77	2,851.59	11.88	9.46	-0.51	369.90	150.89	871.50	856.44	15.06	57.869		
3,060.00	3,008.18	2,910.03	2,879.50	12.02	9.57	-0.51	374.04	152.64	881.57	866.35	15.22	57.926		
3,090.00	3,037.55	2,938.29	2,907.40	12.15	9.67	-0.51	378.17	154.39	891.63	876.25	15.38	57.982		
3,120.00	3,066.92	2,966.55	2,935.31	12.29	9.77	-0.51	382.30	156.14	901.69	886.15	15.54	58.036		
3,150.00	3,096.29	2,994.82	2,963.21	12.42	9.88	-0.52	386.44	157.89	911.75	896.06	15.70	58.089		
3,180.00	3,125.66	3,023.08	2,991.11	12.56	9.98	-0.52	390.57	159.64	921.81	905.96	15.85	58.141		
3,210.00	3,155.03	3,051.34	3,019.02	12.69	10.08	-0.52	394.70	161.39	931.87	915.86	16.01	58.192		
3,240.00	3,184.40	3,079.60	3,046.92	12.83	10.19	-0.52	398.83	163.15	941.94	925.76	16.17	58.242		
3,270.00	3,213.77	3,107.87	3,074.82	12.96	10.29	-0.52	402.97	164.90	952.00	935.67	16.33	58.291		
3,300.00	3,243.14	3,136.13	3,102.73	13.10	10.39	-0.53	407.10	166.65	962.06	945.57	16.49	58.339		
3,330.00	3,272.51	3,164.39	3,130.63	13.23	10.49	-0.53	411.23	168.40	972.12	955.47	16.65	58.386		
3,360.00	3,301.88	3,192.65	3,158.53	13.37	10.60	-0.53	415.37	170.15	982.18	965.37	16.81	58.432		
3,390.00	3,331.25	3,220.92	3,186.44	13.50	10.70	-0.53	419.50	171.90	992.24	975.28	16.97	58.477		
3,420.00	3,360.62	3,249.18	3,214.34	13.64	10.80	-0.53	423.63	173.65	1,002.31	985.18	17.13	58.521		
3,450.00	3,389.99	3,277.44	3,242.25	13.77	10.91	-0.54	427.77	175.40	1,012.37	995.08	17.29	58.564		
3,480.00	3,419.36	3,305.70	3,270.15	13.91	11.01	-0.54	431.90	177.15	1,022.43	1,004.98	17.45	58.606		
3,510.00	3,448.73	3,333.96	3,298.05	14.04	11.11	-0.54	436.03	178.90	1,032.49	1,014.89	17.60	58.648		
3,540.00	3,478.10	3,362.23	3,325.96	14.18	11.22	-0.54	440.16	180.65	1,042.55	1,024.79	17.76	58.688		
3,570.00	3,507.47	3,390.49	3,353.86	14.31	11.32	-0.54	444.30	182.41	1,052.62	1,034.69	17.92	58.728		
3,600.00	3,536.84	3,418.75	3,381.76	14.45	11.42	-0.54	448.43	184.16	1,062.68	1,044.59	18.08	58.767		

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 29-14E
<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 29-14E	<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 29-07E - 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		
3,630.00	3,566.21	3,447.01	3,409.67	14.58	11.52	-0.55	452.56	185.91	1,072.74	1,054.50	18.24	58.806		
3,660.00	3,595.58	3,475.28	3,437.57	14.72	11.63	-0.55	456.70	187.66	1,082.80	1,064.40	18.40	58.844		
3,690.00	3,624.95	3,503.54	3,465.47	14.85	11.73	-0.55	460.83	189.41	1,092.86	1,074.30	18.56	58.881		
3,720.00	3,654.32	3,531.80	3,493.38	14.99	11.83	-0.55	464.96	191.16	1,102.92	1,084.20	18.72	58.917		
3,750.00	3,683.69	3,560.06	3,521.28	15.12	11.94	-0.55	469.10	192.91	1,112.99	1,094.11	18.88	58.953		
3,780.00	3,713.06	3,588.33	3,549.19	15.26	12.04	-0.55	473.23	194.66	1,123.05	1,104.01	19.04	58.988		
3,810.00	3,742.43	3,616.59	3,577.09	15.39	12.14	-0.55	477.36	196.41	1,133.11	1,113.91	19.20	59.022		
3,840.00	3,771.80	3,644.85	3,604.99	15.53	12.25	-0.56	481.49	198.16	1,143.17	1,123.81	19.36	59.056		
3,870.00	3,801.17	3,673.11	3,632.90	15.66	12.35	-0.56	485.63	199.92	1,153.23	1,133.72	19.52	59.089		
3,900.00	3,830.55	3,701.37	3,660.80	15.80	12.45	-0.56	489.76	201.67	1,163.29	1,143.62	19.68	59.121		
3,930.00	3,859.92	3,729.64	3,688.70	15.93	12.56	-0.56	493.89	203.42	1,173.36	1,153.52	19.84	59.153		
3,960.00	3,889.29	3,757.90	3,716.61	16.07	12.66	-0.56	498.03	205.17	1,183.42	1,163.42	20.00	59.185		
3,990.00	3,918.66	3,786.16	3,744.51	16.20	12.76	-0.56	502.16	206.92	1,193.48	1,173.33	20.15	59.216		
4,020.00	3,948.03	3,814.42	3,772.41	16.34	12.86	-0.56	506.29	208.67	1,203.54	1,183.23	20.31	59.246		
4,050.00	3,977.40	3,842.69	3,800.32	16.47	12.97	-0.57	510.42	210.42	1,213.60	1,193.13	20.47	59.276		
4,080.00	4,006.77	3,870.95	3,828.22	16.61	13.07	-0.57	514.56	212.17	1,223.67	1,203.03	20.63	59.305		
4,110.00	4,036.14	3,899.21	3,856.13	16.74	13.17	-0.57	518.69	213.92	1,233.73	1,212.93	20.79	59.334		
4,140.00	4,065.51	3,927.47	3,884.03	16.88	13.28	-0.57	522.82	215.67	1,243.79	1,222.84	20.95	59.363		
4,170.00	4,094.88	3,955.74	3,911.93	17.01	13.38	-0.57	526.96	217.42	1,253.85	1,232.74	21.11	59.391		
4,200.00	4,124.25	3,984.00	3,939.84	17.15	13.48	-0.57	531.09	219.18	1,263.91	1,242.64	21.27	59.418		
4,230.00	4,153.62	4,012.26	3,967.74	17.28	13.59	-0.57	535.22	220.93	1,273.97	1,252.54	21.43	59.445		
4,260.00	4,182.99	4,040.52	3,995.64	17.42	13.69	-0.57	539.36	222.68	1,284.04	1,262.45	21.59	59.472		
4,290.00	4,212.36	4,068.79	4,023.55	17.55	13.79	-0.57	543.49	224.43	1,294.10	1,272.35	21.75	59.498		
4,320.00	4,241.73	4,097.05	4,051.45	17.69	13.90	-0.58	547.62	226.18	1,304.16	1,282.25	21.91	59.524		
4,350.00	4,271.10	4,125.31	4,079.35	17.82	14.00	-0.58	551.75	227.93	1,314.22	1,292.15	22.07	59.549		
4,380.00	4,300.47	4,153.57	4,107.26	17.96	14.10	-0.58	555.89	229.68	1,324.28	1,302.05	22.23	59.574		
4,410.00	4,329.84	4,181.83	4,135.16	18.09	14.20	-0.58	560.02	231.43	1,334.34	1,311.96	22.39	59.598		
4,440.00	4,359.21	4,210.10	4,163.07	18.23	14.31	-0.58	564.15	233.18	1,344.41	1,321.86	22.55	59.622		
4,470.00	4,388.58	4,238.36	4,190.97	18.36	14.41	-0.58	568.29	234.93	1,354.47	1,331.76	22.71	59.646		
4,500.00	4,417.95	4,266.62	4,218.87	18.50	14.51	-0.58	572.42	236.69	1,364.53	1,341.66	22.87	59.670		
4,530.00	4,447.32	4,294.88	4,246.78	18.63	14.62	-0.58	576.55	238.44	1,374.59	1,351.56	23.03	59.693		
4,560.00	4,476.69	4,323.15	4,274.68	18.77	14.72	-0.58	580.69	240.19	1,384.65	1,361.47	23.19	59.715		
4,590.00	4,506.06	4,351.41	4,302.58	18.90	14.82	-0.58	584.82	241.94	1,394.72	1,371.37	23.35	59.738		
4,620.00	4,535.43	4,379.67	4,330.49	19.04	14.93	-0.59	588.95	243.69	1,404.78	1,381.27	23.51	59.760		
4,650.00	4,564.80	4,407.93	4,358.39	19.17	15.03	-0.59	593.08	245.44	1,414.84	1,391.17	23.67	59.781		
4,680.00	4,594.17	4,436.20	4,386.29	19.31	15.13	-0.59	597.22	247.19	1,424.90	1,401.07	23.83	59.803		
4,710.00	4,623.54	4,464.46	4,414.20	19.44	15.24	-0.59	601.35	248.94	1,434.96	1,410.98	23.99	59.824		
4,740.00	4,652.91	4,492.72	4,442.10	19.58	15.34	-0.59	605.48	250.69	1,445.02	1,420.88	24.15	59.845		
4,770.00	4,682.28	4,520.98	4,470.01	19.71	15.44	-0.59	609.62	252.44	1,455.09	1,430.78	24.31	59.865		
4,800.00	4,711.65	4,549.25	4,497.91	19.85	15.55	-0.59	613.75	254.19	1,465.15	1,440.68	24.47	59.885		
4,830.00	4,741.02	4,577.51	4,525.81	19.98	15.65	-0.59	617.88	255.95	1,475.21	1,450.58	24.63	59.905		
4,860.00	4,770.39	4,605.77	4,553.72	20.12	15.75	-0.59	622.01	257.70	1,485.27	1,460.49	24.79	59.925		
4,890.00	4,799.76	4,634.03	4,581.62	20.25	15.85	-0.59	626.15	259.45	1,495.33	1,470.39	24.95	59.944		
4,920.00	4,829.13	4,662.29	4,609.52	20.39	15.96	-0.59	630.28	261.20	1,505.39	1,480.29	25.11	59.963		
4,950.00	4,858.50	4,690.56	4,637.43	20.52	16.06	-0.59	634.41	262.95	1,515.46	1,490.19	25.27	59.981		
4,980.00	4,887.87	4,718.82	4,665.33	20.66	16.16	-0.60	638.55	264.70	1,525.52	1,500.09	25.43	60.000		
5,010.00	4,917.24	4,747.08	4,693.23	20.79	16.27	-0.60	642.68	266.45	1,535.58	1,509.99	25.59	60.018		
5,040.00	4,946.61	4,775.34	4,721.14	20.93	16.37	-0.60	646.81	268.20	1,545.64	1,519.90	25.75	60.036		
5,070.00	4,975.98	4,803.61	4,749.04	21.06	16.47	-0.60	650.95	269.95	1,555.70	1,529.80	25.91	60.054		
5,100.00	5,005.35	4,831.87	4,776.95	21.20	16.58	-0.60	655.08	271.70	1,565.77	1,539.70	26.07	60.071		
5,130.00	5,034.72	4,860.13	4,804.85	21.33	16.68	-0.60	659.21	273.46	1,575.83	1,549.60	26.23	60.088		
5,160.00	5,064.09	4,888.39	4,832.75	21.47	16.78	-0.60	663.34	275.21	1,585.89	1,559.50	26.39	60.105		

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 29-14E
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 29-14E	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 29-07E - 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		
5,190.00	5,093.46	4,916.66	4,860.66	21.60	16.89	-0.60	667.48	276.96	1,595.95	1,569.41	26.55	60.122		
5,220.00	5,122.83	4,944.92	4,888.56	21.74	16.99	-0.60	671.61	278.71	1,606.01	1,579.31	26.71	60.139		
5,250.00	5,152.20	4,973.18	4,916.47	21.87	17.09	-0.60	675.74	280.46	1,616.07	1,589.20	26.87	60.142		
5,280.00	5,181.62	5,001.52	4,944.44	21.98	17.20	-0.60	679.89	282.21	1,625.93	1,598.87	27.06	60.094		
5,310.00	5,211.09	5,029.94	4,972.51	22.08	17.30	-0.59	684.04	283.98	1,635.51	1,608.27	27.24	60.047		
5,340.00	5,240.62	5,058.47	5,000.67	22.17	17.40	-0.59	688.22	285.74	1,644.81	1,617.40	27.41	60.010		
5,370.00	5,270.21	5,087.08	5,028.92	22.25	17.51	-0.57	692.40	287.52	1,653.82	1,626.24	27.58	59.967		
5,400.00	5,299.85	5,115.78	5,057.25	22.33	17.61	-0.56	696.60	289.29	1,662.54	1,634.79	27.75	59.917		
5,430.00	5,329.53	5,144.56	5,085.67	22.41	17.72	-0.54	700.81	291.08	1,670.98	1,643.07	27.91	59.871		
5,460.00	5,359.26	5,173.43	5,114.17	22.48	17.82	-0.52	705.03	292.86	1,679.13	1,651.06	28.07	59.818		
5,490.00	5,389.02	5,202.37	5,142.74	22.55	17.93	-0.49	709.26	294.66	1,687.00	1,658.77	28.23	59.760		
5,520.00	5,418.83	5,231.38	5,171.39	22.61	18.04	-0.47	713.50	296.46	1,694.57	1,666.19	28.38	59.702		
5,550.00	5,448.67	5,260.47	5,200.11	22.67	18.14	-0.44	717.76	298.26	1,701.86	1,673.33	28.53	59.642		
5,580.00	5,478.54	5,289.63	5,228.89	22.73	18.25	-0.40	722.02	300.06	1,708.86	1,680.17	28.68	59.576		
5,610.00	5,508.43	5,318.85	5,257.74	22.79	18.35	-0.36	726.29	301.87	1,715.56	1,686.73	28.83	59.508		
5,640.00	5,538.36	5,362.72	5,301.07	22.84	18.50	-0.29	732.60	304.55	1,721.93	1,692.93	29.00	59.376		
5,670.00	5,568.30	5,428.80	5,366.52	22.89	18.69	-0.19	741.01	308.11	1,727.49	1,698.28	29.20	59.152		
5,700.00	5,598.26	5,495.52	5,432.79	22.94	18.86	-0.11	748.10	311.11	1,732.12	1,702.73	29.39	58.932		
5,730.00	5,628.23	5,562.76	5,499.75	22.97	19.00	-0.04	753.80	313.53	1,735.83	1,706.26	29.56	58.712		
5,760.00	5,658.22	5,630.41	5,567.24	23.01	19.13	0.01	758.07	315.34	1,738.58	1,708.85	29.73	58.477		
5,790.00	5,688.21	5,698.36	5,635.12	23.05	19.25	0.04	760.88	316.53	1,740.39	1,710.50	29.89	58.227		
5,820.00	5,718.21	5,766.48	5,703.22	23.08	19.34	0.06	762.22	317.09	1,741.25	1,711.21	30.04	57.967		
5,850.00	5,748.21	5,811.47	5,748.21	23.12	19.40	0.06	762.33	317.14	1,741.32	1,711.16	30.16	57.739		
5,880.00	5,778.21	5,841.47	5,778.21	23.15	19.44	0.06	762.33	317.14	1,741.32	1,711.06	30.26	57.540		
5,910.00	5,808.21	5,871.47	5,808.21	23.18	19.49	0.06	762.33	317.14	1,741.32	1,710.95	30.37	57.345		
5,940.00	5,838.21	5,901.47	5,838.21	23.21	19.53	0.06	762.33	317.14	1,741.32	1,710.85	30.47	57.157		
5,970.00	5,868.21	5,931.47	5,868.21	23.24	19.57	0.06	762.33	317.14	1,741.32	1,710.75	30.57	56.969		
6,000.00	5,898.21	5,961.47	5,898.21	23.26	19.61	0.06	762.33	317.14	1,741.32	1,710.65	30.67	56.783		
6,030.00	5,928.21	5,991.47	5,928.21	23.29	19.65	0.06	762.33	317.14	1,741.32	1,710.55	30.77	56.596		
6,060.00	5,958.21	6,021.47	5,958.21	23.32	19.70	0.06	762.33	317.14	1,741.32	1,710.45	30.87	56.411		
6,090.00	5,988.21	6,051.47	5,988.21	23.35	19.74	0.06	762.33	317.14	1,741.32	1,710.35	30.97	56.227		
6,120.00	6,018.21	6,081.47	6,018.21	23.38	19.78	0.06	762.33	317.14	1,741.32	1,710.25	31.07	56.043		
6,150.00	6,048.21	6,111.47	6,048.21	23.41	19.83	0.06	762.33	317.14	1,741.32	1,710.15	31.17	55.860		
6,180.00	6,078.21	6,141.47	6,078.21	23.44	19.87	0.06	762.33	317.14	1,741.32	1,710.04	31.28	55.678		
6,210.00	6,108.21	6,171.47	6,108.21	23.47	19.91	0.06	762.33	317.14	1,741.32	1,709.94	31.38	55.496		
6,240.00	6,138.21	6,201.47	6,138.21	23.50	19.96	0.06	762.33	317.14	1,741.32	1,709.84	31.48	55.316		
6,270.00	6,168.21	6,231.47	6,168.21	23.53	20.00	0.06	762.33	317.14	1,741.32	1,709.74	31.58	55.135		
6,300.00	6,198.21	6,261.47	6,198.21	23.56	20.04	0.06	762.33	317.14	1,741.32	1,709.63	31.69	54.957		
6,330.00	6,228.21	6,291.47	6,228.21	23.59	20.09	0.06	762.33	317.14	1,741.32	1,709.53	31.79	54.778		
6,360.00	6,258.21	6,321.47	6,258.21	23.62	20.13	0.06	762.33	317.14	1,741.32	1,709.43	31.89	54.600		
6,390.00	6,288.21	6,351.47	6,288.21	23.65	20.18	0.06	762.33	317.14	1,741.32	1,709.32	32.00	54.423		
6,420.00	6,318.21	6,381.47	6,318.21	23.68	20.22	0.06	762.33	317.14	1,741.32	1,709.22	32.10	54.247		
6,450.00	6,348.21	6,411.47	6,348.21	23.71	20.26	0.06	762.33	317.14	1,741.32	1,709.12	32.20	54.072		
6,480.00	6,378.21	6,441.47	6,378.21	23.74	20.31	0.06	762.33	317.14	1,741.32	1,709.01	32.31	53.897		
6,510.00	6,408.21	6,471.47	6,408.21	23.77	20.35	0.06	762.33	317.14	1,741.32	1,708.91	32.41	53.723		
6,540.00	6,438.21	6,501.47	6,438.21	23.80	20.40	0.06	762.33	317.14	1,741.32	1,708.80	32.52	53.550		
6,570.00	6,468.21	6,531.47	6,468.21	23.83	20.44	0.06	762.33	317.14	1,741.32	1,708.70	32.62	53.378		
6,600.00	6,498.21	6,561.47	6,498.21	23.86	20.49	0.06	762.33	317.14	1,741.32	1,708.59	32.73	53.206		
6,630.00	6,528.21	6,591.47	6,528.21	23.90	20.53	0.06	762.33	317.14	1,741.32	1,708.49	32.83	53.035		
6,660.00	6,558.21	6,621.47	6,558.21	23.93	20.58	0.06	762.33	317.14	1,741.32	1,708.38	32.94	52.865		
6,690.00	6,588.21	6,651.47	6,588.21	23.96	20.63	0.06	762.33	317.14	1,741.32	1,708.28	33.04	52.696		
6,720.00	6,618.21	6,681.47	6,618.21	23.99	20.67	0.06	762.33	317.14	1,741.32	1,708.17	33.15	52.527		

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



# Archer

## Anticollision Report

# Archer

<b>Company:</b>	Piceance Energy, LLC	<b>Local Co-ordinate Reference:</b>	Well Gunderson 29-14E
<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 29-14E	<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 29-07E - 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		
6,750.00	6,648.21	6,711.47	6,648.21	24.02	20.72	0.06	762.33	317.14	1,741.32	1,708.06	33.26	52.359		
6,780.00	6,678.21	6,741.47	6,678.21	24.06	20.76	0.06	762.33	317.14	1,741.32	1,707.96	33.36	52.192		
6,810.00	6,708.21	6,771.47	6,708.21	24.09	20.81	0.06	762.33	317.14	1,741.32	1,707.85	33.47	52.026		
6,840.00	6,738.21	6,801.47	6,738.21	24.12	20.85	0.06	762.33	317.14	1,741.32	1,707.74	33.58	51.860		
6,870.00	6,768.21	6,831.47	6,768.21	24.15	20.90	0.06	762.33	317.14	1,741.32	1,707.64	33.68	51.695		
6,900.00	6,798.21	6,861.47	6,798.21	24.19	20.95	0.06	762.33	317.14	1,741.32	1,707.53	33.79	51.532		
6,930.00	6,828.21	6,891.47	6,828.21	24.22	20.99	0.06	762.33	317.14	1,741.32	1,707.42	33.90	51.368		
6,960.00	6,858.21	6,921.47	6,858.21	24.25	21.04	0.06	762.33	317.14	1,741.32	1,707.31	34.01	51.205		
6,990.00	6,888.21	6,951.47	6,888.21	24.29	21.09	0.06	762.33	317.14	1,741.32	1,707.21	34.11	51.044		
7,020.00	6,918.21	6,981.47	6,918.21	24.32	21.13	0.06	762.33	317.14	1,741.32	1,707.10	34.22	50.883		
7,050.00	6,948.21	7,011.47	6,948.21	24.35	21.18	0.06	762.33	317.14	1,741.32	1,706.99	34.33	50.722		
7,080.00	6,978.21	7,041.47	6,978.21	24.39	21.23	0.06	762.33	317.14	1,741.32	1,706.88	34.44	50.562		
7,110.00	7,008.21	7,071.47	7,008.21	24.42	21.27	0.06	762.33	317.14	1,741.32	1,706.77	34.55	50.404		
7,140.00	7,038.21	7,101.47	7,038.21	24.45	21.32	0.06	762.33	317.14	1,741.32	1,706.66	34.66	50.245		
7,170.00	7,068.21	7,131.47	7,068.21	24.49	21.37	0.06	762.33	317.14	1,741.32	1,706.55	34.77	50.088		
7,200.00	7,098.21	7,161.47	7,098.21	24.52	21.42	0.06	762.33	317.14	1,741.32	1,706.45	34.87	49.931		
7,230.00	7,128.21	7,191.47	7,128.21	24.56	21.46	0.06	762.33	317.14	1,741.32	1,706.34	34.98	49.775		
7,260.00	7,158.21	7,221.47	7,158.21	24.59	21.51	0.06	762.33	317.14	1,741.32	1,706.23	35.09	49.620		
7,290.00	7,188.21	7,251.47	7,188.21	24.63	21.56	0.06	762.33	317.14	1,741.32	1,706.12	35.20	49.465		
7,320.00	7,218.21	7,281.47	7,218.21	24.66	21.61	0.06	762.33	317.14	1,741.32	1,706.01	35.31	49.312		
7,350.00	7,248.21	7,311.47	7,248.21	24.70	21.65	0.06	762.33	317.14	1,741.32	1,705.90	35.42	49.158		
7,380.00	7,278.21	7,341.47	7,278.21	24.73	21.70	0.06	762.33	317.14	1,741.32	1,705.79	35.53	49.006		
7,410.00	7,308.21	7,371.47	7,308.21	24.77	21.75	0.06	762.33	317.14	1,741.32	1,705.68	35.64	48.854		
7,440.00	7,338.21	7,401.47	7,338.21	24.80	21.80	0.06	762.33	317.14	1,741.32	1,705.57	35.75	48.703		
7,470.00	7,368.21	7,431.47	7,368.21	24.84	21.85	0.06	762.33	317.14	1,741.32	1,705.46	35.86	48.553		
7,500.00	7,398.21	7,461.47	7,398.21	24.87	21.89	0.06	762.33	317.14	1,741.32	1,705.34	35.97	48.404		
7,530.00	7,428.21	7,491.47	7,428.21	24.91	21.94	0.06	762.33	317.14	1,741.32	1,705.23	36.09	48.255		
7,560.00	7,458.21	7,521.47	7,458.21	24.95	21.99	0.06	762.33	317.14	1,741.32	1,705.12	36.20	48.106		
7,590.00	7,488.21	7,551.47	7,488.21	24.98	22.04	0.06	762.33	317.14	1,741.32	1,705.01	36.31	47.959		
7,620.00	7,518.21	7,581.47	7,518.21	25.02	22.09	0.06	762.33	317.14	1,741.32	1,704.90	36.42	47.812		
7,650.00	7,548.21	7,611.47	7,548.21	25.05	22.14	0.06	762.33	317.14	1,741.32	1,704.79	36.53	47.666		
7,680.00	7,578.21	7,641.47	7,578.21	25.09	22.19	0.06	762.33	317.14	1,741.32	1,704.68	36.64	47.521		
7,710.00	7,608.21	7,671.47	7,608.21	25.13	22.24	0.06	762.33	317.14	1,741.32	1,704.56	36.76	47.376		
7,740.00	7,638.21	7,701.47	7,638.21	25.16	22.29	0.06	762.33	317.14	1,741.32	1,704.45	36.87	47.232		
7,770.00	7,668.21	7,731.47	7,668.21	25.20	22.33	0.06	762.33	317.14	1,741.32	1,704.34	36.98	47.089		
7,781.79	7,680.00	7,743.26	7,680.00	25.22	22.35	0.06	762.33	317.14	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 29-14E
<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 29-14E	<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 29-13E - 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	80.33	3.39	19.88	20.17					
30.00	30.00	30.00	30.00	0.01	0.03	80.33	3.39	19.88	20.17	20.13	0.03	623.071		
60.00	60.00	60.00	60.00	0.04	0.05	80.33	3.39	19.88	20.17	20.07	0.09	219.908		
90.00	90.00	90.00	90.00	0.07	0.08	80.33	3.39	19.88	20.17	20.02	0.15	133.515		
120.00	120.00	120.00	120.00	0.13	0.13	80.33	3.39	19.88	20.17	19.91	0.26	77.347		
150.00	150.00	150.00	150.00	0.20	0.20	80.33	3.39	19.88	20.17	19.77	0.40	50.979		
180.00	180.00	180.00	180.00	0.27	0.27	80.33	3.39	19.88	20.17	19.64	0.53	38.018		
210.00	210.00	210.00	210.00	0.33	0.33	80.28	3.39	19.88	20.16	19.50	0.66	30.411		
240.00	240.00	240.00	240.00	0.39	0.40	79.54	3.39	19.88	20.13	19.34	0.79	25.443		
270.00	269.99	269.99	269.99	0.45	0.47	77.91	3.39	19.88	20.06	19.14	0.92	21.828		
300.00	299.98	299.98	299.98	0.51	0.53	75.37	3.39	19.88	19.99	18.95	1.05	19.094		
328.25	328.20	328.20	328.20	0.57	0.60	72.15	3.39	19.88	19.96	18.79	1.17	17.066 CC		
330.00	329.96	329.96	329.96	0.58	0.60	71.92	3.39	19.88	19.96	18.78	1.18	16.956		
360.00	359.92	359.92	359.92	0.64	0.67	67.57	3.39	19.88	20.03	18.72	1.31	15.315 ES		
390.00	389.86	389.86	389.86	0.71	0.74	62.40	3.39	19.88	20.25	18.82	1.44	14.085		
420.00	419.78	419.78	419.78	0.77	0.80	56.55	3.39	19.88	20.72	19.15	1.58	13.153		
450.00	449.68	449.68	449.68	0.84	0.87	50.23	3.39	19.88	21.52	19.80	1.72	12.544		
480.00	479.55	479.55	479.55	0.92	0.94	43.73	3.39	19.88	22.70	20.84	1.86	12.235		
510.00	509.40	509.44	509.44	1.00	1.00	37.36	3.37	19.89	24.31	22.31	1.99	12.188		
540.00	539.20	539.42	539.42	1.08	1.06	31.74	3.14	19.98	26.24	24.11	2.13	12.313		
570.00	568.97	569.43	569.42	1.17	1.12	26.96	2.61	20.19	28.41	26.14	2.27	12.543		
600.00	598.70	599.48	599.46	1.26	1.18	22.93	1.79	20.53	30.76	28.37	2.40	12.842		
630.00	628.39	629.56	629.51	1.36	1.24	19.51	0.67	20.98	33.26	30.73	2.53	13.156		
660.00	658.03	659.67	659.59	1.46	1.30	16.61	-0.74	21.54	35.87	33.21	2.66	13.498		
690.00	687.61	689.82	689.68	1.56	1.36	14.15	-2.44	22.23	38.57	35.79	2.78	13.855		
720.00	717.15	720.00	719.78	1.67	1.42	12.04	-4.44	23.04	41.35	38.43	2.92	14.175		
750.00	746.63	750.21	749.89	1.78	1.48	10.23	-6.74	23.96	44.18	41.13	3.05	14.477		
780.00	776.05	780.46	780.01	1.90	1.54	8.67	-9.34	25.01	47.06	43.88	3.18	14.777		
810.00	805.42	810.75	810.14	2.02	1.61	7.36	-12.23	26.17	49.91	46.59	3.32	15.027		
840.00	834.79	841.09	840.29	2.15	1.69	6.35	-15.42	27.46	52.51	49.05	3.46	15.162		
870.00	864.16	871.50	870.46	2.27	1.77	5.60	-18.92	28.87	54.85	51.24	3.61	15.212		
900.00	893.53	901.95	900.63	2.40	1.84	5.05	-22.72	30.40	56.91	53.16	3.75	15.182		
930.00	922.90	932.45	930.81	2.53	1.93	4.69	-26.83	32.06	58.69	54.79	3.90	15.052		
960.00	952.27	962.98	960.96	2.65	2.02	4.48	-31.24	33.83	60.19	56.14	4.05	14.859		
990.00	981.64	993.12	990.70	2.78	2.11	4.36	-35.81	35.68	61.47	57.26	4.20	14.624		
1,020.00	1,011.01	1,023.09	1,020.27	2.91	2.21	4.24	-40.37	37.52	62.74	58.38	4.36	14.388		
1,050.00	1,040.38	1,053.07	1,049.83	3.04	2.30	4.12	-44.93	39.35	64.01	59.49	4.52	14.166		
1,080.00	1,069.75	1,083.04	1,079.40	3.17	2.40	4.01	-49.49	41.19	65.28	60.60	4.68	13.962		
1,110.00	1,099.12	1,113.01	1,108.97	3.30	2.50	3.90	-54.05	43.03	66.55	61.71	4.83	13.767		
1,140.00	1,128.49	1,142.98	1,138.54	3.43	2.60	3.79	-58.61	44.87	67.82	62.82	4.99	13.578		
1,170.00	1,157.86	1,172.96	1,168.10	3.57	2.70	3.69	-63.17	46.70	69.09	63.94	5.15	13.403		
1,200.00	1,187.23	1,202.93	1,197.67	3.70	2.81	3.60	-67.73	48.54	70.36	65.05	5.31	13.242		
1,230.00	1,216.60	1,232.90	1,227.24	3.83	2.91	3.50	-72.29	50.38	71.63	66.15	5.48	13.075		
1,260.00	1,245.97	1,262.88	1,256.80	3.96	3.02	3.41	-76.85	52.22	72.90	67.27	5.64	12.932		
1,290.00	1,275.34	1,292.85	1,286.37	4.09	3.12	3.32	-81.41	54.06	74.18	68.38	5.80	12.793		
1,320.00	1,304.71	1,322.82	1,315.94	4.23	3.23	3.24	-85.97	55.89	75.45	69.49	5.96	12.657		
1,350.00	1,334.08	1,352.79	1,345.50	4.36	3.33	3.16	-90.53	57.73	76.72	70.60	6.12	12.528		
1,380.00	1,363.45	1,382.77	1,375.07	4.49	3.44	3.08	-95.09	59.57	77.99	71.71	6.29	12.406		
1,410.00	1,392.82	1,412.74	1,404.64	4.63	3.55	3.00	-99.65	61.41	79.26	72.81	6.45	12.286		
1,440.00	1,422.19	1,442.71	1,434.20	4.76	3.66	2.93	-104.21	63.24	80.54	73.92	6.62	12.172		
1,470.00	1,451.56	1,472.68	1,463.77	4.89	3.77	2.86	-108.77	65.08	81.81	75.03	6.78	12.069		
1,500.00	1,480.93	1,502.66	1,493.34	5.03	3.88	2.79	-113.33	66.92	83.08	76.14	6.94	11.970		

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 29-14E
<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 29-14E	<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 29-13E - 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	1,510.30	1,532.63	1,522.90	5.16	3.99	2.72	-117.89	68.76	84.35	77.25	7.10	11.874		
1,560.00	1,539.67	1,562.60	1,552.47	5.29	4.10	2.66	-122.45	70.60	85.63	78.36	7.27	11.781		
1,590.00	1,569.04	1,592.58	1,582.04	5.43	4.21	2.59	-127.01	72.43	86.90	79.47	7.43	11.690		
1,620.00	1,598.41	1,622.55	1,611.61	5.56	4.32	2.53	-131.57	74.27	88.17	80.58	7.60	11.605		
1,650.00	1,627.78	1,652.52	1,641.17	5.69	4.43	2.47	-136.13	76.11	89.45	81.68	7.76	11.522		
1,680.00	1,657.15	1,682.49	1,670.74	5.83	4.54	2.41	-140.69	77.95	90.72	82.79	7.93	11.443		
1,710.00	1,686.52	1,712.47	1,700.31	5.96	4.65	2.36	-145.25	79.78	91.99	83.90	8.09	11.368		
1,740.00	1,715.89	1,742.44	1,729.87	6.10	4.77	2.30	-149.81	81.62	93.27	85.01	8.26	11.295		
1,770.00	1,745.26	1,772.41	1,759.44	6.23	4.88	2.25	-154.37	83.46	94.54	86.12	8.42	11.224		
1,800.00	1,774.63	1,802.39	1,789.01	6.36	4.99	2.20	-158.93	85.30	95.81	87.23	8.59	11.157		
1,830.00	1,804.00	1,832.36	1,818.57	6.50	5.10	2.14	-163.48	87.14	97.09	88.34	8.75	11.092		
1,860.00	1,833.37	1,862.33	1,848.14	6.63	5.22	2.10	-168.04	88.97	98.36	89.44	8.92	11.029		
1,890.00	1,862.74	1,892.30	1,877.71	6.77	5.33	2.05	-172.60	90.81	99.64	90.55	9.08	10.968		
1,920.00	1,892.11	1,922.28	1,907.27	6.90	5.44	2.00	-177.16	92.65	100.91	91.66	9.25	10.910		
1,950.00	1,921.48	1,952.25	1,936.84	7.04	5.55	1.95	-181.72	94.49	102.18	92.77	9.41	10.853		
1,980.00	1,950.85	1,982.22	1,966.41	7.17	5.67	1.91	-186.28	96.32	103.46	93.88	9.58	10.799		
2,010.00	1,980.22	2,012.20	1,995.98	7.30	5.78	1.87	-190.84	98.16	104.73	94.99	9.75	10.746		
2,040.00	2,009.59	2,042.17	2,025.54	7.44	5.89	1.82	-195.40	100.00	106.01	96.09	9.91	10.695		
2,070.00	2,038.97	2,072.14	2,055.11	7.57	6.01	1.78	-199.96	101.84	107.28	97.20	10.08	10.646		
2,100.00	2,068.34	2,102.11	2,084.68	7.71	6.12	1.74	-204.52	103.68	108.55	98.31	10.24	10.598		
2,130.00	2,097.71	2,132.09	2,114.24	7.84	6.23	1.70	-209.08	105.51	109.83	99.42	10.41	10.551		
2,160.00	2,127.08	2,162.06	2,143.81	7.98	6.35	1.66	-213.64	107.35	111.10	100.53	10.57	10.506		
2,190.00	2,156.45	2,192.03	2,173.38	8.11	6.46	1.63	-218.20	109.19	112.38	101.64	10.74	10.463		
2,220.00	2,185.82	2,222.01	2,202.94	8.24	6.58	1.59	-222.76	111.03	113.65	102.75	10.91	10.421		
2,250.00	2,215.19	2,251.98	2,232.51	8.38	6.69	1.55	-227.32	112.87	114.93	103.85	11.07	10.380		
2,280.00	2,244.56	2,281.95	2,262.08	8.51	6.80	1.52	-231.88	114.70	116.20	104.96	11.24	10.340		
2,310.00	2,273.93	2,311.92	2,291.64	8.65	6.92	1.48	-236.44	116.54	117.48	106.07	11.40	10.301		
2,340.00	2,303.30	2,341.90	2,321.21	8.78	7.03	1.45	-241.00	118.38	118.75	107.18	11.57	10.263		
2,370.00	2,332.67	2,371.87	2,350.78	8.92	7.15	1.42	-245.56	120.22	120.03	108.29	11.74	10.227		
2,400.00	2,362.04	2,401.84	2,380.34	9.05	7.26	1.38	-250.12	122.05	121.30	109.40	11.90	10.191		
2,430.00	2,391.41	2,431.82	2,409.91	9.19	7.37	1.35	-254.68	123.89	122.57	110.51	12.07	10.157		
2,460.00	2,420.78	2,461.79	2,439.48	9.32	7.49	1.32	-259.24	125.73	123.85	111.62	12.23	10.123		
2,490.00	2,450.15	2,491.76	2,469.05	9.46	7.60	1.29	-263.80	127.57	125.12	112.72	12.40	10.090		
2,520.00	2,479.52	2,521.73	2,498.61	9.59	7.72	1.26	-268.36	129.41	126.40	113.83	12.57	10.058		
2,550.00	2,508.89	2,551.71	2,528.18	9.73	7.83	1.23	-272.92	131.24	127.67	114.94	12.73	10.027		
2,580.00	2,538.26	2,581.68	2,557.75	9.86	7.95	1.20	-277.48	133.08	128.95	116.05	12.90	9.997		
2,610.00	2,567.63	2,611.65	2,587.31	10.00	8.06	1.17	-282.04	134.92	130.22	117.16	13.06	9.967		
2,640.00	2,597.00	2,641.63	2,616.88	10.13	8.18	1.15	-286.60	136.76	131.50	118.27	13.23	9.939		
2,670.00	2,626.37	2,671.60	2,646.45	10.26	8.29	1.12	-291.16	138.59	132.77	119.38	13.40	9.911		
2,700.00	2,655.74	2,701.57	2,676.01	10.40	8.41	1.09	-295.72	140.43	134.05	120.49	13.56	9.883		
2,730.00	2,685.11	2,731.54	2,705.58	10.53	8.52	1.07	-300.28	142.27	135.32	121.59	13.73	9.856		
2,760.00	2,714.48	2,761.52	2,735.15	10.67	8.64	1.04	-304.84	144.11	136.60	122.70	13.90	9.830		
2,790.00	2,743.85	2,791.49	2,764.71	10.80	8.75	1.02	-309.40	145.95	137.87	123.81	14.06	9.805		
2,820.00	2,773.22	2,821.46	2,794.28	10.94	8.87	0.99	-313.96	147.78	139.15	124.92	14.23	9.780		
2,850.00	2,802.59	2,851.44	2,823.85	11.07	8.98	0.97	-318.52	149.62	140.43	126.03	14.39	9.755		
2,880.00	2,831.96	2,881.41	2,853.41	11.21	9.10	0.94	-323.08	151.46	141.70	127.14	14.56	9.732		
2,910.00	2,861.33	2,911.38	2,882.98	11.34	9.21	0.92	-327.64	153.30	142.98	128.25	14.73	9.708		
2,940.00	2,890.70	2,941.35	2,912.55	11.48	9.33	0.90	-332.20	155.13	144.25	129.36	14.89	9.686		
2,970.00	2,920.07	2,971.33	2,942.12	11.61	9.44	0.87	-336.76	156.97	145.53	130.47	15.06	9.663		
3,000.00	2,949.44	3,001.30	2,971.68	11.75	9.56	0.85	-341.32	158.81	146.80	131.58	15.23	9.642		
3,030.00	2,978.81	3,031.27	3,001.25	11.88	9.67	0.83	-345.88	160.65	148.08	132.68	15.39	9.620		
3,060.00	3,008.18	3,061.24	3,030.82	12.02	9.79	0.81	-350.44	162.49	149.35	133.79	15.56	9.599		

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 29-14E
<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 29-14E	<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 29-13E - 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	3,037.55	3,091.22	3,060.38	12.15	9.90	0.79	-355.00	164.32	150.63	134.90	15.72	9.579		
3,120.00	3,066.92	3,121.19	3,089.95	12.29	10.02	0.77	-359.56	166.16	151.90	136.01	15.89	9.559		
3,150.00	3,096.29	3,151.16	3,119.52	12.42	10.13	0.75	-364.12	168.00	153.18	137.12	16.06	9.539		
3,180.00	3,125.66	3,181.14	3,149.08	12.56	10.25	0.73	-368.68	169.84	154.45	138.23	16.22	9.520		
3,210.00	3,155.03	3,211.11	3,178.65	12.69	10.36	0.71	-373.24	171.67	155.73	139.34	16.39	9.502		
3,240.00	3,184.40	3,241.08	3,208.22	12.83	10.48	0.69	-377.80	173.51	157.00	140.45	16.56	9.483		
3,270.00	3,213.77	3,271.05	3,237.78	12.96	10.59	0.67	-382.36	175.35	158.28	141.56	16.72	9.465		
3,300.00	3,243.14	3,301.03	3,267.35	13.10	10.71	0.65	-386.92	177.19	159.56	142.67	16.89	9.447		
3,330.00	3,272.51	3,331.00	3,296.92	13.23	10.82	0.63	-391.48	179.03	160.83	143.78	17.06	9.430		
3,360.00	3,301.88	3,360.97	3,326.48	13.37	10.94	0.61	-396.04	180.86	162.11	144.88	17.22	9.413		
3,390.00	3,331.25	3,390.95	3,356.05	13.50	11.05	0.60	-400.60	182.70	163.38	145.99	17.39	9.396		
3,420.00	3,360.62	3,420.92	3,385.62	13.64	11.17	0.58	-405.16	184.54	164.66	147.10	17.55	9.380		
3,450.00	3,389.99	3,450.89	3,415.19	13.77	11.28	0.56	-409.72	186.38	165.93	148.21	17.72	9.364		
3,480.00	3,419.36	3,480.86	3,444.75	13.91	11.40	0.54	-414.28	188.22	167.21	149.32	17.89	9.348		
3,510.00	3,448.73	3,510.84	3,474.32	14.04	11.51	0.53	-418.84	190.05	168.48	150.43	18.05	9.333		
3,540.00	3,478.10	3,540.81	3,503.89	14.18	11.63	0.51	-423.40	191.89	169.76	151.54	18.22	9.317		
3,570.00	3,507.47	3,570.78	3,533.45	14.31	11.74	0.49	-427.96	193.73	171.04	152.65	18.39	9.303		
3,600.00	3,536.84	3,600.76	3,563.02	14.45	11.86	0.48	-432.52	195.57	172.31	153.76	18.55	9.288		
3,630.00	3,566.21	3,630.73	3,592.59	14.58	11.98	0.46	-437.08	197.40	173.59	154.87	18.72	9.274		
3,660.00	3,595.58	3,660.70	3,622.15	14.72	12.09	0.45	-441.64	199.24	174.86	155.98	18.88	9.259		
3,690.00	3,624.95	3,690.67	3,651.72	14.85	12.21	0.43	-446.20	201.08	176.14	157.09	19.05	9.245		
3,720.00	3,654.32	3,720.65	3,681.29	14.99	12.32	0.42	-450.76	202.92	177.41	158.20	19.22	9.232		
3,750.00	3,683.69	3,750.62	3,710.85	15.12	12.44	0.40	-455.32	204.76	178.69	159.31	19.38	9.218		
3,780.00	3,713.06	3,780.59	3,740.42	15.26	12.55	0.39	-459.88	206.59	179.97	160.41	19.55	9.205		
3,810.00	3,742.43	3,810.57	3,769.99	15.39	12.67	0.37	-464.44	208.43	181.24	161.52	19.72	9.192		
3,840.00	3,771.80	3,840.54	3,799.55	15.53	12.78	0.36	-469.00	210.27	182.52	162.63	19.88	9.179		
3,870.00	3,801.17	3,870.51	3,829.12	15.66	12.90	0.34	-473.56	212.11	183.79	163.74	20.05	9.167		
3,900.00	3,830.55	3,900.48	3,858.69	15.80	13.02	0.33	-478.12	213.94	185.07	164.85	20.22	9.155		
3,930.00	3,859.92	3,930.46	3,888.26	15.93	13.13	0.32	-482.68	215.78	186.34	165.96	20.38	9.142		
3,960.00	3,889.29	3,960.43	3,917.82	16.07	13.25	0.30	-487.24	217.62	187.62	167.07	20.55	9.131		
3,990.00	3,918.66	3,990.40	3,947.39	16.20	13.36	0.29	-491.80	219.46	188.90	168.18	20.71	9.119		
4,020.00	3,948.03	4,020.38	3,976.96	16.34	13.48	0.28	-496.36	221.30	190.17	169.29	20.88	9.107		
4,050.00	3,977.40	4,050.35	4,006.52	16.47	13.59	0.26	-500.92	223.13	191.45	170.40	21.05	9.096		
4,080.00	4,006.77	4,080.32	4,036.09	16.61	13.71	0.25	-505.48	224.97	192.72	171.51	21.21	9.085		
4,110.00	4,036.14	4,110.29	4,065.66	16.74	13.82	0.24	-510.04	226.81	194.00	172.62	21.38	9.074		
4,140.00	4,065.51	4,140.27	4,095.22	16.88	13.94	0.23	-514.60	228.65	195.27	173.73	21.55	9.063		
4,170.00	4,094.88	4,170.24	4,124.79	17.01	14.06	0.21	-519.15	230.48	196.55	174.84	21.71	9.052		
4,200.00	4,124.25	4,200.21	4,154.36	17.15	14.17	0.20	-523.71	232.32	197.83	175.95	21.88	9.042		
4,230.00	4,153.62	4,230.19	4,183.92	17.28	14.29	0.19	-528.27	234.16	199.10	177.06	22.05	9.031		
4,260.00	4,182.99	4,260.16	4,213.49	17.42	14.40	0.18	-532.83	236.00	200.38	178.17	22.21	9.021		
4,290.00	4,212.36	4,290.13	4,243.06	17.55	14.52	0.17	-537.39	237.84	201.65	179.28	22.38	9.011		
4,320.00	4,241.73	4,320.10	4,272.63	17.69	14.63	0.15	-541.95	239.67	202.93	180.38	22.55	9.001		
4,350.00	4,271.10	4,350.08	4,302.19	17.82	14.75	0.14	-546.51	241.51	204.21	181.49	22.71	8.991		
4,380.00	4,300.47	4,380.05	4,331.76	17.96	14.86	0.13	-551.07	243.35	205.48	182.60	22.88	8.982		
4,410.00	4,329.84	4,410.02	4,361.33	18.09	14.98	0.12	-555.63	245.19	206.76	183.71	23.04	8.972		
4,440.00	4,359.21	4,440.00	4,390.89	18.23	15.10	0.11	-560.19	247.02	208.03	184.82	23.21	8.963		
4,470.00	4,388.58	4,469.97	4,420.46	18.36	15.21	0.10	-564.75	248.86	209.31	185.93	23.38	8.954		
4,500.00	4,417.95	4,499.94	4,450.03	18.50	15.33	0.09	-569.31	250.70	210.59	187.04	23.54	8.945		
4,530.00	4,447.32	4,529.91	4,479.59	18.63	15.44	0.08	-573.87	252.54	211.86	188.15	23.71	8.936		
4,560.00	4,476.69	4,559.89	4,509.16	18.77	15.56	0.07	-578.43	254.38	213.14	189.26	23.88	8.927		
4,590.00	4,506.06	4,589.86	4,538.73	18.90	15.67	0.06	-582.99	256.21	214.41	190.37	24.04	8.918		
4,620.00	4,535.43	4,619.83	4,568.29	19.04	15.79	0.05	-587.55	258.05	215.69	191.48	24.21	8.909		

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 29-14E
<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 29-14E	<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 29-13E - 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	4,564.80	4,649.80	4,597.86	19.17	15.91	0.04	-592.11	259.89	216.97	192.59	24.38	8.901		
4,680.00	4,594.17	4,679.78	4,627.43	19.31	16.02	0.03	-596.67	261.73	218.24	193.70	24.54	8.893		
4,710.00	4,623.54	4,709.75	4,656.99	19.44	16.14	0.02	-601.23	263.57	219.52	194.81	24.71	8.884		
4,740.00	4,652.91	4,739.72	4,686.56	19.58	16.25	0.01	-605.79	265.40	220.79	195.92	24.87	8.876		
4,770.00	4,682.28	4,769.70	4,716.13	19.71	16.37	0.00	-610.35	267.24	222.07	197.03	25.04	8.868		
4,800.00	4,711.65	4,799.67	4,745.70	19.85	16.48	-0.01	-614.91	269.08	223.35	198.14	25.21	8.860		
4,830.00	4,741.02	4,829.64	4,775.26	19.98	16.60	-0.02	-619.47	270.92	224.62	199.25	25.37	8.852		
4,860.00	4,770.39	4,859.61	4,804.83	20.12	16.72	-0.03	-624.03	272.75	225.90	200.36	25.54	8.845		
4,890.00	4,799.76	4,889.59	4,834.40	20.25	16.83	-0.04	-628.59	274.59	227.17	201.47	25.71	8.837		
4,920.00	4,829.13	4,919.56	4,863.96	20.39	16.95	-0.05	-633.15	276.43	228.45	202.58	25.87	8.830		
4,950.00	4,858.50	4,949.53	4,893.53	20.52	17.06	-0.06	-637.71	278.27	229.73	203.69	26.04	8.822		
4,980.00	4,887.87	4,979.51	4,923.10	20.66	17.18	-0.07	-642.27	280.11	231.00	204.80	26.21	8.815		
5,010.00	4,917.24	5,009.48	4,952.66	20.79	17.29	-0.08	-646.83	281.94	232.28	205.91	26.37	8.808		
5,040.00	4,946.61	5,039.45	4,982.23	20.93	17.41	-0.08	-651.39	283.78	233.55	207.01	26.54	8.801		
5,070.00	4,975.98	5,069.42	5,011.80	21.06	17.53	-0.09	-655.95	285.62	234.83	208.12	26.70	8.793		
5,100.00	5,005.35	5,099.40	5,041.36	21.20	17.64	-0.10	-660.51	287.46	236.11	209.23	26.87	8.787		
5,130.00	5,034.72	5,129.37	5,070.93	21.33	17.76	-0.11	-665.07	289.29	237.38	210.34	27.04	8.780		
5,160.00	5,064.09	5,159.34	5,100.50	21.47	17.87	-0.12	-669.63	291.13	238.66	211.45	27.20	8.773		
5,190.00	5,093.46	5,189.32	5,130.06	21.60	17.99	-0.13	-674.19	292.97	239.93	212.56	27.37	8.766		
5,220.00	5,122.83	5,219.29	5,159.63	21.74	18.11	-0.14	-678.75	294.81	241.21	213.67	27.54	8.759		
5,250.00	5,152.20	5,249.26	5,189.20	21.87	18.22	-0.14	-683.31	296.65	242.48	214.78	27.70	8.753		
5,280.00	5,181.62	5,279.24	5,218.77	21.98	18.34	-0.13	-687.87	298.48	243.54	215.68	27.87	8.739		
5,310.00	5,211.09	5,309.23	5,248.36	22.08	18.45	-0.10	-692.43	300.32	244.31	216.28	28.03	8.715		
5,340.00	5,240.62	5,337.90	5,276.64	22.17	18.55	-0.08	-696.75	302.06	244.82	216.64	28.18	8.688		
5,370.00	5,270.21	5,365.68	5,304.10	22.25	18.64	-0.06	-700.70	303.66	245.29	216.97	28.32	8.661		
5,400.00	5,299.85	5,393.47	5,331.59	22.33	18.73	-0.04	-704.41	305.15	245.72	217.26	28.46	8.635		
5,430.00	5,329.53	5,421.25	5,359.12	22.41	18.80	-0.03	-707.87	306.54	246.13	217.55	28.58	8.612		
5,460.00	5,359.26	5,449.03	5,386.69	22.48	18.86	-0.02	-711.08	307.84	246.50	217.81	28.70	8.590		
5,490.00	5,389.02	5,476.80	5,414.28	22.55	18.93	0.00	-714.05	309.03	246.85	218.04	28.81	8.568		
5,520.00	5,418.83	5,504.58	5,441.90	22.61	18.99	0.01	-716.76	310.13	247.17	218.25	28.92	8.547		
5,550.00	5,448.67	5,532.35	5,469.54	22.67	19.04	0.02	-719.23	311.12	247.46	218.44	29.02	8.528		
5,580.00	5,478.54	5,560.12	5,497.21	22.73	19.10	0.03	-721.45	312.02	247.72	218.61	29.12	8.508		
5,610.00	5,508.43	5,587.90	5,524.90	22.79	19.15	0.03	-723.41	312.81	247.95	218.74	29.21	8.489		
5,640.00	5,538.36	5,615.66	5,552.61	22.84	19.20	0.04	-725.13	313.50	248.16	218.86	29.29	8.471		
5,670.00	5,568.30	5,643.43	5,580.33	22.89	19.25	0.05	-726.60	314.09	248.33	218.95	29.38	8.454		
5,700.00	5,598.26	5,671.20	5,608.07	22.94	19.29	0.05	-727.82	314.59	248.47	219.02	29.45	8.436		
5,730.00	5,628.23	5,700.00	5,636.85	22.97	19.34	0.06	-728.83	314.99	248.59	219.06	29.53	8.419		
5,730.23	5,628.47	5,700.00	5,636.85	22.97	19.34	0.06	-728.83	314.99	248.59	219.06	29.53	8.419		
5,760.00	5,658.22	5,726.73	5,663.57	23.01	19.37	0.06	-729.52	315.27	248.67	219.08	29.59	8.403		
5,790.00	5,688.21	5,754.50	5,691.33	23.05	19.41	0.06	-729.99	315.46	248.73	219.07	29.66	8.386		
5,820.00	5,718.21	5,782.26	5,719.09	23.08	19.45	0.06	-730.21	315.55	248.75	219.03	29.72	8.369		
5,850.00	5,748.21	5,811.38	5,748.21	23.12	19.49	0.06	-730.23	315.56	248.76	218.95	29.81	8.346		
5,880.00	5,778.21	5,841.38	5,778.21	23.15	19.53	0.06	-730.23	315.56	248.76	218.85	29.90	8.319		
5,910.00	5,808.21	5,871.38	5,808.21	23.18	19.56	0.06	-730.23	315.56	248.76	218.76	29.99	8.293		
5,940.00	5,838.21	5,901.38	5,838.21	23.21	19.59	0.06	-730.23	315.56	248.76	218.67	30.09	8.268		
5,970.00	5,868.21	5,931.38	5,868.21	23.24	19.63	0.06	-730.23	315.56	248.76	218.58	30.18	8.243		
6,000.00	5,898.21	5,961.38	5,898.21	23.26	19.66	0.06	-730.23	315.56	248.76	218.49	30.27	8.218		
6,030.00	5,928.21	5,991.38	5,928.21	23.29	19.70	0.06	-730.23	315.56	248.76	218.40	30.36	8.194		
6,060.00	5,958.21	6,021.38	5,958.21	23.32	19.73	0.06	-730.23	315.56	248.76	218.30	30.45	8.169		
6,090.00	5,988.21	6,051.38	5,988.21	23.35	19.77	0.06	-730.23	315.56	248.76	218.21	30.54	8.144		
6,120.00	6,018.21	6,081.38	6,018.21	23.38	19.80	0.06	-730.23	315.56	248.76	218.12	30.64	8.119		
6,150.00	6,048.21	6,111.38	6,048.21	23.41	19.84	0.06	-730.23	315.56	248.76	218.03	30.73	8.095		

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 29-14E
<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 29-14E	<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 29-13E - 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		
6,180.00	6,078.21	6,141.38	6,078.21	23.44	19.87	0.06	-730.23	315.56	248.76	217.93	30.82	8.070		
6,210.00	6,108.21	6,171.38	6,108.21	23.47	19.91	0.06	-730.23	315.56	248.76	217.84	30.92	8.046		
6,240.00	6,138.21	6,201.38	6,138.21	23.50	19.94	0.06	-730.23	315.56	248.76	217.74	31.01	8.022		
6,270.00	6,168.21	6,231.38	6,168.21	23.53	19.98	0.06	-730.23	315.56	248.76	217.65	31.11	7.997		
6,300.00	6,198.21	6,261.38	6,198.21	23.56	20.02	0.06	-730.23	315.56	248.76	217.56	31.20	7.973		
6,330.00	6,228.21	6,291.38	6,228.21	23.59	20.05	0.06	-730.23	315.56	248.76	217.46	31.29	7.949		
6,360.00	6,258.21	6,321.38	6,258.21	23.62	20.09	0.06	-730.23	315.56	248.76	217.37	31.39	7.925		
6,390.00	6,288.21	6,351.38	6,288.21	23.65	20.13	0.06	-730.23	315.56	248.76	217.27	31.49	7.901		
6,420.00	6,318.21	6,381.38	6,318.21	23.68	20.16	0.06	-730.23	315.56	248.76	217.17	31.58	7.877		
6,450.00	6,348.21	6,411.38	6,348.21	23.71	20.20	0.06	-730.23	315.56	248.76	217.08	31.68	7.853		
6,480.00	6,378.21	6,441.38	6,378.21	23.74	20.24	0.06	-730.23	315.56	248.76	216.98	31.77	7.829		
6,510.00	6,408.21	6,471.38	6,408.21	23.77	20.27	0.06	-730.23	315.56	248.76	216.89	31.87	7.805		
6,540.00	6,438.21	6,501.38	6,438.21	23.80	20.31	0.06	-730.23	315.56	248.76	216.79	31.97	7.782		
6,570.00	6,468.21	6,531.38	6,468.21	23.83	20.35	0.06	-730.23	315.56	248.76	216.69	32.06	7.758		
6,600.00	6,498.21	6,561.38	6,498.21	23.86	20.39	0.06	-730.23	315.56	248.76	216.59	32.16	7.735		
6,630.00	6,528.21	6,591.38	6,528.21	23.90	20.42	0.06	-730.23	315.56	248.76	216.50	32.26	7.711		
6,660.00	6,558.21	6,621.38	6,558.21	23.93	20.46	0.06	-730.23	315.56	248.76	216.40	32.36	7.688		
6,690.00	6,588.21	6,651.38	6,588.21	23.96	20.50	0.06	-730.23	315.56	248.76	216.30	32.46	7.665		
6,720.00	6,618.21	6,681.38	6,618.21	23.99	20.54	0.06	-730.23	315.56	248.76	216.20	32.55	7.641		
6,750.00	6,648.21	6,711.38	6,648.21	24.02	20.58	0.06	-730.23	315.56	248.76	216.10	32.65	7.618		
6,780.00	6,678.21	6,741.38	6,678.21	24.06	20.62	0.06	-730.23	315.56	248.76	216.00	32.75	7.595		
6,810.00	6,708.21	6,771.38	6,708.21	24.09	20.66	0.06	-730.23	315.56	248.76	215.91	32.85	7.572		
6,840.00	6,738.21	6,801.38	6,738.21	24.12	20.69	0.06	-730.23	315.56	248.76	215.81	32.95	7.550		
6,870.00	6,768.21	6,831.38	6,768.21	24.15	20.73	0.06	-730.23	315.56	248.76	215.71	33.05	7.527		
6,900.00	6,798.21	6,861.38	6,798.21	24.19	20.77	0.06	-730.23	315.56	248.76	215.61	33.15	7.504		
6,930.00	6,828.21	6,891.38	6,828.21	24.22	20.81	0.06	-730.23	315.56	248.76	215.51	33.25	7.481		
6,960.00	6,858.21	6,921.38	6,858.21	24.25	20.85	0.06	-730.23	315.56	248.76	215.41	33.35	7.459		
6,990.00	6,888.21	6,951.38	6,888.21	24.29	20.89	0.06	-730.23	315.56	248.76	215.30	33.45	7.436		
7,020.00	6,918.21	6,981.38	6,918.21	24.32	20.93	0.06	-730.23	315.56	248.76	215.20	33.55	7.414		
7,050.00	6,948.21	7,011.38	6,948.21	24.35	20.97	0.06	-730.23	315.56	248.76	215.10	33.65	7.392		
7,080.00	6,978.21	7,041.38	6,978.21	24.39	21.01	0.06	-730.23	315.56	248.76	215.00	33.75	7.370		
7,110.00	7,008.21	7,071.38	7,008.21	24.42	21.05	0.06	-730.23	315.56	248.76	214.90	33.86	7.347		
7,140.00	7,038.21	7,101.38	7,038.21	24.45	21.09	0.06	-730.23	315.56	248.76	214.80	33.96	7.325		
7,170.00	7,068.21	7,131.38	7,068.21	24.49	21.13	0.06	-730.23	315.56	248.76	214.70	34.06	7.303		
7,200.00	7,098.21	7,161.38	7,098.21	24.52	21.17	0.06	-730.23	315.56	248.76	214.59	34.16	7.282		
7,230.00	7,128.21	7,191.38	7,128.21	24.56	21.21	0.06	-730.23	315.56	248.76	214.49	34.26	7.260		
7,260.00	7,158.21	7,221.38	7,158.21	24.59	21.25	0.06	-730.23	315.56	248.76	214.39	34.37	7.238		
7,290.00	7,188.21	7,251.38	7,188.21	24.63	21.30	0.06	-730.23	315.56	248.76	214.28	34.47	7.216		
7,320.00	7,218.21	7,281.38	7,218.21	24.66	21.34	0.06	-730.23	315.56	248.76	214.18	34.57	7.195		
7,350.00	7,248.21	7,311.38	7,248.21	24.70	21.38	0.06	-730.23	315.56	248.76	214.08	34.68	7.173		
7,380.00	7,278.21	7,341.38	7,278.21	24.73	21.42	0.06	-730.23	315.56	248.76	213.97	34.78	7.152		
7,410.00	7,308.21	7,371.38	7,308.21	24.77	21.46	0.06	-730.23	315.56	248.76	213.87	34.88	7.131		
7,440.00	7,338.21	7,401.38	7,338.21	24.80	21.50	0.06	-730.23	315.56	248.76	213.77	34.99	7.110		
7,470.00	7,368.21	7,431.38	7,368.21	24.84	21.54	0.06	-730.23	315.56	248.76	213.66	35.09	7.088		
7,500.00	7,398.21	7,461.38	7,398.21	24.87	21.59	0.06	-730.23	315.56	248.76	213.56	35.20	7.067		
7,530.00	7,428.21	7,491.38	7,428.21	24.91	21.63	0.06	-730.23	315.56	248.76	213.45	35.30	7.046		
7,560.00	7,458.21	7,521.38	7,458.21	24.95	21.67	0.06	-730.23	315.56	248.76	213.35	35.41	7.026		
7,590.00	7,488.21	7,551.38	7,488.21	24.98	21.71	0.06	-730.23	315.56	248.76	213.24	35.51	7.005		
7,620.00	7,518.21	7,581.38	7,518.21	25.02	21.76	0.06	-730.23	315.56	248.76	213.14	35.62	6.984		
7,650.00	7,548.21	7,611.38	7,548.21	25.05	21.80	0.06	-730.23	315.56	248.76	213.03	35.72	6.963		
7,680.00	7,578.21	7,641.38	7,578.21	25.09	21.84	0.06	-730.23	315.56	248.76	212.93	35.83	6.943		
7,710.00	7,608.21	7,671.38	7,608.21	25.13	21.88	0.06	-730.23	315.56	248.76	212.82	35.93	6.922		

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 29-14E
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 29-14E	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 29-13E - 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	
7,740.00	7,638.21	7,701.38	7,638.21	25.16	21.93	0.06	-730.23	315.56	248.76	212.71	36.04	6.902	
7,770.00	7,668.21	7,731.38	7,668.21	25.20	21.97	0.06	-730.23	315.56	248.76	212.61	36.15	6.882	
7,781.79	7,680.00	7,743.17	7,680.00	25.22	21.99	0.06	-730.23	315.56	248.76	212.57	36.19	6.874 SF	



# Archer

## Anticollision Report



<b>Company:</b>	Piceance Energy, LLC	<b>Local Co-ordinate Reference:</b>	Well Gunderson 29-14E
<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 29-14E	<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	-90.00	0.00	-9.94	9.94					
30.00	30.00	30.00	30.00	0.01	0.03	-90.00	0.00	-9.94	9.94	9.91	0.03	307.110		
60.00	60.00	60.00	60.00	0.04	0.05	-90.00	0.00	-9.94	9.94	9.85	0.09	108.392		
90.00	90.00	90.00	90.00	0.07	0.08	-90.00	0.00	-9.94	9.94	9.79	0.15	65.809		
120.00	120.00	120.00	120.00	0.13	0.13	-90.00	0.00	-9.94	9.94	9.68	0.26	38.124		
150.00	150.00	150.00	150.00	0.20	0.20	-90.00	0.00	-9.94	9.94	9.54	0.40	25.127		
180.00	180.00	180.00	180.00	0.27	0.27	-90.00	0.00	-9.94	9.94	9.41	0.53	18.739 CC		
189.47	189.47	189.47	189.47	0.29	0.29	-89.97	0.00	-9.94	9.94	9.37	0.57	17.371		
210.00	210.00	210.00	210.00	0.33	0.33	-89.90	0.00	-9.94	9.95	9.28	0.66	14.999		
240.00	240.00	240.00	240.00	0.39	0.40	-88.48	0.00	-9.94	10.03	9.24	0.79	12.674 ES		
270.00	269.99	269.99	269.99	0.45	0.47	-85.44	0.00	-9.94	10.23	9.31	0.92	11.127		
300.00	299.98	299.98	299.98	0.51	0.53	-80.99	0.00	-9.94	10.61	9.56	1.05	10.115		
330.00	329.96	329.96	329.96	0.58	0.60	-75.49	0.00	-9.94	11.20	10.02	1.18	9.494		
360.00	359.92	359.92	359.92	0.64	0.67	-69.40	0.00	-9.94	12.08	10.77	1.31	9.213		
390.00	389.86	389.86	389.86	0.71	0.74	-63.20	0.00	-9.94	13.30	11.86	1.44	9.219		
420.00	419.78	419.78	419.78	0.77	0.80	-57.32	0.00	-9.94	14.88	13.31	1.58	9.428		
450.00	449.68	449.68	449.68	0.84	0.87	-52.00	0.00	-9.94	16.85	15.14	1.72	9.814		
480.00	479.55	479.55	479.55	0.92	0.94	-47.36	0.00	-9.94	19.21	17.36	1.85	10.366		
510.00	509.40	509.40	509.40	1.00	1.01	-43.39	0.00	-9.94	21.95	19.96	1.99	11.033		
540.00	539.20	539.20	539.20	1.08	1.07	-40.04	0.00	-9.94	25.05	22.93	2.13	11.770		
570.00	568.97	568.97	568.97	1.17	1.14	-37.22	0.00	-9.94	28.52	26.26	2.27	12.589		
600.00	598.70	598.70	598.70	1.26	1.21	-34.86	0.00	-9.94	32.34	29.94	2.40	13.471		
630.00	628.39	628.39	628.39	1.36	1.27	-32.87	0.00	-9.94	36.51	33.96	2.54	14.366		
660.00	658.03	658.03	658.03	1.46	1.34	-31.19	0.00	-9.94	41.01	38.33	2.68	15.305		
690.00	687.61	687.61	687.61	1.56	1.41	-29.76	0.00	-9.94	45.84	43.02	2.82	16.279		
720.00	717.15	717.45	717.45	1.67	1.47	-28.56	-0.05	-9.93	50.95	48.00	2.95	17.267		
750.00	746.63	747.54	747.54	1.78	1.53	-27.58	-0.38	-9.84	56.10	53.02	3.08	18.206		
780.00	776.05	777.68	777.67	1.90	1.59	-26.79	-1.02	-9.67	61.27	58.06	3.21	19.093		
810.00	805.42	807.89	807.87	2.02	1.65	-26.15	-1.96	-9.42	66.37	63.04	3.34	19.901		
840.00	834.79	838.21	838.16	2.15	1.70	-25.64	-3.22	-9.09	71.19	67.73	3.46	20.574		
870.00	864.16	868.64	868.54	2.27	1.76	-25.24	-4.80	-8.67	75.69	72.11	3.58	21.124		
900.00	893.53	899.15	898.99	2.40	1.82	-24.93	-6.69	-8.17	79.89	76.19	3.71	21.562		
930.00	922.90	929.76	929.51	2.53	1.88	-24.69	-8.90	-7.58	83.78	79.95	3.84	21.834		
960.00	952.27	960.45	960.09	2.65	1.94	-24.51	-11.44	-6.91	87.36	83.39	3.97	22.014		
990.00	981.64	991.21	990.71	2.78	2.00	-24.37	-14.30	-6.16	90.62	86.53	4.10	22.112		
1,020.00	1,011.01	1,022.04	1,021.37	2.91	2.07	-24.28	-17.48	-5.31	93.57	89.34	4.23	22.099		
1,050.00	1,040.38	1,052.94	1,052.05	3.04	2.14	-24.23	-20.99	-4.38	96.20	91.83	4.37	22.004		
1,080.00	1,069.75	1,083.89	1,082.74	3.17	2.21	-24.21	-24.83	-3.37	98.51	94.00	4.51	21.848		
1,110.00	1,099.12	1,114.88	1,113.43	3.30	2.29	-24.23	-28.99	-2.27	100.51	95.86	4.65	21.618		
1,140.00	1,128.49	1,145.92	1,144.12	3.43	2.37	-24.27	-33.48	-1.08	102.18	97.38	4.79	21.316		
1,170.00	1,157.86	1,176.99	1,174.79	3.57	2.46	-24.35	-38.30	0.20	103.53	98.59	4.94	20.971		
1,200.00	1,187.23	1,208.09	1,205.43	3.70	2.55	-24.45	-43.44	1.56	104.56	99.48	5.08	20.581		
1,230.00	1,216.60	1,239.20	1,236.02	3.83	2.65	-24.59	-48.91	3.01	105.27	100.04	5.23	20.118		
1,260.00	1,245.97	1,270.33	1,266.57	3.96	2.75	-24.75	-54.70	4.54	105.66	100.28	5.38	19.642		
1,290.00	1,275.34	1,301.46	1,297.05	4.09	2.85	-24.95	-60.81	6.16	105.73	100.20	5.53	19.125		
1,320.00	1,304.71	1,332.58	1,327.46	4.23	2.97	-25.18	-67.24	7.86	105.48	99.80	5.68	18.554		
1,350.00	1,334.08	1,363.70	1,357.78	4.36	3.09	-25.44	-73.99	9.64	104.91	99.07	5.84	17.961		
1,380.00	1,363.45	1,394.80	1,388.01	4.49	3.20	-25.75	-81.05	11.51	104.02	98.02	6.00	17.344		
1,410.00	1,392.82	1,425.87	1,418.13	4.63	3.34	-26.10	-88.42	13.46	102.82	96.66	6.16	16.689		
1,440.00	1,422.19	1,456.91	1,448.13	4.76	3.47	-26.49	-96.10	15.50	101.30	94.97	6.33	16.015		
1,470.00	1,451.56	1,487.91	1,478.01	4.89	3.61	-26.94	-104.08	17.61	99.46	92.97	6.49	15.325		
1,500.00	1,480.93	1,518.86	1,507.76	5.03	3.75	-27.45	-112.37	19.80	97.32	90.65	6.66	14.611		

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 29-14E
<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 29-14E	<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	1,510.30	1,549.62	1,537.22	5.16	3.90	-28.02	-120.90	22.06	94.86	88.03	6.83	13.880		
1,560.00	1,539.67	1,579.50	1,565.81	5.29	4.06	-28.61	-129.30	24.28	92.31	85.30	7.01	13.170		
1,590.00	1,569.04	1,609.37	1,594.39	5.43	4.21	-29.23	-137.70	26.51	89.76	82.57	7.19	12.488		
1,620.00	1,598.41	1,639.25	1,622.98	5.56	4.37	-29.88	-146.10	28.73	87.22	79.85	7.37	11.833		
1,650.00	1,627.78	1,669.13	1,651.56	5.69	4.52	-30.57	-154.50	30.95	84.69	77.14	7.55	11.211		
1,680.00	1,657.15	1,699.00	1,680.15	5.83	4.68	-31.31	-162.90	33.18	82.18	74.44	7.74	10.617		
1,710.00	1,686.52	1,728.88	1,708.73	5.96	4.84	-32.09	-171.29	35.40	79.68	71.74	7.93	10.044		
1,740.00	1,715.89	1,758.76	1,737.32	6.10	5.00	-32.92	-179.69	37.62	77.19	69.06	8.13	9.493		
1,770.00	1,745.26	1,788.63	1,765.90	6.23	5.16	-33.80	-188.09	39.85	74.72	66.38	8.34	8.959		
1,800.00	1,774.63	1,818.51	1,794.49	6.36	5.33	-34.74	-196.49	42.07	72.26	63.71	8.56	8.446		
1,830.00	1,804.00	1,848.39	1,823.07	6.50	5.49	-35.75	-204.89	44.29	69.83	61.05	8.78	7.955		
1,860.00	1,833.37	1,878.26	1,851.66	6.63	5.66	-36.83	-213.29	46.52	67.42	58.41	9.01	7.483		
1,890.00	1,862.74	1,908.14	1,880.25	6.77	5.82	-37.99	-221.69	48.74	65.03	55.78	9.25	7.029		
1,920.00	1,892.11	1,938.02	1,908.83	6.90	5.99	-39.24	-230.09	50.96	62.67	53.16	9.51	6.593		
1,950.00	1,921.48	1,967.89	1,937.42	7.04	6.16	-40.58	-238.49	53.19	60.34	50.56	9.77	6.174		
1,980.00	1,950.85	1,997.77	1,966.00	7.17	6.33	-42.02	-246.89	55.41	58.04	47.98	10.06	5.771		
2,010.00	1,980.22	2,027.65	1,994.59	7.30	6.50	-43.58	-255.29	57.63	55.78	45.42	10.36	5.385		
2,040.00	2,009.59	2,057.52	2,023.17	7.44	6.66	-45.27	-263.69	59.86	53.56	42.88	10.68	5.016		
2,070.00	2,038.97	2,087.40	2,051.76	7.57	6.83	-47.10	-272.08	62.08	51.39	40.37	11.02	4.663		
2,100.00	2,068.34	2,117.28	2,080.34	7.71	7.01	-49.08	-280.48	64.30	49.28	37.89	11.39	4.326		
2,130.00	2,097.71	2,147.15	2,108.93	7.84	7.18	-51.23	-288.88	66.52	47.23	35.44	11.79	4.006		
2,160.00	2,127.08	2,177.03	2,137.51	7.98	7.35	-53.56	-297.28	68.75	45.25	33.03	12.22	3.704		
2,190.00	2,156.45	2,206.91	2,166.10	8.11	7.52	-56.09	-305.68	70.97	43.34	30.67	12.67	3.420		
2,220.00	2,185.82	2,236.78	2,194.68	8.24	7.69	-58.84	-314.08	73.19	41.53	28.36	13.17	3.154		
2,250.00	2,215.19	2,266.66	2,223.27	8.38	7.86	-61.82	-322.48	75.42	39.82	26.13	13.70	2.908		
2,280.00	2,244.56	2,296.54	2,251.86	8.51	8.04	-65.04	-330.88	77.64	38.23	23.97	14.26	2.682		
2,310.00	2,273.93	2,326.41	2,280.44	8.65	8.21	-68.51	-339.28	79.86	36.77	21.92	14.85	2.477		
2,340.00	2,303.30	2,356.29	2,309.03	8.78	8.38	-72.23	-347.68	82.09	35.46	20.00	15.46	2.293		
2,370.00	2,332.67	2,386.17	2,337.61	8.92	8.56	-76.20	-356.08	84.31	34.31	18.22	16.09	2.133		
2,400.00	2,362.04	2,416.04	2,366.20	9.05	8.73	-80.39	-364.48	86.53	33.35	16.63	16.72	1.995		
2,430.00	2,391.41	2,445.92	2,394.78	9.19	8.90	-84.79	-372.87	88.76	32.59	15.25	17.34	1.880		
2,460.00	2,420.78	2,475.80	2,423.37	9.32	9.08	-89.34	-381.27	90.98	32.04	14.12	17.92	1.788		
2,490.00	2,450.15	2,505.67	2,451.95	9.46	9.25	-94.01	-389.67	93.20	31.71	13.26	18.45	1.718		
2,517.30	2,476.87	2,532.86	2,477.96	9.58	9.41	-98.30	-397.32	95.23	31.61	12.73	18.88	1.674		
2,520.00	2,479.52	2,535.55	2,480.54	9.59	9.43	-98.72	-398.07	95.43	31.61	12.69	18.92	1.671		
2,550.00	2,508.89	2,565.43	2,509.12	9.73	9.60	-103.42	-406.47	97.65	31.75	12.44	19.31	1.644		
2,580.00	2,538.26	2,595.30	2,537.71	9.86	9.77	-108.05	-414.87	99.87	32.12	12.50	19.62	1.637 SF		
2,610.00	2,567.63	2,625.18	2,566.29	10.00	9.95	-112.54	-423.27	102.10	32.71	12.86	19.85	1.648		
2,640.00	2,597.00	2,655.06	2,594.88	10.13	10.13	-116.85	-431.67	104.32	33.51	13.50	20.01	1.675		
2,670.00	2,626.37	2,684.93	2,623.47	10.26	10.30	-120.95	-440.07	106.54	34.51	14.41	20.10	1.717		
2,700.00	2,655.74	2,714.81	2,652.05	10.40	10.48	-124.81	-448.47	108.77	35.68	15.55	20.14	1.772		
2,730.00	2,685.11	2,744.69	2,680.64	10.53	10.65	-128.43	-456.87	110.99	37.02	16.89	20.13	1.839		
2,760.00	2,714.48	2,774.56	2,709.22	10.67	10.83	-131.79	-465.27	113.21	38.51	18.40	20.10	1.916		
2,790.00	2,743.85	2,804.44	2,737.81	10.80	11.00	-134.90	-473.66	115.43	40.12	20.07	20.05	2.001		
2,820.00	2,773.22	2,834.32	2,766.39	10.94	11.18	-137.78	-482.06	117.66	41.85	21.85	20.00	2.093		
2,850.00	2,802.59	2,864.19	2,794.98	11.07	11.35	-140.43	-490.46	119.88	43.68	23.74	19.94	2.191		
2,880.00	2,831.96	2,894.07	2,823.56	11.21	11.53	-142.88	-498.86	122.10	45.60	25.72	19.88	2.294		
2,910.00	2,861.33	2,923.95	2,852.15	11.34	11.71	-145.13	-507.26	124.33	47.59	27.77	19.82	2.401		
2,940.00	2,890.70	2,953.82	2,880.73	11.48	11.88	-147.20	-515.66	126.55	49.66	29.88	19.78	2.511		
2,970.00	2,920.07	2,983.70	2,909.32	11.61	12.06	-149.11	-524.06	128.77	51.78	32.04	19.74	2.623		
3,000.00	2,949.44	3,013.58	2,937.91	11.75	12.24	-150.88	-532.46	131.00	53.96	34.25	19.71	2.737		
3,030.00	2,978.81	3,043.45	2,966.49	11.88	12.41	-152.51	-540.86	133.22	56.19	36.49	19.70	2.852		

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 29-14E
<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 29-14E	<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		
3,060.00	3,008.18	3,073.33	2,995.08	12.02	12.59	-154.01	-549.26	135.44	58.45	38.76	19.69	2.968		
3,090.00	3,037.55	3,103.21	3,023.66	12.15	12.77	-155.41	-557.66	137.67	60.76	41.06	19.70	3.084		
3,120.00	3,066.92	3,133.08	3,052.25	12.29	12.94	-156.71	-566.06	139.89	63.09	43.38	19.72	3.200		
3,150.00	3,096.29	3,162.96	3,080.83	12.42	13.12	-157.92	-574.45	142.11	65.46	45.72	19.74	3.316		
3,180.00	3,125.66	3,192.83	3,109.42	12.56	13.30	-159.04	-582.85	144.34	67.85	48.07	19.78	3.431		
3,210.00	3,155.03	3,222.71	3,138.00	12.69	13.47	-160.09	-591.25	146.56	70.27	50.45	19.82	3.545		
3,240.00	3,184.40	3,252.59	3,166.59	12.83	13.65	-161.07	-599.65	148.78	72.70	52.83	19.87	3.659		
3,270.00	3,213.77	3,282.46	3,195.17	12.96	13.83	-161.99	-608.05	151.01	75.16	55.23	19.93	3.771		
3,300.00	3,243.14	3,312.34	3,223.76	13.10	14.00	-162.85	-616.45	153.23	77.64	57.64	20.00	3.883		
3,330.00	3,272.51	3,342.22	3,252.34	13.23	14.18	-163.66	-624.85	155.45	80.13	60.06	20.07	3.993		
3,360.00	3,301.88	3,372.09	3,280.93	13.37	14.36	-164.42	-633.25	157.68	82.63	62.48	20.15	4.102		
3,390.00	3,331.25	3,401.97	3,309.52	13.50	14.54	-165.13	-641.65	159.90	85.15	64.92	20.23	4.209		
3,420.00	3,360.62	3,431.85	3,338.10	13.64	14.71	-165.81	-650.05	162.12	87.68	67.36	20.32	4.315		
3,450.00	3,389.99	3,461.72	3,366.69	13.77	14.89	-166.45	-658.45	164.34	90.22	69.80	20.41	4.420		
3,480.00	3,419.36	3,491.60	3,395.27	13.91	15.07	-167.05	-666.85	166.57	92.77	72.26	20.51	4.523		
3,510.00	3,448.73	3,521.48	3,423.86	14.04	15.25	-167.62	-675.24	168.79	95.33	74.71	20.61	4.624		
3,540.00	3,478.10	3,551.35	3,452.44	14.18	15.42	-168.16	-683.64	171.01	97.89	77.17	20.72	4.725		
3,570.00	3,507.47	3,581.23	3,481.03	14.31	15.60	-168.68	-692.04	173.24	100.47	79.64	20.83	4.823		
3,600.00	3,536.84	3,611.11	3,509.61	14.45	15.78	-169.17	-700.44	175.46	103.05	82.11	20.94	4.921		
3,630.00	3,566.21	3,640.98	3,538.20	14.58	15.96	-169.63	-708.84	177.68	105.64	84.58	21.06	5.016		
3,660.00	3,595.58	3,670.86	3,566.78	14.72	16.13	-170.07	-717.24	179.91	108.24	87.06	21.18	5.111		
3,690.00	3,624.95	3,700.74	3,595.37	14.85	16.31	-170.50	-725.64	182.13	110.84	89.54	21.30	5.204		
3,720.00	3,654.32	3,730.61	3,623.95	14.99	16.49	-170.90	-734.04	184.35	113.45	92.02	21.43	5.295		
3,750.00	3,683.69	3,760.49	3,652.54	15.12	16.67	-171.29	-742.44	186.58	116.06	94.51	21.55	5.385		
3,780.00	3,713.06	3,790.37	3,681.13	15.26	16.84	-171.65	-750.84	188.80	118.68	97.00	21.68	5.474		
3,810.00	3,742.43	3,820.24	3,709.71	15.39	17.02	-172.01	-759.24	191.02	121.30	99.49	21.81	5.561		
3,840.00	3,771.80	3,850.12	3,738.30	15.53	17.20	-172.34	-767.64	193.25	123.93	101.98	21.95	5.647		
3,870.00	3,801.17	3,880.00	3,766.88	15.66	17.38	-172.67	-776.03	195.47	126.56	104.48	22.08	5.731		
3,900.00	3,830.55	3,909.87	3,795.47	15.80	17.56	-172.98	-784.43	197.69	129.19	106.97	22.22	5.815		
3,930.00	3,859.92	3,939.75	3,824.05	15.93	17.73	-173.28	-792.83	199.92	131.83	109.47	22.36	5.896		
3,960.00	3,889.29	3,969.63	3,852.64	16.07	17.91	-173.57	-801.23	202.14	134.47	111.97	22.50	5.977		
3,990.00	3,918.66	3,999.50	3,881.22	16.20	18.09	-173.84	-809.63	204.36	137.11	114.47	22.64	6.057		
4,020.00	3,948.03	4,029.38	3,909.81	16.34	18.27	-174.11	-818.03	206.59	139.76	116.98	22.78	6.135		
4,050.00	3,977.40	4,059.26	3,938.39	16.47	18.45	-174.36	-826.43	208.81	142.40	119.48	22.92	6.212		
4,080.00	4,006.77	4,089.13	3,966.98	16.61	18.62	-174.61	-834.83	211.03	145.06	121.99	23.07	6.288		
4,110.00	4,036.14	4,119.01	3,995.57	16.74	18.80	-174.85	-843.23	213.25	147.71	124.49	23.22	6.362		
4,140.00	4,065.51	4,148.89	4,024.15	16.88	18.98	-175.08	-851.63	215.48	150.37	127.00	23.36	6.436		
4,170.00	4,094.88	4,178.76	4,052.74	17.01	19.16	-175.30	-860.03	217.70	153.02	129.51	23.51	6.508		
4,200.00	4,124.25	4,208.64	4,081.32	17.15	19.34	-175.51	-868.43	219.92	155.68	132.02	23.66	6.580		
4,230.00	4,153.62	4,238.52	4,109.91	17.28	19.51	-175.72	-876.82	222.15	158.35	134.53	23.81	6.650		
4,260.00	4,182.99	4,268.39	4,138.49	17.42	19.69	-175.92	-885.22	224.37	161.01	137.05	23.96	6.719		
4,290.00	4,212.36	4,298.27	4,167.08	17.55	19.87	-176.11	-893.62	226.59	163.68	139.56	24.11	6.788		
4,320.00	4,241.73	4,328.15	4,195.66	17.69	20.05	-176.30	-902.02	228.82	166.34	142.08	24.27	6.855		
4,350.00	4,271.10	4,358.02	4,224.25	17.82	20.23	-176.48	-910.42	231.04	169.01	144.59	24.42	6.921		
4,380.00	4,300.47	4,387.90	4,252.83	17.96	20.41	-176.66	-918.82	233.26	171.68	147.11	24.57	6.986		
4,410.00	4,329.84	4,417.78	4,281.42	18.09	20.58	-176.83	-927.22	235.49	174.35	149.63	24.73	7.051		
4,440.00	4,359.21	4,447.65	4,310.00	18.23	20.76	-176.99	-935.62	237.71	177.03	152.14	24.88	7.114		
4,470.00	4,388.58	4,477.53	4,338.59	18.36	20.94	-177.15	-944.02	239.93	179.70	154.66	25.04	7.177		
4,500.00	4,417.95	4,507.41	4,367.18	18.50	21.12	-177.31	-952.42	242.16	182.38	157.18	25.20	7.238		
4,530.00	4,447.32	4,537.28	4,395.76	18.63	21.30	-177.46	-960.82	244.38	185.06	159.70	25.35	7.299		
4,560.00	4,476.69	4,567.16	4,424.35	18.77	21.48	-177.61	-969.22	246.60	187.73	162.22	25.51	7.359		
4,590.00	4,506.06	4,597.04	4,452.93	18.90	21.65	-177.75	-977.61	248.83	190.41	164.74	25.67	7.418		

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 29-14E
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 29-14E	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		
4,620.00	4,535.43	4,626.91	4,481.52	19.04	21.83	-177.89	-986.01	251.05	193.09	167.27	25.83	7.476		
4,650.00	4,564.80	4,656.79	4,510.10	19.17	22.01	-178.02	-994.41	253.27	195.78	169.79	25.99	7.533		
4,680.00	4,594.17	4,686.67	4,538.69	19.31	22.19	-178.16	-1,002.81	255.50	198.46	172.31	26.15	7.590		
4,710.00	4,623.54	4,716.54	4,567.27	19.44	22.37	-178.28	-1,011.21	257.72	201.14	174.83	26.31	7.646		
4,740.00	4,652.91	4,746.42	4,595.86	19.58	22.55	-178.41	-1,019.61	259.94	203.83	177.36	26.47	7.701		
4,770.00	4,682.28	4,776.30	4,624.44	19.71	22.72	-178.53	-1,028.01	262.16	206.51	179.88	26.63	7.755		
4,800.00	4,711.65	4,806.17	4,653.03	19.85	22.90	-178.65	-1,036.41	264.39	209.20	182.41	26.79	7.809		
4,830.00	4,741.02	4,836.05	4,681.61	19.98	23.08	-178.76	-1,044.81	266.61	211.89	184.93	26.95	7.862		
4,860.00	4,770.39	4,865.93	4,710.20	20.12	23.26	-178.88	-1,053.21	268.83	214.57	187.46	27.11	7.914		
4,890.00	4,799.76	4,895.80	4,738.79	20.25	23.44	-178.99	-1,061.61	271.06	217.26	189.99	27.28	7.965		
4,920.00	4,829.13	4,925.68	4,767.37	20.39	23.62	-179.09	-1,070.01	273.28	219.95	192.51	27.44	8.016		
4,950.00	4,858.50	4,955.56	4,795.96	20.52	23.80	-179.20	-1,078.40	275.50	222.64	195.04	27.60	8.066		
4,980.00	4,887.87	4,985.43	4,824.54	20.66	23.97	-179.30	-1,086.80	277.73	225.33	197.57	27.76	8.116		
5,010.00	4,917.24	5,015.31	4,853.13	20.79	24.15	-179.40	-1,095.20	279.95	228.02	200.09	27.93	8.165		
5,040.00	4,946.61	5,045.19	4,881.71	20.93	24.33	-179.50	-1,103.60	282.17	230.71	202.62	28.09	8.213		
5,070.00	4,975.98	5,076.26	4,911.46	21.06	24.50	-179.61	-1,112.30	284.48	233.37	205.12	28.26	8.259		
5,100.00	5,005.35	5,108.74	4,942.63	21.20	24.66	-179.73	-1,121.10	286.81	235.75	207.33	28.42	8.295		
5,130.00	5,034.72	5,141.27	4,973.96	21.33	24.79	-179.83	-1,129.57	289.05	237.79	209.21	28.58	8.319		
5,160.00	5,064.09	5,173.85	5,005.43	21.47	24.92	-179.90	-1,137.71	291.20	239.51	210.76	28.75	8.331		
5,190.00	5,093.46	5,206.47	5,037.04	21.60	25.05	-179.94	-1,145.51	293.27	240.90	211.98	28.92	8.329		
5,220.00	5,122.83	5,239.11	5,068.76	21.74	25.16	-179.97	-1,152.97	295.24	241.96	212.86	29.09	8.316		
5,250.00	5,152.20	5,271.78	5,100.58	21.87	25.28	-179.97	-1,160.08	297.12	242.69	213.42	29.27	8.292		
5,280.00	5,181.62	5,304.46	5,132.50	21.98	25.40	-179.97	-1,166.85	298.91	243.30	213.86	29.43	8.266		
5,310.00	5,211.09	5,337.14	5,164.50	22.08	25.50	-179.96	-1,173.26	300.61	243.87	214.29	29.58	8.244		
5,340.00	5,240.62	5,369.83	5,196.59	22.17	25.61	-179.96	-1,179.32	302.22	244.42	214.69	29.72	8.223		
5,370.00	5,270.21	5,402.53	5,228.75	22.25	25.71	-179.96	-1,185.03	303.73	244.93	215.07	29.86	8.202		
5,400.00	5,299.85	5,435.23	5,260.98	22.33	25.80	-179.96	-1,190.39	305.14	245.41	215.42	29.99	8.182		
5,430.00	5,329.53	5,467.94	5,293.28	22.41	25.89	-179.95	-1,195.38	306.47	245.86	215.74	30.11	8.164		
5,460.00	5,359.26	5,500.66	5,325.64	22.48	25.98	-179.95	-1,200.03	307.70	246.28	216.04	30.23	8.145		
5,490.00	5,389.02	5,533.37	5,358.05	22.55	26.06	-179.95	-1,204.31	308.83	246.66	216.31	30.35	8.128		
5,520.00	5,418.83	5,566.10	5,390.53	22.61	26.14	-179.95	-1,208.24	309.87	247.01	216.56	30.45	8.112		
5,550.00	5,448.67	5,598.83	5,423.04	22.67	26.22	-179.95	-1,211.81	310.82	247.33	216.78	30.55	8.095		
5,580.00	5,478.54	5,631.56	5,455.61	22.73	26.28	-179.95	-1,215.02	311.67	247.62	216.98	30.65	8.080		
5,610.00	5,508.43	5,664.30	5,488.21	22.79	26.34	-179.94	-1,217.87	312.42	247.88	217.14	30.73	8.065		
5,640.00	5,538.36	5,697.03	5,520.85	22.84	26.41	-179.94	-1,220.36	313.08	248.10	217.29	30.82	8.051		
5,670.00	5,568.30	5,729.78	5,553.51	22.89	26.46	-179.94	-1,222.49	313.64	248.29	217.40	30.89	8.038		
5,700.00	5,598.26	5,762.52	5,586.21	22.94	26.51	-179.94	-1,224.26	314.11	248.45	217.49	30.96	8.025		
5,730.00	5,628.23	5,795.26	5,618.92	22.97	26.55	-179.94	-1,225.67	314.48	248.58	217.55	31.02	8.012		
5,760.00	5,658.22	5,828.01	5,651.65	23.01	26.59	-179.94	-1,226.72	314.76	248.67	217.59	31.08	8.000		
5,790.00	5,688.21	5,860.76	5,684.39	23.05	26.63	-179.94	-1,227.40	314.94	248.73	217.60	31.14	7.988		
5,820.00	5,718.21	5,893.51	5,717.13	23.08	26.67	-179.94	-1,227.73	315.03	248.76	217.57	31.19	7.976		
5,850.00	5,748.21	5,924.59	5,748.21	23.12	26.70	-179.94	-1,227.75	315.04	248.77	217.50	31.27	7.956		
5,880.00	5,778.21	5,954.59	5,778.21	23.15	26.73	-179.94	-1,227.75	315.04	248.77	217.40	31.36	7.932		
5,910.00	5,808.21	5,984.59	5,808.21	23.18	26.76	-179.94	-1,227.75	315.04	248.77	217.31	31.45	7.909		
5,940.00	5,838.21	6,014.59	5,838.21	23.21	26.78	-179.94	-1,227.75	315.04	248.77	217.22	31.54	7.887		
5,970.00	5,868.21	6,044.59	5,868.21	23.24	26.81	-179.94	-1,227.75	315.04	248.77	217.14	31.63	7.865		
6,000.00	5,898.21	6,074.59	5,898.21	23.26	26.83	-179.94	-1,227.75	315.04	248.77	217.05	31.72	7.843		
6,030.00	5,928.21	6,104.59	5,928.21	23.29	26.86	-179.94	-1,227.75	315.04	248.77	216.96	31.80	7.822		
6,060.00	5,958.21	6,134.59	5,958.21	23.32	26.89	-179.94	-1,227.75	315.04	248.77	216.87	31.89	7.800		
6,090.00	5,988.21	6,164.59	5,988.21	23.35	26.91	-179.94	-1,227.75	315.04	248.77	216.78	31.98	7.778		
6,120.00	6,018.21	6,194.59	6,018.21	23.38	26.94	-179.94	-1,227.75	315.04	248.77	216.70	32.07	7.757		
6,150.00	6,048.21	6,224.59	6,048.21	23.41	26.96	-179.94	-1,227.75	315.04	248.77	216.61	32.16	7.735		

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 29-14E
<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 29-14E	<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		
6,180.00	6,078.21	6,254.59	6,078.21	23.44	26.99	-179.94	-1,227.75	315.04	248.77	216.52	32.25	7.714		
6,210.00	6,108.21	6,284.59	6,108.21	23.47	27.02	-179.94	-1,227.75	315.04	248.77	216.43	32.34	7.693		
6,240.00	6,138.21	6,314.59	6,138.21	23.50	27.04	-179.94	-1,227.75	315.04	248.77	216.34	32.43	7.671		
6,270.00	6,168.21	6,344.59	6,168.21	23.53	27.07	-179.94	-1,227.75	315.04	248.77	216.25	32.52	7.650		
6,300.00	6,198.21	6,374.59	6,198.21	23.56	27.10	-179.94	-1,227.75	315.04	248.77	216.16	32.61	7.629		
6,330.00	6,228.21	6,404.59	6,228.21	23.59	27.12	-179.94	-1,227.75	315.04	248.77	216.07	32.70	7.608		
6,360.00	6,258.21	6,434.59	6,258.21	23.62	27.15	-179.94	-1,227.75	315.04	248.77	215.97	32.79	7.586		
6,390.00	6,288.21	6,464.59	6,288.21	23.65	27.18	-179.94	-1,227.75	315.04	248.77	215.88	32.88	7.565		
6,420.00	6,318.21	6,494.59	6,318.21	23.68	27.20	-179.94	-1,227.75	315.04	248.77	215.79	32.97	7.544		
6,450.00	6,348.21	6,524.59	6,348.21	23.71	27.23	-179.94	-1,227.75	315.04	248.77	215.70	33.07	7.523		
6,480.00	6,378.21	6,554.59	6,378.21	23.74	27.26	-179.94	-1,227.75	315.04	248.77	215.61	33.16	7.502		
6,510.00	6,408.21	6,584.59	6,408.21	23.77	27.29	-179.94	-1,227.75	315.04	248.77	215.51	33.25	7.481		
6,540.00	6,438.21	6,614.59	6,438.21	23.80	27.31	-179.94	-1,227.75	315.04	248.77	215.42	33.34	7.460		
6,570.00	6,468.21	6,644.59	6,468.21	23.83	27.34	-179.94	-1,227.75	315.04	248.77	215.33	33.44	7.440		
6,600.00	6,498.21	6,674.59	6,498.21	23.86	27.37	-179.94	-1,227.75	315.04	248.77	215.23	33.53	7.419		
6,630.00	6,528.21	6,704.59	6,528.21	23.90	27.40	-179.94	-1,227.75	315.04	248.77	215.14	33.63	7.398		
6,660.00	6,558.21	6,734.59	6,558.21	23.93	27.43	-179.94	-1,227.75	315.04	248.77	215.05	33.72	7.377		
6,690.00	6,588.21	6,764.59	6,588.21	23.96	27.46	-179.94	-1,227.75	315.04	248.77	214.95	33.81	7.357		
6,720.00	6,618.21	6,794.59	6,618.21	23.99	27.48	-179.94	-1,227.75	315.04	248.77	214.86	33.91	7.336		
6,750.00	6,648.21	6,824.59	6,648.21	24.02	27.51	-179.94	-1,227.75	315.04	248.77	214.76	34.00	7.316		
6,780.00	6,678.21	6,854.59	6,678.21	24.06	27.54	-179.94	-1,227.75	315.04	248.77	214.67	34.10	7.295		
6,810.00	6,708.21	6,884.59	6,708.21	24.09	27.57	-179.94	-1,227.75	315.04	248.77	214.57	34.19	7.275		
6,840.00	6,738.21	6,914.59	6,738.21	24.12	27.60	-179.94	-1,227.75	315.04	248.77	214.48	34.29	7.255		
6,870.00	6,768.21	6,944.59	6,768.21	24.15	27.63	-179.94	-1,227.75	315.04	248.77	214.38	34.39	7.235		
6,900.00	6,798.21	6,974.59	6,798.21	24.19	27.66	-179.94	-1,227.75	315.04	248.77	214.28	34.48	7.214		
6,930.00	6,828.21	7,004.59	6,828.21	24.22	27.69	-179.94	-1,227.75	315.04	248.77	214.19	34.58	7.194		
6,960.00	6,858.21	7,034.59	6,858.21	24.25	27.72	-179.94	-1,227.75	315.04	248.77	214.09	34.68	7.174		
6,990.00	6,888.21	7,064.59	6,888.21	24.29	27.75	-179.94	-1,227.75	315.04	248.77	213.99	34.77	7.154		
7,020.00	6,918.21	7,094.59	6,918.21	24.32	27.78	-179.94	-1,227.75	315.04	248.77	213.90	34.87	7.134		
7,050.00	6,948.21	7,124.59	6,948.21	24.35	27.81	-179.94	-1,227.75	315.04	248.77	213.80	34.97	7.114		
7,080.00	6,978.21	7,154.59	6,978.21	24.39	27.84	-179.94	-1,227.75	315.04	248.77	213.70	35.06	7.094		
7,110.00	7,008.21	7,184.59	7,008.21	24.42	27.87	-179.94	-1,227.75	315.04	248.77	213.60	35.16	7.075		
7,140.00	7,038.21	7,214.59	7,038.21	24.45	27.90	-179.94	-1,227.75	315.04	248.77	213.50	35.26	7.055		
7,170.00	7,068.21	7,244.59	7,068.21	24.49	27.93	-179.94	-1,227.75	315.04	248.77	213.41	35.36	7.035		
7,200.00	7,098.21	7,274.59	7,098.21	24.52	27.96	-179.94	-1,227.75	315.04	248.77	213.31	35.46	7.016		
7,230.00	7,128.21	7,304.59	7,128.21	24.56	27.99	-179.94	-1,227.75	315.04	248.77	213.21	35.56	6.996		
7,260.00	7,158.21	7,334.59	7,158.21	24.59	28.02	-179.94	-1,227.75	315.04	248.77	213.11	35.66	6.977		
7,290.00	7,188.21	7,364.59	7,188.21	24.63	28.06	-179.94	-1,227.75	315.04	248.77	213.01	35.76	6.957		
7,320.00	7,218.21	7,394.59	7,218.21	24.66	28.09	-179.94	-1,227.75	315.04	248.77	212.91	35.86	6.938		
7,350.00	7,248.21	7,424.59	7,248.21	24.70	28.12	-179.94	-1,227.75	315.04	248.77	212.81	35.96	6.919		
7,380.00	7,278.21	7,454.59	7,278.21	24.73	28.15	-179.94	-1,227.75	315.04	248.77	212.71	36.06	6.899		
7,410.00	7,308.21	7,484.59	7,308.21	24.77	28.18	-179.94	-1,227.75	315.04	248.77	212.61	36.16	6.880		
7,440.00	7,338.21	7,514.59	7,338.21	24.80	28.21	-179.94	-1,227.75	315.04	248.77	212.51	36.26	6.861		
7,470.00	7,368.21	7,544.59	7,368.21	24.84	28.24	-179.94	-1,227.75	315.04	248.77	212.41	36.36	6.842		
7,500.00	7,398.21	7,574.59	7,398.21	24.87	28.28	-179.94	-1,227.75	315.04	248.77	212.31	36.46	6.823		
7,530.00	7,428.21	7,604.59	7,428.21	24.91	28.31	-179.94	-1,227.75	315.04	248.77	212.21	36.56	6.804		
7,560.00	7,458.21	7,634.59	7,458.21	24.95	28.34	-179.94	-1,227.75	315.04	248.77	212.10	36.66	6.786		
7,590.00	7,488.21	7,664.59	7,488.21	24.98	28.37	-179.94	-1,227.75	315.04	248.77	212.00	36.76	6.767		
7,620.00	7,518.21	7,694.59	7,518.21	25.02	28.41	-179.94	-1,227.75	315.04	248.77	211.90	36.86	6.748		
7,650.00	7,548.21	7,724.59	7,548.21	25.05	28.44	-179.94	-1,227.75	315.04	248.77	211.80	36.97	6.729		
7,680.00	7,578.21	7,754.59	7,578.21	25.09	28.47	-179.94	-1,227.75	315.04	248.77	211.70	37.07	6.711		
7,710.00	7,608.21	7,784.59	7,608.21	25.13	28.50	-179.94	-1,227.75	315.04	248.77	211.59	37.17	6.692		

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 29-14E
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 29-14E	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

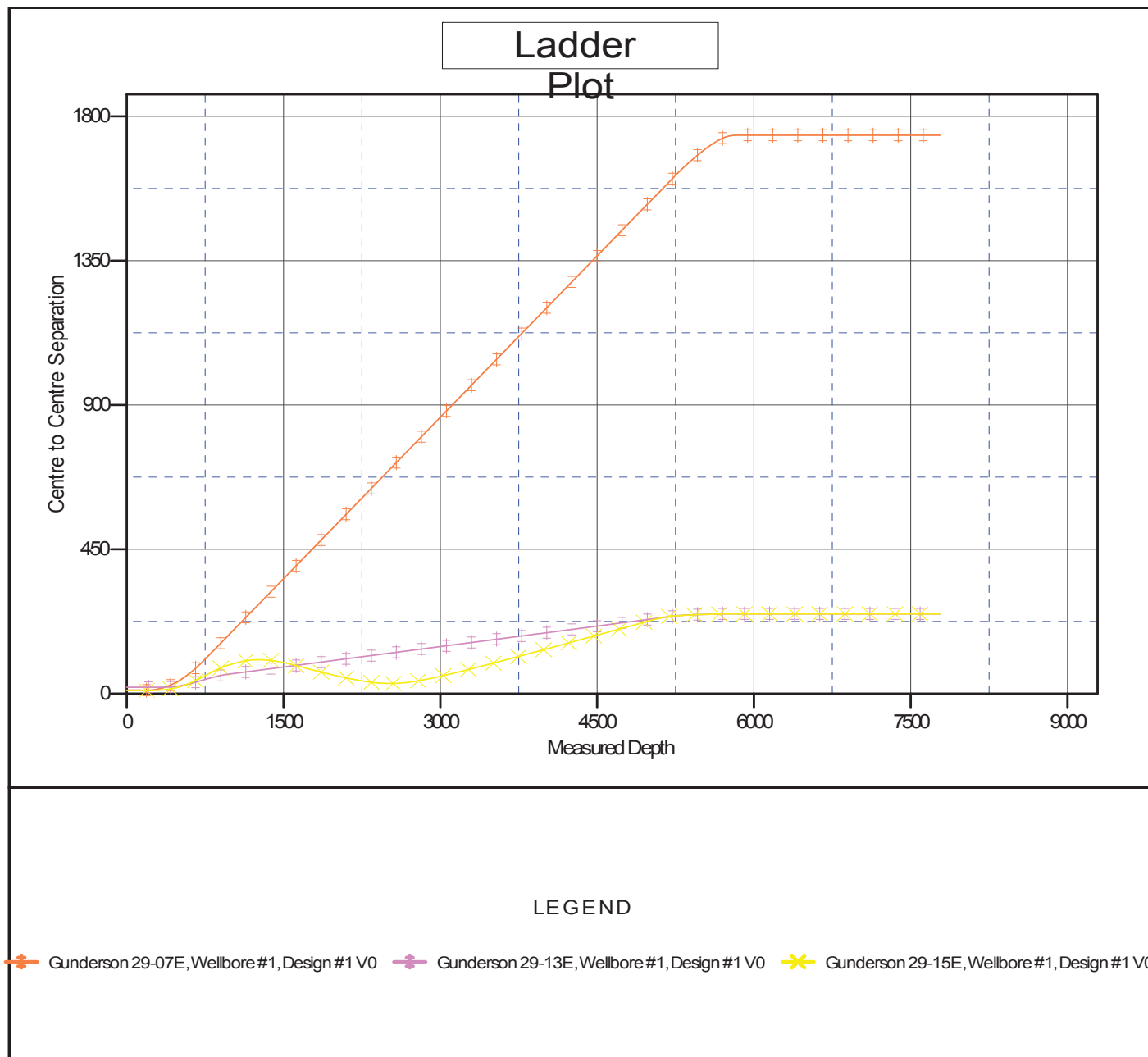
Offset Design Gunderson - Gunderson 29-15E - Wellbore #1 - Design #1												Offset Site Error:	0.00 usft
Survey Program: 0-MWD												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical 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	
7,740.00	7,638.21	7,814.59	7,638.21	25.16	28.54	-179.94	-1,227.75	315.04	248.77	211.49	37.27	6.674	
7,770.00	7,668.21	7,844.59	7,668.21	25.20	28.57	-179.94	-1,227.75	315.04	248.77	211.39	37.38	6.656	
7,781.79	7,680.00	7,856.37	7,680.00	25.22	28.58	-179.94	-1,227.75	315.04	248.77	211.35	37.42	6.648	



Company:	Piceance Energy, LLC	Local Co-ordinate Reference:	Well Gunderson 29-14E
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 29-14E	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 29-14E  
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 29-14E
<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 29-14E	<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 29-14E  
Coordinate System is US State Plane 1983, Colorado Central Zone  
Grid Convergence at Surface is: -1.44°

