



# **Piceance Energy, LLC**

**Mesa County, CO  
Gunderson  
Gunderson 29-08M**

**Wellbore #1**

**Plan: Design #1**

## **Standard Planning Report**

**03 October, 2014**

# **Archer**



Project: Mesa County, CO  
Site: Gunderson  
Well: Gunderson 29-08M  
Wellbore: Wellbore #1  
Design: Design #1  
Latitude: 39.248813  
Longitude: -107.788115  
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 29-08M, 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 29-08M

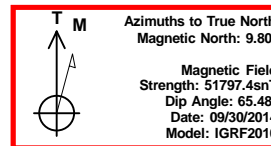
+N/-S	+E/-W	Northing	Ground Level: Easting	Latitude	Longitude	Slot
0.00	0.00	1523674.078	2352093.644	39.248813	-107.788115	

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

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
Gunderson 29-08M tgt	7680.00	519.54	-1382.37	1524228.271	2350724.800	39.250239	-107.792997	Circle (Radius: 50.00)

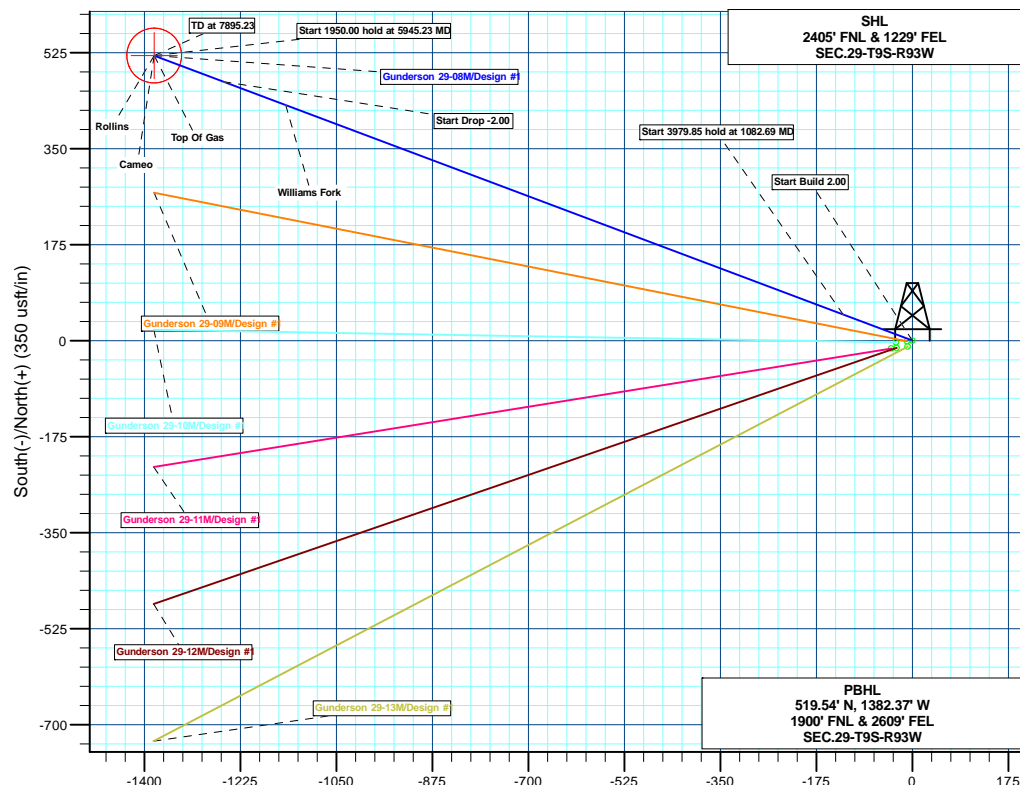
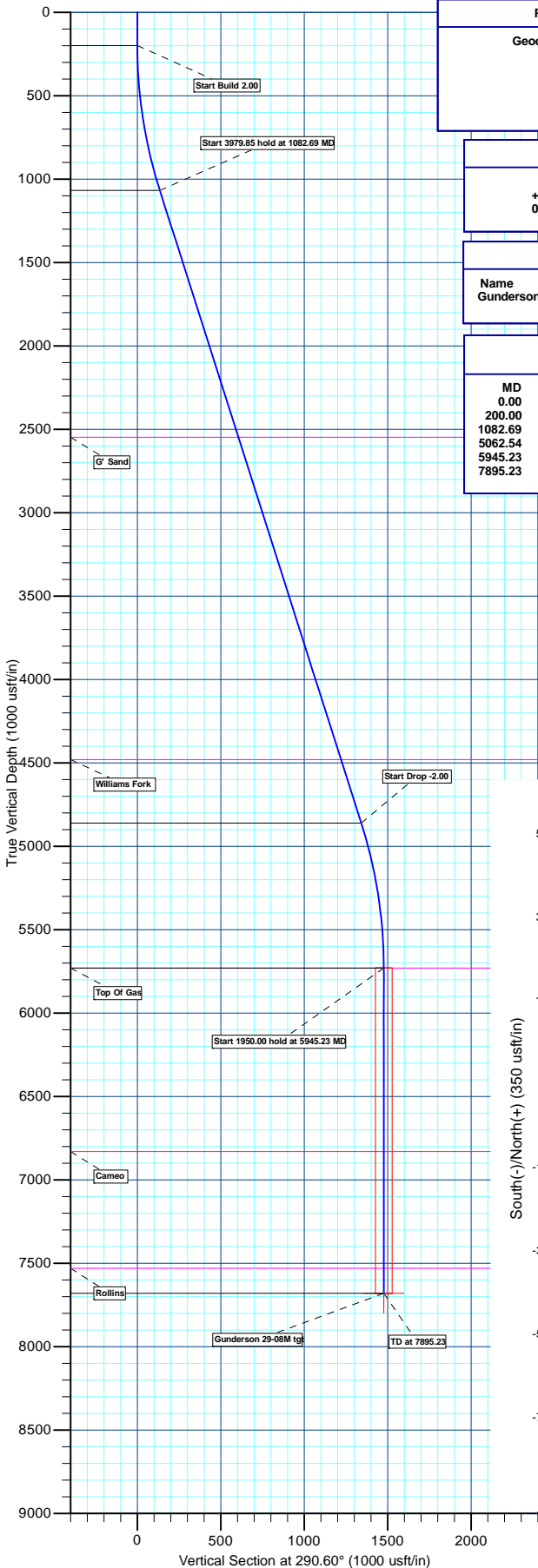
### SECTION DETAILS

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
1082.69	17.65	290.60	1068.79	47.46	-126.29	2.00	290.60	134.91	Start 3979.85 hold at 1082.69 MD
5062.54	17.65	290.60	4861.21	472.08	-1256.08	0.00	0.00	1341.86	Start Drop -2.00
5945.23	0.00	0.00	5730.00	519.54	-1382.37	2.00	180.00	1476.77	Start 1950.00 hold at 5945.23 MD
7895.23	0.00	0.00	7680.00	519.54	-1382.37	0.00	0.00	1476.77	TD at 7895.23



### FORMATION TOP DETAILS

TVDPATH	MDPATH	Formation
2548.00	2635.00	G' Sand
4480.00	4662.49	Williams Fork
5730.00	5945.23	Top Of Gas
6830.00	7045.23	Cameo
7530.00	7745.23	Rollins



Plan: Design #1 (Gunderson 29-08M/Wellbore #1)

Created By: Ricky Osburn Date: 6:46, October 03 2014



<b>Database:</b>	EDMDBBW	<b>Local Co-ordinate Reference:</b>	Well Gunderson 29-08M
<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 29-08M	<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 29-08M					
Well Position	+N/-S	3.41 usft	Northing:	1,523,674.078 usft	Latitude:	39.248813
	+E/-W	29.82 usft	Easting:	2,352,093.644 usft	Longitude:	-107.788115
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	7,536.00 usft

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

<b>Design</b>	Design #1			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PLAN	<b>Tie On Depth:</b>	0.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>
	0.00	0.00	0.00	290.60

<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	
1,082.69	17.65	290.60	1,068.79	47.46	-126.29	2.00	2.00	0.00	290.60	
5,062.54	17.65	290.60	4,861.21	472.08	-1,256.08	0.00	0.00	0.00	0.00	
5,945.23	0.00	0.00	5,730.00	519.54	-1,382.37	2.00	-2.00	0.00	180.00	
7,895.23	0.00	0.00	7,680.00	519.54	-1,382.37	0.00	0.00	0.00	0.00	Gunderson 29-08M tg



Database:	EDMDBBW	Local Co-ordinate Reference:	Well Gunderson 29-08M
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 29-08M	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Start Build 2.00									
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	2.00	290.60	299.98	0.61	-1.63	1.75	2.00	2.00	0.00
400.00	4.00	290.60	399.84	2.46	-6.53	6.98	2.00	2.00	0.00
500.00	6.00	290.60	499.45	5.52	-14.69	15.69	2.00	2.00	0.00
600.00	8.00	290.60	598.70	9.81	-26.10	27.88	2.00	2.00	0.00
700.00	10.00	290.60	697.47	15.31	-40.74	43.52	2.00	2.00	0.00
800.00	12.00	290.60	795.62	22.02	-58.60	62.60	2.00	2.00	0.00
900.00	14.00	290.60	893.06	29.94	-79.66	85.10	2.00	2.00	0.00
1,000.00	16.00	290.60	989.64	39.04	-103.88	110.98	2.00	2.00	0.00
Start 3979.85 hold at 1082.69 MD									
1,082.69	17.65	290.60	1,068.79	47.46	-126.29	134.91	2.00	2.00	0.00
1,100.00	17.65	290.60	1,085.28	49.31	-131.20	140.16	0.00	0.00	0.00
1,200.00	17.65	290.60	1,180.58	59.98	-159.59	170.49	0.00	0.00	0.00
1,300.00	17.65	290.60	1,275.87	70.65	-187.98	200.82	0.00	0.00	0.00
1,400.00	17.65	290.60	1,371.16	81.32	-216.37	231.14	0.00	0.00	0.00
8 5/8" Csg.									
1,500.00	17.65	290.60	1,466.45	91.99	-244.75	261.47	0.00	0.00	0.00
1,600.00	17.65	290.60	1,561.74	102.66	-273.14	291.80	0.00	0.00	0.00
1,700.00	17.65	290.60	1,657.03	113.33	-301.53	322.12	0.00	0.00	0.00
1,800.00	17.65	290.60	1,752.32	123.99	-329.92	352.45	0.00	0.00	0.00
1,900.00	17.65	290.60	1,847.61	134.66	-358.30	382.77	0.00	0.00	0.00
2,000.00	17.65	290.60	1,942.90	145.33	-386.69	413.10	0.00	0.00	0.00
2,100.00	17.65	290.60	2,038.19	156.00	-415.08	443.43	0.00	0.00	0.00
2,200.00	17.65	290.60	2,133.48	166.67	-443.47	473.75	0.00	0.00	0.00
2,300.00	17.65	290.60	2,228.77	177.34	-471.86	504.08	0.00	0.00	0.00
2,400.00	17.65	290.60	2,324.06	188.01	-500.24	534.41	0.00	0.00	0.00
2,500.00	17.65	290.60	2,419.35	198.68	-528.63	564.73	0.00	0.00	0.00
2,600.00	17.65	290.60	2,514.64	209.35	-557.02	595.06	0.00	0.00	0.00
G' Sand									
2,635.00	17.65	290.60	2,548.00	213.08	-566.96	605.68	0.00	0.00	0.00
2,700.00	17.65	290.60	2,609.93	220.02	-585.41	625.39	0.00	0.00	0.00
2,800.00	17.65	290.60	2,705.23	230.69	-613.79	655.71	0.00	0.00	0.00
2,900.00	17.65	290.60	2,800.52	241.36	-642.18	686.04	0.00	0.00	0.00
3,000.00	17.65	290.60	2,895.81	252.03	-670.57	716.37	0.00	0.00	0.00
3,100.00	17.65	290.60	2,991.10	262.69	-698.96	746.69	0.00	0.00	0.00
3,200.00	17.65	290.60	3,086.39	273.36	-727.35	777.02	0.00	0.00	0.00
3,300.00	17.65	290.60	3,181.68	284.03	-755.73	807.35	0.00	0.00	0.00
3,400.00	17.65	290.60	3,276.97	294.70	-784.12	837.67	0.00	0.00	0.00
3,500.00	17.65	290.60	3,372.26	305.37	-812.51	868.00	0.00	0.00	0.00
3,600.00	17.65	290.60	3,467.55	316.04	-840.90	898.33	0.00	0.00	0.00
3,700.00	17.65	290.60	3,562.84	326.71	-869.28	928.65	0.00	0.00	0.00
3,800.00	17.65	290.60	3,658.13	337.38	-897.67	958.98	0.00	0.00	0.00
3,900.00	17.65	290.60	3,753.42	348.05	-926.06	989.30	0.00	0.00	0.00
4,000.00	17.65	290.60	3,848.71	358.72	-954.45	1,019.63	0.00	0.00	0.00
4,100.00	17.65	290.60	3,944.00	369.39	-982.84	1,049.96	0.00	0.00	0.00
4,200.00	17.65	290.60	4,039.29	380.06	-1,011.22	1,080.28	0.00	0.00	0.00
4,300.00	17.65	290.60	4,134.58	390.72	-1,039.61	1,110.61	0.00	0.00	0.00
4,400.00	17.65	290.60	4,229.88	401.39	-1,068.00	1,140.94	0.00	0.00	0.00
4,500.00	17.65	290.60	4,325.17	412.06	-1,096.39	1,171.26	0.00	0.00	0.00
4,600.00	17.65	290.60	4,420.46	422.73	-1,124.77	1,201.59	0.00	0.00	0.00
Williams Fork									



<b>Database:</b>	EDMDBBW	<b>Local Co-ordinate Reference:</b>	Well Gunderson 29-08M
<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 29-08M	<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)
4,662.49	17.65	290.60	4,480.00	429.40	-1,142.51	1,220.54	0.00	0.00	0.00
4,700.00	17.65	290.60	4,515.75	433.40	-1,153.16	1,231.92	0.00	0.00	0.00
4,800.00	17.65	290.60	4,611.04	444.07	-1,181.55	1,262.24	0.00	0.00	0.00
4,900.00	17.65	290.60	4,706.33	454.74	-1,209.94	1,292.57	0.00	0.00	0.00
5,000.00	17.65	290.60	4,801.62	465.41	-1,238.32	1,322.90	0.00	0.00	0.00
<b>Start Drop -2.00</b>									
5,062.54	17.65	290.60	4,861.21	472.08	-1,256.08	1,341.86	0.00	0.00	0.00
5,100.00	16.90	290.60	4,896.98	476.00	-1,266.49	1,352.99	2.00	-2.00	0.00
5,200.00	14.90	290.60	4,993.15	485.64	-1,292.14	1,380.39	2.00	-2.00	0.00
5,300.00	12.90	290.60	5,090.21	494.09	-1,314.64	1,404.42	2.00	-2.00	0.00
5,400.00	10.90	290.60	5,188.06	501.35	-1,333.95	1,425.05	2.00	-2.00	0.00
5,500.00	8.90	290.60	5,286.56	507.40	-1,350.05	1,442.25	2.00	-2.00	0.00
5,600.00	6.90	290.60	5,385.61	512.24	-1,362.92	1,456.00	2.00	-2.00	0.00
5,700.00	4.90	290.60	5,485.07	515.85	-1,372.55	1,466.29	2.00	-2.00	0.00
5,800.00	2.90	290.60	5,584.84	518.25	-1,378.92	1,473.09	2.00	-2.00	0.00
5,900.00	0.90	290.60	5,684.78	519.42	-1,382.03	1,476.42	2.00	-2.00	0.00
<b>Start 1950.00 hold at 5945.23 MD - Top Of Gas</b>									
5,945.23	0.00	0.00	5,730.00	519.54	-1,382.37	1,476.77	2.00	-2.00	0.00
6,000.00	0.00	0.00	5,784.77	519.54	-1,382.37	1,476.77	0.00	0.00	0.00
6,100.00	0.00	0.00	5,884.77	519.54	-1,382.37	1,476.77	0.00	0.00	0.00
6,200.00	0.00	0.00	5,984.77	519.54	-1,382.37	1,476.77	0.00	0.00	0.00
6,300.00	0.00	0.00	6,084.77	519.54	-1,382.37	1,476.77	0.00	0.00	0.00
6,400.00	0.00	0.00	6,184.77	519.54	-1,382.37	1,476.77	0.00	0.00	0.00
6,500.00	0.00	0.00	6,284.77	519.54	-1,382.37	1,476.77	0.00	0.00	0.00
6,600.00	0.00	0.00	6,384.77	519.54	-1,382.37	1,476.77	0.00	0.00	0.00
6,700.00	0.00	0.00	6,484.77	519.54	-1,382.37	1,476.77	0.00	0.00	0.00
6,800.00	0.00	0.00	6,584.77	519.54	-1,382.37	1,476.77	0.00	0.00	0.00
6,900.00	0.00	0.00	6,684.77	519.54	-1,382.37	1,476.77	0.00	0.00	0.00
7,000.00	0.00	0.00	6,784.77	519.54	-1,382.37	1,476.77	0.00	0.00	0.00
<b>Cameo</b>									
7,045.23	0.00	0.00	6,830.00	519.54	-1,382.37	1,476.77	0.00	0.00	0.00
7,100.00	0.00	0.00	6,884.77	519.54	-1,382.37	1,476.77	0.00	0.00	0.00
7,200.00	0.00	0.00	6,984.77	519.54	-1,382.37	1,476.77	0.00	0.00	0.00
7,300.00	0.00	0.00	7,084.77	519.54	-1,382.37	1,476.77	0.00	0.00	0.00
7,400.00	0.00	0.00	7,184.77	519.54	-1,382.37	1,476.77	0.00	0.00	0.00
7,500.00	0.00	0.00	7,284.77	519.54	-1,382.37	1,476.77	0.00	0.00	0.00
7,600.00	0.00	0.00	7,384.77	519.54	-1,382.37	1,476.77	0.00	0.00	0.00
7,700.00	0.00	0.00	7,484.77	519.54	-1,382.37	1,476.77	0.00	0.00	0.00
<b>Rollins</b>									
7,745.23	0.00	0.00	7,530.00	519.54	-1,382.37	1,476.77	0.00	0.00	0.00
7,800.00	0.00	0.00	7,584.77	519.54	-1,382.37	1,476.77	0.00	0.00	0.00
<b>TD at 7895.23</b>									
7,895.23	0.00	0.00	7,680.00	519.54	-1,382.37	1,476.77	0.00	0.00	0.00



<b>Database:</b>	EDMDBBW	<b>Local Co-ordinate Reference:</b>	Well Gunderson 29-08M
<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 29-08M	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #1		

Design Targets									
Target Name									
- hit/miss target	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- Shape	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)		
Gunderson 29-08M tgt	0.00	0.00	7,680.00	519.54	-1,382.37	1,524,228.271	2,350,724.800	39.250239	-107.792997
- plan hits target center									
- Circle (radius 50.00)									

Casing Points				
Measured Depth	Vertical Depth		Casing Diameter	Hole Diameter
(usft)	(usft)	Name	(")	(")
1,500.00	1,466.45	8 5/8" Csg.	8-5/8	12-1/4

Formations					
Measured Depth	Vertical Depth			Dip	Dip Direction
(usft)	(usft)	Name	Lithology	(°)	(°)
2,635.00	2,548.00	G' Sand		0.00	
4,662.49	4,480.00	Williams Fork		0.00	
5,945.23	5,730.00	Top Of Gas		0.00	
7,045.23	6,830.00	Cameo		0.00	
7,745.23	7,530.00	Rollins		0.00	

Plan Annotations				
Measured Depth	Vertical Depth	Local Coordinates		
(usft)	(usft)	+N/-S (usft)	+E/-W (usft)	Comment
200.00	200.00	0.00	0.00	Start Build 2.00
1,082.69	1,068.79	47.46	-126.29	Start 3979.85 hold at 1082.69 MD
5,062.54	4,861.21	472.08	-1,256.08	Start Drop -2.00
5,945.23	5,730.00	519.54	-1,382.37	Start 1950.00 hold at 5945.23 MD
7,895.23	7,680.00	519.54	-1,382.37	TD at 7895.23



# **Piceance Energy, LLC**

**Mesa County, CO**

**Gunderson**

**Gunderson 29-08M**

**Wellbore #1**

**Design #1**

## **Anticollision Report**

**03 October, 2014**

# **Archer**



<b>Company:</b>	Piceance Energy, LLC	<b>Local Co-ordinate Reference:</b>	Well Gunderson 29-08M
<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 29-08M	<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	7,895.23	Design #1 (Wellbore #1)	MWD	MWD - Standard

<b>Summary</b>						
Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Gunderson						
Gunderson 29-09M - Wellbore #1 - Design #1	426.22	425.97	4.57	2.94	2.791	CC, ES
Gunderson 29-09M - Wellbore #1 - Design #1	450.00	449.70	4.88	3.13	2.788	SF
Gunderson 29-10M - Wellbore #1 - Design #1	591.10	589.71	14.23	11.78	5.821	CC
Gunderson 29-10M - Wellbore #1 - Design #1	600.00	598.54	14.26	11.77	5.727	ES
Gunderson 29-10M - Wellbore #1 - Design #1	630.00	628.33	14.92	12.26	5.620	SF
Gunderson 29-11M - Wellbore #1 - Design #1	622.04	620.52	27.15	24.52	10.343	CC
Gunderson 29-11M - Wellbore #1 - Design #1	630.00	628.39	27.17	24.50	10.179	ES
Gunderson 29-11M - Wellbore #1 - Design #1	690.00	687.61	29.21	26.22	9.765	SF
Gunderson 29-12M - Wellbore #1 - Design #1	556.48	555.56	22.60	20.32	9.913	CC
Gunderson 29-12M - Wellbore #1 - Design #1	570.00	568.97	22.67	20.32	9.646	ES
Gunderson 29-12M - Wellbore #1 - Design #1	630.00	628.39	24.74	22.08	9.294	SF
Gunderson 29-13M - Wellbore #1 - Design #1	357.87	357.79	13.46	12.14	10.157	CC
Gunderson 29-13M - Wellbore #1 - Design #1	360.00	359.92	13.46	12.13	10.084	ES
Gunderson 29-13M - Wellbore #1 - Design #1	450.00	449.68	14.97	13.22	8.525	SF

<b>Offset Design</b>												
Gunderson - Gunderson 29-09M - Wellbore #1 - Design #1												
Survey Program: 0-MWD												
Reference		Offset		Semi Major Axis			Distance					
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor
0.00	0.00	0.00	0.00	0.00	0.00	-96.48	-1.13	-9.94	10.00	9.97	0.03	309.085
30.00	30.00	30.00	30.00	0.01	0.03	-96.48	-1.13	-9.94	10.00	9.91	0.09	109.089
60.00	60.00	60.00	60.00	0.04	0.05	-96.48	-1.13	-9.94	10.00	9.85	0.15	66.232
90.00	90.00	90.00	90.00	0.07	0.08	-96.48	-1.13	-9.94	10.00	9.74	0.26	38.369
120.00	120.00	120.00	120.00	0.13	0.13	-96.48	-1.13	-9.94	10.00	9.61	0.40	25.289
150.00	150.00	150.00	150.00	0.20	0.20	-96.48	-1.13	-9.94	10.00	9.47	0.53	18.859
180.00	180.00	180.00	180.00	0.27	0.27	-96.48	-1.13	-9.94	10.00	9.32	0.66	15.021
210.00	210.00	210.00	210.00	0.33	0.33	-96.53	-1.13	-9.94	9.99	8.96	0.80	12.200
240.00	240.00	240.00	240.00	0.40	0.40	-97.23	-1.13	-9.94	9.76	8.32	0.93	9.899
270.00	269.99	269.99	269.99	0.46	0.47	-98.89	-1.13	-9.94	9.25	7.42	1.07	7.943
300.00	299.98	299.98	299.98	0.53	0.53	-101.85	-1.13	-9.94	8.49	6.29	1.20	6.227
330.00	329.96	329.96	329.96	0.60	0.60	-106.79	-1.13	-9.94	7.50	5.02	1.34	4.752
360.00	359.92	359.92	359.92	0.67	0.67	-115.12	-1.13	-9.94	6.36	3.78	1.47	3.567
390.00	389.86	389.86	389.86	0.74	0.74	-129.59	-1.13	-9.94	5.25			

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 29-08M
<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 29-08M	<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 29-09M - 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		
420.00	419.78	419.78	419.78	0.81	0.80	-152.76	-1.12	-10.01	4.60	2.99	1.61	2.856		
426.22	425.98	425.97	425.97	0.82	0.82	-158.19	-1.11	-10.06	4.57	2.94	1.64	2.791 CC, ES		
450.00	449.68	449.70	449.70	0.88	0.87	-178.14	-1.05	-10.36	4.88	3.13	1.75	2.788 SF		
480.00	479.55	479.64	479.63	0.96	0.93	162.80	-0.91	-11.03	5.99	4.10	1.89	3.171		
510.00	509.40	509.61	509.58	1.04	1.00	150.87	-0.72	-12.00	7.58	5.55	2.03	3.741		
540.00	539.20	539.60	539.54	1.12	1.06	143.53	-0.47	-13.28	9.41	7.25	2.16	4.351		
570.00	568.97	569.60	569.50	1.21	1.13	138.86	-0.16	-14.86	11.37	9.07	2.30	4.953		
600.00	598.70	599.63	599.47	1.30	1.19	135.78	0.22	-16.76	13.41	10.98	2.42	5.530		
630.00	628.39	629.68	629.43	1.40	1.26	133.68	0.65	-18.97	15.50	12.93	2.57	6.041		
660.00	658.03	659.75	659.39	1.50	1.34	132.25	1.15	-21.49	17.63	14.92	2.70	6.518		
690.00	687.61	689.84	689.35	1.60	1.41	131.26	1.71	-24.31	19.79	16.95	2.84	6.963		
720.00	717.15	719.95	719.29	1.71	1.49	130.60	2.32	-27.45	21.97	18.99	2.99	7.356		
750.00	746.63	750.08	749.21	1.82	1.57	130.18	3.00	-30.90	24.18	21.05	3.13	7.714		
780.00	776.05	780.23	779.12	1.94	1.65	129.94	3.75	-34.66	26.41	23.13	3.28	8.050		
810.00	805.40	810.40	809.00	2.06	1.74	129.84	4.55	-38.73	28.66	25.23	3.43	8.353		
840.00	834.69	840.59	838.86	2.19	1.83	129.85	5.41	-43.11	30.92	27.33	3.59	8.615		
870.00	863.91	870.80	868.69	2.32	1.92	129.94	6.34	-47.81	33.21	29.46	3.75	8.863		
900.00	893.06	901.03	898.48	2.46	2.02	130.11	7.33	-52.82	35.51	31.61	3.90	9.097		
930.00	922.13	931.28	928.24	2.61	2.13	130.34	8.38	-58.13	37.83	33.76	4.08	9.280		
960.00	951.12	961.55	957.96	2.76	2.24	130.62	9.49	-63.76	40.18	35.93	4.25	9.455		
990.00	980.03	991.84	987.64	2.91	2.35	130.94	10.66	-69.71	42.53	38.11	4.42	9.621		
1,020.00	1,008.85	1,022.15	1,017.27	3.07	2.47	131.30	11.89	-75.96	44.91	40.31	4.61	9.752		
1,050.00	1,037.58	1,052.47	1,046.85	3.24	2.60	131.68	13.19	-82.52	47.31	42.52	4.80	9.866		
1,080.00	1,066.23	1,082.82	1,076.37	3.41	2.73	132.09	14.54	-89.40	49.73	44.75	4.99	9.975		
1,110.00	1,094.81	1,113.19	1,105.85	3.59	2.86	132.58	15.96	-96.59	52.05	46.86	5.19	10.023		
1,140.00	1,123.40	1,143.60	1,135.28	3.77	3.01	133.21	17.44	-104.09	54.10	48.68	5.41	9.991		
1,170.00	1,151.99	1,174.04	1,164.66	3.95	3.16	133.98	18.98	-111.91	55.88	50.24	5.64	9.907		
1,200.00	1,180.58	1,204.50	1,193.97	4.13	3.31	134.89	20.58	-120.04	57.41	51.53	5.87	9.772		
1,230.00	1,209.16	1,234.97	1,223.20	4.32	3.47	135.93	22.25	-128.48	58.68	52.54	6.14	9.560		
1,260.00	1,237.75	1,265.46	1,252.35	4.50	3.64	137.11	23.97	-137.23	59.70	53.30	6.40	9.324		
1,290.00	1,266.34	1,295.54	1,281.06	4.68	3.81	138.31	25.72	-146.07	60.56	53.88	6.68	9.066		
1,320.00	1,294.92	1,325.50	1,309.64	4.87	3.98	139.46	27.46	-154.88	61.44	54.46	6.97	8.812		
1,350.00	1,323.51	1,355.47	1,338.22	5.05	4.15	140.57	29.19	-163.70	62.34	55.07	7.27	8.576		
1,380.00	1,352.10	1,385.43	1,366.81	5.24	4.33	141.65	30.93	-172.52	63.26	55.69	7.57	8.353		
1,410.00	1,380.69	1,415.39	1,395.39	5.42	4.50	142.70	32.67	-181.33	64.20	56.32	7.89	8.140		
1,440.00	1,409.27	1,445.36	1,423.97	5.61	4.68	143.71	34.41	-190.15	65.17	56.96	8.20	7.943		
1,470.00	1,437.86	1,475.32	1,452.56	5.80	4.86	144.70	36.15	-198.96	66.15	57.63	8.53	7.759		
1,500.00	1,466.45	1,505.28	1,481.14	5.99	5.04	145.65	37.89	-207.78	67.15	58.30	8.86	7.582		
1,530.00	1,495.03	1,535.24	1,509.72	6.17	5.22	146.57	39.63	-216.60	68.18	58.98	9.19	7.417		
1,560.00	1,523.62	1,565.21	1,538.31	6.36	5.40	147.47	41.36	-225.41	69.21	59.68	9.53	7.262		
1,590.00	1,552.21	1,595.17	1,566.89	6.55	5.58	148.33	43.10	-234.23	70.27	60.39	9.87	7.116		
1,620.00	1,580.80	1,625.13	1,595.48	6.74	5.76	149.17	44.84	-243.04	71.34	61.12	10.22	6.978		
1,650.00	1,609.38	1,655.10	1,624.06	6.93	5.95	149.99	46.58	-251.86	72.42	61.85	10.57	6.849		
1,680.00	1,637.97	1,685.06	1,652.64	7.11	6.13	150.77	48.32	-260.68	73.52	62.59	10.93	6.727		
1,710.00	1,666.56	1,715.02	1,681.23	7.30	6.31	151.54	50.06	-269.49	74.64	63.35	11.29	6.612		
1,740.00	1,695.14	1,744.98	1,709.81	7.49	6.50	152.28	51.80	-278.31	75.76	64.11	11.65	6.504		
1,770.00	1,723.73	1,774.95	1,738.39	7.68	6.68	153.00	53.53	-287.12	76.90	64.89	12.01	6.402		
1,800.00	1,752.32	1,804.91	1,766.98	7.87	6.87	153.69	55.27	-295.94	78.05	65.67	12.38	6.306		
1,830.00	1,780.91	1,834.87	1,795.56	8.06	7.05	154.37	57.01	-304.76	79.21	66.47	12.75	6.214		
1,860.00	1,809.49	1,864.84	1,824.15	8.25	7.24	155.02	58.75	-313.57	80.39	67.27	13.12	6.128		
1,890.00	1,838.08	1,894.80	1,852.73	8.44	7.42	155.66	60.49	-322.39	81.57	68.08	13.49	6.047		
1,920.00	1,866.67	1,924.76	1,881.31	8.63	7.61	156.27	62.23	-331.20	82.76	68.90	13.86	5.970		

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 29-08M
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 29-08M	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 29-09M - 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		
1,950.00	1,895.25	1,954.72	1,909.90	8.82	7.79	156.87	63.97	-340.02	83.97	69.73	14.24	5.897		
1,980.00	1,923.84	1,984.69	1,938.48	9.01	7.98	157.45	65.70	-348.84	85.18	70.56	14.62	5.828		
2,010.00	1,952.43	2,014.65	1,967.06	9.20	8.16	158.01	67.44	-357.65	86.40	71.40	14.99	5.762		
2,040.00	1,981.02	2,044.61	1,995.65	9.39	8.35	158.56	69.18	-366.47	87.63	72.25	15.37	5.700		
2,070.00	2,009.60	2,074.58	2,024.23	9.58	8.54	159.09	70.92	-375.28	88.86	73.11	15.75	5.641		
2,100.00	2,038.19	2,104.54	2,052.82	9.77	8.72	159.61	72.66	-384.10	90.11	73.97	16.14	5.585		
2,130.00	2,066.78	2,134.50	2,081.40	9.96	8.91	160.11	74.40	-392.92	91.36	74.84	16.52	5.531		
2,160.00	2,095.37	2,164.46	2,109.98	10.15	9.10	160.60	76.14	-401.73	92.62	75.72	16.90	5.480		
2,190.00	2,123.95	2,194.43	2,138.57	10.34	9.29	161.07	77.87	-410.55	93.89	76.60	17.29	5.432		
2,220.00	2,152.54	2,224.39	2,167.15	10.53	9.47	161.54	79.61	-419.36	95.16	77.49	17.67	5.386		
2,250.00	2,181.13	2,254.35	2,195.73	10.72	9.66	161.99	81.35	-428.18	96.44	78.39	18.06	5.341		
2,280.00	2,209.71	2,284.32	2,224.32	10.91	9.85	162.42	83.09	-437.00	97.73	79.28	18.44	5.299		
2,310.00	2,238.30	2,314.28	2,252.90	11.10	10.04	162.85	84.83	-445.81	99.02	80.19	18.83	5.259		
2,340.00	2,266.89	2,344.24	2,281.48	11.29	10.22	163.26	86.57	-454.63	100.31	81.10	19.21	5.221		
2,370.00	2,295.48	2,374.20	2,310.07	11.48	10.41	163.67	88.31	-463.44	101.62	82.01	19.60	5.184		
2,400.00	2,324.06	2,404.17	2,338.65	11.67	10.60	164.06	90.04	-472.26	102.92	82.93	19.99	5.149		
2,430.00	2,352.65	2,434.13	2,367.24	11.86	10.79	164.44	91.78	-481.08	104.23	83.86	20.38	5.116		
2,460.00	2,381.24	2,464.09	2,395.82	12.05	10.98	164.81	93.52	-489.89	105.55	84.79	20.76	5.083		
2,490.00	2,409.82	2,494.06	2,424.40	12.24	11.16	165.18	95.26	-498.71	106.87	85.72	21.15	5.052		
2,520.00	2,438.41	2,524.02	2,452.99	12.44	11.35	165.53	97.00	-507.52	108.20	86.66	21.54	5.023		
2,550.00	2,467.00	2,553.98	2,481.57	12.63	11.54	165.88	98.74	-516.34	109.53	87.60	21.93	4.995		
2,580.00	2,495.59	2,583.94	2,510.15	12.82	11.73	166.22	100.48	-525.16	110.86	88.55	22.32	4.967		
2,610.00	2,524.17	2,613.91	2,538.74	13.01	11.92	166.55	102.22	-533.97	112.20	89.49	22.71	4.941		
2,640.00	2,552.76	2,643.87	2,567.32	13.20	12.11	166.87	103.95	-542.79	113.55	90.45	23.10	4.916		
2,670.00	2,581.35	2,673.83	2,595.91	13.39	12.30	167.18	105.69	-551.60	114.89	91.40	23.49	4.892		
2,700.00	2,609.93	2,703.80	2,624.49	13.58	12.48	167.49	107.43	-560.42	116.24	92.36	23.88	4.869		
2,730.00	2,638.52	2,733.76	2,653.07	13.77	12.67	167.79	109.17	-569.24	117.59	93.33	24.27	4.846		
2,760.00	2,667.11	2,763.72	2,681.66	13.96	12.86	168.08	110.91	-578.05	118.95	94.30	24.66	4.825		
2,790.00	2,695.70	2,793.68	2,710.24	14.15	13.05	168.36	112.65	-586.87	120.31	95.27	25.04	4.804		
2,820.00	2,724.28	2,823.65	2,738.82	14.34	13.24	168.64	114.39	-595.68	121.67	96.24	25.43	4.784		
2,850.00	2,752.87	2,853.61	2,767.41	14.54	13.43	168.92	116.12	-604.50	123.04	97.21	25.82	4.765		
2,880.00	2,781.46	2,883.57	2,795.99	14.73	13.62	169.18	117.86	-613.32	124.41	98.19	26.21	4.746		
2,910.00	2,810.04	2,913.54	2,824.58	14.92	13.81	169.44	119.60	-622.13	125.78	99.18	26.60	4.728		
2,940.00	2,838.63	2,943.50	2,853.16	15.11	14.00	169.70	121.34	-630.95	127.15	100.16	26.99	4.711		
2,970.00	2,867.22	2,973.46	2,881.74	15.30	14.18	169.95	123.08	-639.76	128.53	101.15	27.38	4.694		
3,000.00	2,895.81	3,003.42	2,910.33	15.49	14.37	170.19	124.82	-648.58	129.91	102.14	27.77	4.678		
3,030.00	2,924.39	3,033.39	2,938.91	15.68	14.56	170.43	126.56	-657.40	131.29	103.13	28.16	4.662		
3,060.00	2,952.98	3,063.35	2,967.49	15.87	14.75	170.67	128.29	-666.21	132.68	104.12	28.55	4.647		
3,090.00	2,981.57	3,093.31	2,996.08	16.07	14.94	170.89	130.03	-675.03	134.06	105.12	28.94	4.632		
3,120.00	3,010.16	3,123.28	3,024.66	16.26	15.13	171.12	131.77	-683.84	135.45	106.12	29.33	4.618		
3,150.00	3,038.74	3,153.24	3,053.24	16.45	15.32	171.34	133.51	-692.66	136.84	107.12	29.72	4.604		
3,180.00	3,067.33	3,183.20	3,081.83	16.64	15.51	171.55	135.25	-701.48	138.23	108.13	30.11	4.591		
3,210.00	3,095.92	3,213.16	3,110.41	16.83	15.70	171.76	136.99	-710.29	139.63	109.13	30.50	4.578		
3,240.00	3,124.50	3,243.13	3,139.00	17.02	15.89	171.97	138.73	-719.11	141.03	110.14	30.89	4.566		
3,270.00	3,153.09	3,273.09	3,167.58	17.21	16.08	172.17	140.46	-727.92	142.43	111.15	31.28	4.554		
3,300.00	3,181.68	3,303.05	3,196.16	17.40	16.27	172.37	142.20	-736.74	143.83	112.16	31.67	4.542		
3,330.00	3,210.27	3,333.02	3,224.75	17.60	16.46	172.57	143.94	-745.56	145.23	113.17	32.06	4.531		
3,360.00	3,238.85	3,362.98	3,253.33	17.79	16.65	172.76	145.68	-754.37	146.63	114.19	32.44	4.519		
3,390.00	3,267.44	3,392.94	3,281.91	17.98	16.84	172.95	147.42	-763.19	148.04	115.21	32.83	4.509		
3,420.00	3,296.03	3,422.90	3,310.50	18.17	17.02	173.13	149.16	-772.00	149.45	116.23	33.22	4.498		
3,450.00	3,324.61	3,452.87	3,339.08	18.36	17.21	173.31	150.90	-780.82	150.86	117.25	33.61	4.488		
3,480.00	3,353.20	3,482.83	3,367.67	18.55	17.40	173.49	152.63	-789.64	152.27	118.27	34.00	4.478		

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 29-08M
<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 29-08M	<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 29-09M - 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		
3,510.00	3,381.79	3,512.79	3,396.25	18.74	17.59	173.66	154.37	-798.45	153.68	119.29	34.39	4.469		
3,540.00	3,410.38	3,542.76	3,424.83	18.93	17.78	173.83	156.11	-807.27	155.10	120.32	34.78	4.460		
3,570.00	3,438.96	3,572.72	3,453.42	19.13	17.97	174.00	157.85	-816.08	156.51	121.35	35.17	4.451		
3,600.00	3,467.55	3,602.68	3,482.00	19.32	18.16	174.16	159.59	-824.90	157.93	122.37	35.56	4.442		
3,630.00	3,496.14	3,632.64	3,510.58	19.51	18.35	174.32	161.33	-833.72	159.35	123.40	35.94	4.433		
3,660.00	3,524.72	3,662.61	3,539.17	19.70	18.54	174.48	163.07	-842.53	160.77	124.44	36.33	4.425		
3,690.00	3,553.31	3,692.57	3,567.75	19.89	18.73	174.64	164.80	-851.35	162.19	125.47	36.72	4.417		
3,720.00	3,581.90	3,722.53	3,596.34	20.08	18.92	174.79	166.54	-860.16	163.61	126.50	37.11	4.409		
3,750.00	3,610.49	3,752.50	3,624.92	20.27	19.11	174.94	168.28	-868.98	165.04	127.54	37.50	4.401		
3,780.00	3,639.07	3,782.46	3,653.50	20.47	19.30	175.09	170.02	-877.80	166.46	128.57	37.88	4.394		
3,810.00	3,667.66	3,812.42	3,682.09	20.66	19.49	175.23	171.76	-886.61	167.89	129.61	38.27	4.387		
3,840.00	3,696.25	3,842.38	3,710.67	20.85	19.68	175.38	173.50	-895.43	169.31	130.65	38.66	4.379		
3,870.00	3,724.83	3,872.35	3,739.25	21.04	19.87	175.52	175.24	-904.24	170.74	131.69	39.05	4.373		
3,900.00	3,753.42	3,902.31	3,767.84	21.23	20.06	175.65	176.97	-913.06	172.17	132.73	39.44	4.366		
3,930.00	3,782.01	3,932.27	3,796.42	21.42	20.25	175.79	178.71	-921.88	173.60	133.78	39.82	4.359		
3,960.00	3,810.60	3,962.24	3,825.00	21.62	20.44	175.92	180.45	-930.69	175.03	134.82	40.21	4.353		
3,990.00	3,839.18	3,992.20	3,853.59	21.81	20.63	176.05	182.19	-939.51	176.47	135.87	40.60	4.346		
4,020.00	3,867.77	4,022.16	3,882.17	22.00	20.82	176.18	183.93	-948.32	177.90	136.91	40.99	4.340		
4,050.00	3,896.36	4,052.12	3,910.76	22.19	21.01	176.31	185.67	-957.14	179.33	137.96	41.37	4.334		
4,080.00	3,924.95	4,082.09	3,939.34	22.38	21.20	176.44	187.41	-965.96	180.77	139.01	41.76	4.329		
4,110.00	3,953.53	4,112.05	3,967.92	22.57	21.39	176.56	189.14	-974.77	182.20	140.06	42.15	4.323		
4,140.00	3,982.12	4,142.01	3,996.51	22.76	21.58	176.68	190.88	-983.59	183.64	141.11	42.54	4.317		
4,170.00	4,010.71	4,171.98	4,025.09	22.96	21.77	176.80	192.62	-992.40	185.08	142.16	42.92	4.312		
4,200.00	4,039.29	4,201.94	4,053.67	23.15	21.96	176.92	194.36	-1,001.22	186.52	143.21	43.31	4.307		
4,230.00	4,067.88	4,231.90	4,082.26	23.34	22.15	177.03	196.10	-1,010.04	187.96	144.26	43.70	4.301		
4,260.00	4,096.47	4,261.86	4,110.84	23.53	22.34	177.15	197.84	-1,018.85	189.40	145.31	44.08	4.296		
4,290.00	4,125.06	4,291.83	4,139.43	23.72	22.53	177.26	199.58	-1,027.67	190.84	146.37	44.47	4.291		
4,320.00	4,153.64	4,321.79	4,168.01	23.91	22.72	177.37	201.31	-1,036.48	192.28	147.42	44.86	4.286		
4,350.00	4,182.23	4,351.75	4,196.59	24.11	22.91	177.48	203.05	-1,045.30	193.73	148.48	45.25	4.282		
4,380.00	4,210.82	4,381.72	4,225.18	24.30	23.10	177.58	204.79	-1,054.12	195.17	149.54	45.63	4.277		
4,410.00	4,239.40	4,411.68	4,253.76	24.49	23.29	177.69	206.53	-1,062.93	196.61	150.60	46.02	4.272		
4,440.00	4,267.99	4,441.64	4,282.34	24.68	23.48	177.79	208.27	-1,071.75	198.06	151.65	46.41	4.268		
4,470.00	4,296.58	4,471.60	4,310.93	24.87	23.67	177.90	210.01	-1,080.56	199.50	152.71	46.79	4.264		
4,500.00	4,325.17	4,501.57	4,339.51	25.06	23.86	178.00	211.75	-1,089.38	200.95	153.77	47.18	4.259		
4,530.00	4,353.75	4,531.53	4,368.09	25.25	24.05	178.10	213.49	-1,098.20	202.40	154.83	47.56	4.255		
4,560.00	4,382.34	4,561.49	4,396.68	25.45	24.24	178.19	215.22	-1,107.01	203.85	155.90	47.95	4.251		
4,590.00	4,410.93	4,591.46	4,425.26	25.64	24.43	178.29	216.96	-1,115.83	205.29	156.96	48.34	4.247		
4,620.00	4,439.51	4,621.42	4,453.85	25.83	24.62	178.39	218.70	-1,124.64	206.74	158.02	48.72	4.243		
4,650.00	4,468.10	4,651.38	4,482.43	26.02	24.81	178.48	220.44	-1,133.46	208.19	159.08	49.11	4.239		
4,680.00	4,496.69	4,681.34	4,511.01	26.21	25.00	178.57	222.18	-1,142.28	209.64	160.15	49.50	4.236		
4,710.00	4,525.28	4,711.31	4,539.60	26.40	25.19	178.66	223.92	-1,151.09	211.09	161.21	49.88	4.232		
4,740.00	4,553.86	4,741.27	4,568.18	26.60	25.38	178.75	225.66	-1,159.91	212.55	162.28	50.27	4.228		
4,770.00	4,582.45	4,771.23	4,596.76	26.79	25.57	178.84	227.39	-1,168.72	214.00	163.34	50.65	4.225		
4,800.00	4,611.04	4,801.20	4,625.35	26.98	25.76	178.93	229.13	-1,177.54	215.45	164.41	51.04	4.221		
4,830.00	4,639.63	4,831.16	4,653.93	27.17	25.95	179.02	230.87	-1,186.36	216.90	165.48	51.43	4.218		
4,860.00	4,668.21	4,861.12	4,682.52	27.36	26.14	179.10	232.61	-1,195.17	218.36	166.55	51.81	4.214		
4,890.00	4,696.80	4,891.08	4,711.10	27.55	26.33	179.19	234.35	-1,203.99	219.81	167.61	52.20	4.211		
4,920.00	4,725.39	4,921.05	4,739.68	27.75	26.52	179.27	236.09	-1,212.80	221.27	168.68	52.58	4.208		
4,950.00	4,753.97	4,951.01	4,768.27	27.94	26.71	179.35	237.83	-1,221.62	222.72	169.75	52.97	4.205		
4,980.00	4,782.56	4,980.97	4,796.85	28.13	26.90	179.43	239.56	-1,230.43	224.18	170.82	53.35	4.202		
5,010.00	4,811.15	5,010.94	4,825.43	28.32	27.09	179.51	241.30	-1,239.25	225.63	171.89	53.74	4.199		
5,040.00	4,839.74	5,040.90	4,854.02	28.51	27.28	179.59	243.04	-1,248.07	227.09	172.97	54.13	4.196		

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 29-08M
<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 29-08M	<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 29-09M - 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		
5,070.00	4,868.33	5,070.66	4,882.42	28.70	27.46	179.65	244.76	-1,256.80	228.55	174.06	54.49	4.194		
5,100.00	4,896.98	5,100.00	4,910.49	28.87	27.62	179.67	246.42	-1,265.18	229.98	175.16	54.82	4.195		
5,130.00	4,925.73	5,129.61	4,938.90	29.00	27.75	179.71	248.03	-1,273.34	231.36	176.27	55.10	4.199		
5,160.00	4,954.57	5,159.09	4,967.28	29.14	27.88	179.73	249.57	-1,281.19	232.70	177.33	55.37	4.203		
5,190.00	4,983.49	5,188.57	4,995.73	29.28	28.02	179.76	251.06	-1,288.74	233.98	178.35	55.64	4.205		
5,220.00	5,012.50	5,218.05	5,024.27	29.41	28.14	179.78	252.50	-1,296.01	235.22	179.33	55.89	4.209		
5,250.00	5,041.58	5,247.53	5,052.88	29.53	28.26	179.81	253.87	-1,302.99	236.41	180.28	56.13	4.212		
5,280.00	5,070.74	5,277.02	5,081.57	29.65	28.38	179.83	255.19	-1,309.69	237.55	181.18	56.37	4.214		
5,310.00	5,099.97	5,306.51	5,110.32	29.77	28.49	179.85	256.46	-1,316.09	238.64	182.04	56.60	4.216		
5,340.00	5,129.27	5,335.99	5,139.14	29.88	28.59	179.87	257.66	-1,322.20	239.68	182.87	56.81	4.219		
5,370.00	5,158.63	5,365.48	5,168.03	29.98	28.70	179.89	258.81	-1,328.02	240.67	183.65	57.02	4.221		
5,400.00	5,188.06	5,394.98	5,196.98	30.09	28.80	179.91	259.90	-1,333.55	241.61	184.38	57.23	4.222		
5,430.00	5,217.55	5,424.47	5,225.98	30.18	28.89	179.92	260.93	-1,338.79	242.50	185.09	57.41	4.224		
5,460.00	5,247.09	5,453.96	5,255.04	30.27	28.98	179.94	261.91	-1,343.73	243.34	185.75	57.59	4.225		
5,490.00	5,276.69	5,483.46	5,284.16	30.36	29.07	179.95	262.82	-1,348.38	244.14	186.37	57.77	4.226		
5,520.00	5,306.33	5,512.95	5,313.32	30.45	29.15	179.97	263.68	-1,352.74	244.88	186.95	57.93	4.227		
5,550.00	5,336.03	5,542.45	5,342.52	30.52	29.22	179.98	264.49	-1,356.80	245.57	187.49	58.08	4.228		
5,580.00	5,365.76	5,571.95	5,371.77	30.60	29.30	179.99	265.23	-1,360.57	246.21	187.98	58.23	4.228		
5,610.00	5,395.54	5,601.45	5,401.05	30.67	29.37	-180.00	265.91	-1,364.04	246.80	188.43	58.37	4.228		
5,640.00	5,425.35	5,630.95	5,430.38	30.73	29.43	-179.99	266.54	-1,367.22	247.34	188.85	58.49	4.229		
5,670.00	5,455.20	5,660.45	5,459.73	30.80	29.49	-179.98	267.11	-1,370.10	247.83	189.22	58.61	4.228		
5,700.00	5,485.07	5,689.95	5,489.12	30.86	29.55	-179.97	267.62	-1,372.68	248.27	189.54	58.73	4.227		
5,730.00	5,514.98	5,719.45	5,518.53	30.91	29.60	-179.96	268.07	-1,374.96	248.66	189.83	58.83	4.227		
5,760.00	5,544.90	5,748.96	5,547.96	30.95	29.64	-179.96	268.46	-1,376.95	249.00	190.08	58.92	4.226		
5,790.00	5,574.85	5,778.46	5,577.41	31.00	29.69	-179.95	268.79	-1,378.64	249.29	190.28	59.01	4.225		
5,820.00	5,604.81	5,807.96	5,606.88	31.04	29.73	-179.95	269.07	-1,380.03	249.52	190.44	59.09	4.223		
5,850.00	5,634.79	5,837.47	5,636.36	31.08	29.76	-179.94	269.28	-1,381.13	249.71	190.56	59.15	4.222		
5,880.00	5,664.78	5,866.97	5,665.86	31.11	29.80	-179.94	269.44	-1,381.93	249.85	190.63	59.21	4.220		
5,910.00	5,694.77	5,896.48	5,695.36	31.14	29.83	-179.94	269.54	-1,382.43	249.93	190.66	59.27	4.217		
5,940.00	5,724.77	5,925.98	5,724.86	31.17	29.85	-179.94	269.58	-1,382.63	249.97	190.65	59.32	4.214		
5,970.00	5,754.77	5,955.90	5,754.77	31.19	29.88	-179.94	269.58	-1,382.63	249.97	190.60	59.37	4.211		
6,000.00	5,784.77	5,985.90	5,784.77	31.21	29.90	-179.94	269.58	-1,382.63	249.97	190.55	59.42	4.207		
6,030.00	5,814.77	6,015.90	5,814.77	31.24	29.93	-179.94	269.58	-1,382.63	249.97	190.50	59.47	4.203		
6,060.00	5,844.77	6,045.90	5,844.77	31.27	29.96	-179.94	269.58	-1,382.63	249.97	190.44	59.53	4.199		
6,090.00	5,874.77	6,075.90	5,874.77	31.29	29.99	-179.94	269.58	-1,382.63	249.97	190.38	59.58	4.195		
6,120.00	5,904.77	6,105.90	5,904.77	31.32	30.01	-179.94	269.58	-1,382.63	249.97	190.33	59.64	4.191		
6,150.00	5,934.77	6,135.90	5,934.77	31.35	30.04	-179.94	269.58	-1,382.63	249.97	190.27	59.70	4.187		
6,180.00	5,964.77	6,165.90	5,964.77	31.38	30.07	-179.94	269.58	-1,382.63	249.97	190.21	59.75	4.183		
6,210.00	5,994.77	6,195.90	5,994.77	31.40	30.10	-179.94	269.58	-1,382.63	249.97	190.16	59.81	4.179		
6,240.00	6,024.77	6,225.90	6,024.77	31.43	30.13	-179.94	269.58	-1,382.63	249.97	190.10	59.87	4.175		
6,270.00	6,054.77	6,255.90	6,054.77	31.46	30.16	-179.94	269.58	-1,382.63	249.97	190.04	59.92	4.171		
6,300.00	6,084.77	6,285.90	6,084.77	31.48	30.18	-179.94	269.58	-1,382.63	249.97	189.98	59.98	4.167		
6,330.00	6,114.77	6,315.90	6,114.77	31.51	30.21	-179.94	269.58	-1,382.63	249.97	189.93	60.04	4.163		
6,360.00	6,144.77	6,345.90	6,144.77	31.54	30.24	-179.94	269.58	-1,382.63	249.97	189.87	60.10	4.159		
6,390.00	6,174.77	6,375.90	6,174.77	31.57	30.27	-179.94	269.58	-1,382.63	249.97	189.81	60.16	4.155		
6,420.00	6,204.77	6,405.90	6,204.77	31.60	30.30	-179.94	269.58	-1,382.63	249.97	189.75	60.22	4.151		
6,450.00	6,234.77	6,435.90	6,234.77	31.63	30.33	-179.94	269.58	-1,382.63	249.97	189.69	60.27	4.147		
6,480.00	6,264.77	6,465.90	6,264.77	31.65	30.36	-179.94	269.58	-1,382.63	249.97	189.63	60.33	4.143		
6,510.00	6,294.77	6,495.90	6,294.77	31.68	30.39	-179.94	269.58	-1,382.63	249.97	189.57	60.39	4.139		
6,540.00	6,324.77	6,525.90	6,324.77	31.71	30.42	-179.94	269.58	-1,382.63	249.97	189.51	60.45	4.135		
6,570.00	6,354.77	6,555.90	6,354.77	31.74	30.45	-179.94	269.58	-1,382.63	249.97	189.45	60.51	4.131		
6,600.00	6,384.77	6,585.90	6,384.77	31.77	30.48	-179.94	269.58	-1,382.63	249.97	189.39	60.57	4.127		

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 29-08M
<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 29-08M	<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 29-09M - 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		
6,630.00	6,414.77	6,615.90	6,414.77	31.80	30.51	-179.94	269.58	-1,382.63	249.97	189.33	60.63	4.123		
6,660.00	6,444.77	6,645.90	6,444.77	31.83	30.54	-179.94	269.58	-1,382.63	249.97	189.27	60.69	4.118		
6,690.00	6,474.77	6,675.90	6,474.77	31.86	30.57	-179.94	269.58	-1,382.63	249.97	189.21	60.75	4.114		
6,720.00	6,504.77	6,705.90	6,504.77	31.88	30.60	-179.94	269.58	-1,382.63	249.97	189.15	60.82	4.110		
6,750.00	6,534.77	6,735.90	6,534.77	31.91	30.63	-179.94	269.58	-1,382.63	249.97	189.09	60.88	4.106		
6,780.00	6,564.77	6,765.90	6,564.77	31.94	30.66	-179.94	269.58	-1,382.63	249.97	189.03	60.94	4.102		
6,810.00	6,594.77	6,795.90	6,594.77	31.97	30.69	-179.94	269.58	-1,382.63	249.97	188.97	61.00	4.098		
6,840.00	6,624.77	6,825.90	6,624.77	32.00	30.72	-179.94	269.58	-1,382.63	249.97	188.90	61.06	4.094		
6,870.00	6,654.77	6,855.90	6,654.77	32.03	30.75	-179.94	269.58	-1,382.63	249.97	188.84	61.13	4.089		
6,900.00	6,684.77	6,885.90	6,684.77	32.06	30.78	-179.94	269.58	-1,382.63	249.97	188.78	61.19	4.085		
6,930.00	6,714.77	6,915.90	6,714.77	32.09	30.81	-179.94	269.58	-1,382.63	249.97	188.72	61.25	4.081		
6,960.00	6,744.77	6,945.90	6,744.77	32.12	30.85	-179.94	269.58	-1,382.63	249.97	188.65	61.31	4.077		
6,990.00	6,774.77	6,975.90	6,774.77	32.15	30.88	-179.94	269.58	-1,382.63	249.97	188.59	61.38	4.073		
7,020.00	6,804.77	7,005.90	6,804.77	32.18	30.91	-179.94	269.58	-1,382.63	249.97	188.53	61.44	4.068		
7,050.00	6,834.77	7,035.90	6,834.77	32.21	30.94	-179.94	269.58	-1,382.63	249.97	188.46	61.50	4.064		
7,080.00	6,864.77	7,065.90	6,864.77	32.24	30.97	-179.94	269.58	-1,382.63	249.97	188.40	61.57	4.060		
7,110.00	6,894.77	7,095.90	6,894.77	32.28	31.00	-179.94	269.58	-1,382.63	249.97	188.33	61.63	4.056		
7,140.00	6,924.77	7,125.90	6,924.77	32.31	31.04	-179.94	269.58	-1,382.63	249.97	188.27	61.70	4.052		
7,170.00	6,954.77	7,155.90	6,954.77	32.34	31.07	-179.94	269.58	-1,382.63	249.97	188.20	61.76	4.047		
7,200.00	6,984.77	7,185.90	6,984.77	32.37	31.10	-179.94	269.58	-1,382.63	249.97	188.14	61.83	4.043		
7,230.00	7,014.77	7,215.90	7,014.77	32.40	31.13	-179.94	269.58	-1,382.63	249.97	188.07	61.89	4.039		
7,260.00	7,044.77	7,245.90	7,044.77	32.43	31.16	-179.94	269.58	-1,382.63	249.97	188.01	61.96	4.035		
7,290.00	7,074.77	7,275.90	7,074.77	32.46	31.20	-179.94	269.58	-1,382.63	249.97	187.94	62.02	4.030		
7,320.00	7,104.77	7,305.90	7,104.77	32.49	31.23	-179.94	269.58	-1,382.63	249.97	187.88	62.09	4.026		
7,350.00	7,134.77	7,335.90	7,134.77	32.53	31.26	-179.94	269.58	-1,382.63	249.97	187.81	62.15	4.022		
7,380.00	7,164.77	7,365.90	7,164.77	32.56	31.29	-179.94	269.58	-1,382.63	249.97	187.75	62.22	4.017		
7,410.00	7,194.77	7,395.90	7,194.77	32.59	31.33	-179.94	269.58	-1,382.63	249.97	187.68	62.29	4.013		
7,440.00	7,224.77	7,425.90	7,224.77	32.62	31.36	-179.94	269.58	-1,382.63	249.97	187.61	62.35	4.009		
7,470.00	7,254.77	7,455.90	7,254.77	32.65	31.39	-179.94	269.58	-1,382.63	249.97	187.55	62.42	4.005		
7,500.00	7,284.77	7,485.90	7,284.77	32.69	31.43	-179.94	269.58	-1,382.63	249.97	187.48	62.49	4.000		
7,530.00	7,314.77	7,515.90	7,314.77	32.72	31.46	-179.94	269.58	-1,382.63	249.97	187.41	62.55	3.996		
7,560.00	7,344.77	7,545.90	7,344.77	32.75	31.49	-179.94	269.58	-1,382.63	249.97	187.34	62.62	3.992		
7,590.00	7,374.77	7,575.90	7,374.77	32.78	31.53	-179.94	269.58	-1,382.63	249.97	187.28	62.69	3.987		
7,620.00	7,404.77	7,605.90	7,404.77	32.82	31.56	-179.94	269.58	-1,382.63	249.97	187.21	62.76	3.983		
7,650.00	7,434.77	7,635.90	7,434.77	32.85	31.60	-179.94	269.58	-1,382.63	249.97	187.14	62.83	3.979		
7,680.00	7,464.77	7,665.90	7,464.77	32.88	31.63	-179.94	269.58	-1,382.63	249.97	187.07	62.89	3.974		
7,710.00	7,494.77	7,695.90	7,494.77	32.91	31.66	-179.94	269.58	-1,382.63	249.97	187.00	62.96	3.970		
7,740.00	7,524.77	7,725.90	7,524.77	32.95	31.70	-179.94	269.58	-1,382.63	249.97	186.93	63.03	3.966		
7,770.00	7,554.77	7,755.90	7,554.77	32.98	31.73	-179.94	269.58	-1,382.63	249.97	186.87	63.10	3.961		
7,800.00	7,584.77	7,785.90	7,584.77	33.01	31.77	-179.94	269.58	-1,382.63	249.97	186.80	63.17	3.957		
7,830.00	7,614.77	7,815.90	7,614.77	33.05	31.80	-179.94	269.58	-1,382.63	249.97	186.73	63.24	3.953		
7,860.00	7,644.77	7,845.90	7,644.77	33.08	31.84	-179.94	269.58	-1,382.63	249.97	186.66	63.31	3.948		
7,890.00	7,674.77	7,875.90	7,674.77	33.11	31.87	-179.94	269.58	-1,382.63	249.97	186.59	63.38	3.944		
7,895.23	7,680.00	7,881.12	7,680.00	33.12	31.88	-179.94	269.58	-1,382.63	249.97	186.58	63.39	3.943		



# Archer

## Anticollision Report



<b>Company:</b>	Piceance Energy, LLC	<b>Local Co-ordinate Reference:</b>	Well Gunderson 29-08M
<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 29-08M	<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 29-10M - Wellbore #1 - Design #1													Offset Site Error:	0.00 usft
Survey Program: 0-MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.00	-96.53	-3.41	-29.82	30.01					
30.00	30.00	30.00	30.00	0.01	0.03	-96.53	-3.41	-29.82	30.01	29.98	0.03	927.350		
60.00	60.00	60.00	60.00	0.04	0.05	-96.53	-3.41	-29.82	30.01	29.92	0.09	327.300		
90.00	90.00	90.00	90.00	0.07	0.08	-96.53	-3.41	-29.82	30.01	29.86	0.15	198.718		
120.00	120.00	120.00	120.00	0.13	0.13	-96.53	-3.41	-29.82	30.01	29.75	0.26	115.119		
150.00	150.00	150.00	150.00	0.20	0.20	-96.53	-3.41	-29.82	30.01	29.62	0.40	75.874		
180.00	180.00	180.00	180.00	0.27	0.27	-96.53	-3.41	-29.82	30.01	29.48	0.53	56.584		
210.00	210.00	210.00	210.00	0.33	0.33	-96.55	-3.41	-29.82	30.00	29.33	0.66	45.115		
240.00	240.00	240.00	240.00	0.40	0.40	-96.78	-3.41	-29.82	29.77	28.97	0.80	37.222		
270.00	269.99	269.99	269.99	0.46	0.47	-97.30	-3.41	-29.82	29.26	28.32	0.93	31.301		
300.00	299.98	299.98	299.98	0.53	0.53	-98.13	-3.41	-29.82	28.47	27.40	1.07	26.638		
330.00	329.96	329.96	329.96	0.60	0.60	-99.34	-3.41	-29.82	27.42	26.22	1.21	22.751		
360.00	359.92	359.92	359.92	0.67	0.67	-101.01	-3.41	-29.82	26.12	24.78	1.34	19.477		
390.00	389.86	389.86	389.86	0.74	0.74	-103.24	-3.41	-29.82	24.58	23.10	1.48	16.657		
420.00	419.78	419.78	419.78	0.81	0.80	-106.24	-3.41	-29.82	22.83	21.21	1.61	14.151		
450.00	449.68	449.68	449.68	0.88	0.87	-110.28	-3.41	-29.82	20.91	19.16	1.75	11.937		
480.00	479.55	479.55	479.55	0.96	0.94	-115.79	-3.41	-29.82	18.90	17.01	1.89	9.998		
510.00	509.40	509.35	509.35	1.04	1.00	-123.34	-3.41	-29.84	16.94	14.91	2.03	8.333		
540.00	539.20	539.05	539.05	1.12	1.07	-133.10	-3.41	-30.09	15.37	13.19	2.18	7.049		
570.00	568.97	568.78	568.78	1.21	1.13	-144.83	-3.40	-30.65	14.43	12.10	2.33	6.182		
591.10	589.89	589.71	589.70	1.27	1.18	-153.83	-3.39	-31.22	14.23	11.78	2.44	5.821 CC		
600.00	598.70	598.54	598.52	1.30	1.19	-157.68	-3.39	-31.51	14.26	11.77	2.49	5.727 ES		
630.00	628.39	628.33	628.28	1.40	1.26	-170.19	-3.37	-32.69	14.92	12.26	2.65	5.620 SF		
660.00	658.03	658.14	658.06	1.50	1.32	178.90	-3.34	-34.18	16.31	13.50	2.81	5.806		
690.00	687.61	687.98	687.84	1.60	1.38	170.09	-3.31	-35.98	18.29	15.34	2.95	6.195		
720.00	717.15	717.84	717.63	1.71	1.45	163.28	-3.27	-38.10	20.71	17.61	3.10	6.679		
750.00	746.63	747.73	747.42	1.82	1.52	158.09	-3.23	-40.52	23.46	20.21	3.25	7.217		
780.00	776.05	777.64	777.20	1.94	1.59	154.16	-3.19	-43.26	26.44	23.04	3.40	7.787		
810.00	805.40	807.57	806.98	2.06	1.66	151.18	-3.13	-46.31	29.60	26.06	3.54	8.352		
840.00	834.69	837.53	836.75	2.19	1.74	148.90	-3.08	-49.68	32.91	29.20	3.70	8.883		
870.00	863.91	867.52	866.51	2.32	1.82	147.17	-3.01	-53.36	36.33	32.47	3.86	9.405		
900.00	893.06	897.52	896.25	2.46	1.90	145.85	-2.95	-57.35	39.86	35.84	4.02	9.914		
930.00	922.13	927.55	925.96	2.61	1.99	144.86	-2.87	-61.66	43.48	39.28	4.20	10.357		
960.00	951.12	957.60	955.66	2.76	2.08	144.12	-2.79	-66.28	47.19	42.81	4.38	10.783		
990.00	980.03	987.67	985.32	2.91	2.17	143.58	-2.71	-71.22	50.97	46.41	4.55	11.195		
1,020.00	1,008.85	1,017.76	1,014.95	3.07	2.27	143.20	-2.62	-76.47	54.82	50.08	4.74	11.557		
1,050.00	1,037.58	1,047.87	1,044.54	3.24	2.38	142.96	-2.53	-82.04	58.75	53.80	4.94	11.886		
1,080.00	1,066.23	1,078.00	1,074.09	3.41	2.49	142.84	-2.43	-87.92	62.74	57.60	5.14	12.202		
1,110.00	1,094.81	1,108.17	1,103.61	3.59	2.60	142.86	-2.32	-94.12	66.69	61.34	5.36	12.453		
1,140.00	1,123.40	1,138.38	1,133.11	3.77	2.72	143.08	-2.21	-100.64	70.45	64.86	5.59	12.610		
1,170.00	1,151.99	1,168.64	1,162.59	3.95	2.84	143.48	-2.09	-107.49	74.01	68.19	5.82	12.711		
1,200.00	1,180.58	1,198.94	1,192.02	4.13	2.97	144.04	-1.97	-114.65	77.39	71.32	6.06	12.761		
1,230.00	1,209.16	1,229.26	1,221.41	4.32	3.11	144.74	-1.84	-122.13	80.57	74.24	6.34	12.717		
1,260.00	1,237.75	1,259.61	1,250.74	4.50	3.26	145.56	-1.71	-129.92	83.58	76.97	6.61	12.645		
1,290.00	1,266.34	1,289.98	1,280.01	4.68	3.40	146.50	-1.57	-138.04	86.42	79.53	6.89	12.538		
1,320.00	1,294.92	1,320.36	1,309.19	4.87	3.56	147.55	-1.43	-146.46	89.10	81.90	7.20	12.379		
1,350.00	1,323.51	1,350.74	1,338.29	5.05	3.72	148.70	-1.28	-155.19	91.62	84.11	7.52	12.189		
1,380.00	1,352.10	1,380.77	1,366.98	5.24	3.88	149.87	-1.13	-164.07	94.05	86.20	7.85	11.981		
1,410.00	1,380.69	1,410.62	1,395.49	5.42	4.05	150.96	-0.98	-172.92	96.49	88.31	8.19	11.782		
1,440.00	1,409.27	1,440.46	1,423.99	5.61	4.22	151.99	-0.83	-181.76	98.98	90.44	8.54	11.596		
1,470.00	1,437.86	1,470.30	1,452.49	5.80	4.39	152.97	-0.68	-190.60	101.49	92.61	8.88	11.426		
1,500.00	1,466.45	1,500.15	1,480.99	5.99	4.56	153.91	-0.53	-199.44	104.04	94.80	9.23	11.269		

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





# Archer

## Anticollision Report



<b>Company:</b>	Piceance Energy, LLC	<b>Local Co-ordinate Reference:</b>	Well Gunderson 29-08M
<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 29-08M	<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 29-10M - 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	1,495.03	1,529.99	1,509.49	6.17	4.73	154.79	-0.38	-208.29	106.61	97.02	9.59	11.119		
1,560.00	1,523.62	1,559.83	1,538.00	6.36	4.90	155.64	-0.23	-217.13	109.21	99.26	9.94	10.981		
1,590.00	1,552.21	1,589.67	1,566.50	6.55	5.08	156.44	-0.08	-225.97	111.83	101.52	10.31	10.852		
1,620.00	1,580.80	1,619.52	1,595.00	6.74	5.25	157.21	0.07	-234.81	114.47	103.80	10.67	10.730		
1,650.00	1,609.38	1,649.36	1,623.50	6.93	5.43	157.94	0.22	-243.65	117.14	106.10	11.03	10.617		
1,680.00	1,637.97	1,679.20	1,652.01	7.11	5.61	158.63	0.37	-252.50	119.82	108.42	11.40	10.511		
1,710.00	1,666.56	1,709.04	1,680.51	7.30	5.79	159.30	0.53	-261.34	122.52	110.76	11.77	10.413		
1,740.00	1,695.14	1,738.89	1,709.01	7.49	5.96	159.94	0.68	-270.18	125.24	113.11	12.14	10.319		
1,770.00	1,723.73	1,768.73	1,737.51	7.68	6.14	160.54	0.83	-279.02	127.98	115.47	12.51	10.233		
1,800.00	1,752.32	1,798.57	1,766.01	7.87	6.32	161.13	0.98	-287.86	130.73	117.85	12.88	10.152		
1,830.00	1,780.91	1,828.41	1,794.52	8.06	6.50	161.69	1.13	-296.71	133.49	120.24	13.25	10.075		
1,860.00	1,809.49	1,858.26	1,823.02	8.25	6.68	162.22	1.28	-305.55	136.27	122.64	13.62	10.003		
1,890.00	1,838.08	1,888.10	1,851.52	8.44	6.86	162.74	1.43	-314.39	139.06	125.06	14.00	9.935		
1,920.00	1,866.67	1,917.94	1,880.02	8.63	7.05	163.23	1.58	-323.23	141.86	127.48	14.37	9.871		
1,950.00	1,895.25	1,947.78	1,908.53	8.82	7.23	163.70	1.73	-332.08	144.67	129.92	14.75	9.811		
1,980.00	1,923.84	1,977.63	1,937.03	9.01	7.41	164.16	1.88	-340.92	147.49	132.37	15.12	9.754		
2,010.00	1,952.43	2,007.47	1,965.53	9.20	7.59	164.60	2.03	-349.76	150.32	134.82	15.50	9.700		
2,040.00	1,981.02	2,037.31	1,994.03	9.39	7.77	165.02	2.18	-358.60	153.16	137.29	15.87	9.649		
2,070.00	2,009.60	2,067.16	2,022.53	9.58	7.96	165.43	2.33	-367.44	156.01	139.76	16.25	9.601		
2,100.00	2,038.19	2,097.00	2,051.04	9.77	8.14	165.82	2.48	-376.29	158.87	142.24	16.63	9.555		
2,130.00	2,066.78	2,126.84	2,079.54	9.96	8.32	166.20	2.63	-385.13	161.73	144.73	17.00	9.512		
2,160.00	2,095.37	2,156.68	2,108.04	10.15	8.51	166.56	2.78	-393.97	164.60	147.22	17.38	9.471		
2,190.00	2,123.95	2,186.53	2,136.54	10.34	8.69	166.91	2.93	-402.81	167.48	149.73	17.76	9.432		
2,220.00	2,152.54	2,216.37	2,165.04	10.53	8.87	167.25	3.08	-411.66	170.37	152.23	18.13	9.395		
2,250.00	2,181.13	2,246.21	2,193.55	10.72	9.06	167.58	3.23	-420.50	173.26	154.75	18.51	9.359		
2,280.00	2,209.71	2,276.05	2,222.05	10.91	9.24	167.90	3.38	-429.34	176.16	157.27	18.89	9.325		
2,310.00	2,238.30	2,305.90	2,250.55	11.10	9.43	168.21	3.54	-438.18	179.06	159.80	19.27	9.293		
2,340.00	2,266.89	2,335.74	2,279.05	11.29	9.61	168.50	3.69	-447.02	181.97	162.33	19.65	9.263		
2,370.00	2,295.48	2,365.58	2,307.56	11.48	9.80	168.79	3.84	-455.87	184.89	164.86	20.02	9.233		
2,400.00	2,324.06	2,395.42	2,336.06	11.67	9.98	169.07	3.99	-464.71	187.81	167.40	20.40	9.205		
2,430.00	2,352.65	2,425.27	2,364.56	11.86	10.17	169.34	4.14	-473.55	190.73	169.95	20.78	9.178		
2,460.00	2,381.24	2,455.11	2,393.06	12.05	10.35	169.60	4.29	-482.39	193.66	172.50	21.16	9.153		
2,490.00	2,409.82	2,484.95	2,421.56	12.24	10.54	169.86	4.44	-491.24	196.59	175.06	21.54	9.128		
2,520.00	2,438.41	2,514.79	2,450.07	12.44	10.72	170.10	4.59	-500.08	199.53	177.61	21.91	9.105		
2,550.00	2,467.00	2,544.64	2,478.57	12.63	10.91	170.34	4.74	-508.92	202.47	180.18	22.29	9.082		
2,580.00	2,495.59	2,574.48	2,507.07	12.82	11.09	170.58	4.89	-517.76	205.41	182.74	22.67	9.061		
2,610.00	2,524.17	2,604.32	2,535.57	13.01	11.28	170.80	5.04	-526.60	208.36	185.31	23.05	9.040		
2,640.00	2,552.76	2,634.17	2,564.08	13.20	11.46	171.02	5.19	-535.45	211.31	187.89	23.43	9.020		
2,670.00	2,581.35	2,664.01	2,592.58	13.39	11.65	171.24	5.34	-544.29	214.27	190.46	23.81	9.001		
2,700.00	2,609.93	2,693.85	2,621.08	13.58	11.83	171.44	5.49	-553.13	217.23	193.04	24.18	8.982		
2,730.00	2,638.52	2,723.69	2,649.58	13.77	12.02	171.65	5.64	-561.97	220.19	195.63	24.56	8.965		
2,760.00	2,667.11	2,753.54	2,678.08	13.96	12.21	171.84	5.79	-570.81	223.15	198.21	24.94	8.948		
2,790.00	2,695.70	2,783.38	2,706.59	14.15	12.39	172.03	5.94	-579.66	226.12	200.80	25.32	8.931		
2,820.00	2,724.28	2,813.22	2,735.09	14.34	12.58	172.22	6.09	-588.50	229.09	203.39	25.70	8.915		
2,850.00	2,752.87	2,843.06	2,763.59	14.54	12.76	172.40	6.24	-597.34	232.06	205.99	26.07	8.900		
2,880.00	2,781.46	2,872.91	2,792.09	14.73	12.95	172.58	6.39	-606.18	235.03	208.58	26.45	8.885		
2,910.00	2,810.04	2,902.75	2,820.60	14.92	13.14	172.75	6.54	-615.03	238.01	211.18	26.83	8.871		
2,940.00	2,838.63	2,932.59	2,849.10	15.11	13.32	172.92	6.70	-623.87	240.99	213.78	27.21	8.857		
2,970.00	2,867.22	2,962.43	2,877.60	15.30	13.51	173.09	6.85	-632.71	243.97	216.39	27.59	8.844		
3,000.00	2,895.81	2,992.28	2,906.10	15.49	13.69	173.25	7.00	-641.55	246.96	218.99	27.96	8.831		
3,030.00	2,924.39	3,022.12	2,934.60	15.68	13.88	173.40	7.15	-650.39	249.94	221.60	28.34	8.819		
3,060.00	2,952.98	3,051.96	2,963.11	15.87	14.07	173.56	7.30	-659.24	252.93	224.21	28.72	8.807		

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 29-08M
<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 29-08M	<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 29-10M - 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	2,981.57	3,081.80	2,991.61	16.07	14.25	173.70	7.45	-668.08	255.92	226.82	29.10	8.795		
3,120.00	3,010.16	3,111.65	3,020.11	16.26	14.44	173.85	7.60	-676.92	258.91	229.44	29.47	8.784		
3,150.00	3,038.74	3,141.49	3,048.61	16.45	14.63	173.99	7.75	-685.76	261.90	232.05	29.85	8.773		
3,180.00	3,067.33	3,171.33	3,077.12	16.64	14.81	174.13	7.90	-694.61	264.90	234.67	30.23	8.763		
3,210.00	3,095.92	3,201.18	3,105.62	16.83	15.00	174.27	8.05	-703.45	267.90	237.29	30.61	8.753		
3,240.00	3,124.50	3,231.02	3,134.12	17.02	15.19	174.40	8.20	-712.29	270.89	239.91	30.99	8.743		
3,270.00	3,153.09	3,260.86	3,162.62	17.21	15.37	174.53	8.35	-721.13	273.89	242.53	31.36	8.733		
3,300.00	3,181.68	3,290.70	3,191.12	17.40	15.56	174.66	8.50	-729.97	276.89	245.15	31.74	8.724		
3,330.00	3,210.27	3,320.55	3,219.63	17.60	15.75	174.78	8.65	-738.82	279.90	247.78	32.12	8.715		
3,360.00	3,238.85	3,350.39	3,248.13	17.79	15.93	174.91	8.80	-747.66	282.90	250.41	32.50	8.706		
3,390.00	3,267.44	3,380.23	3,276.63	17.98	16.12	175.02	8.95	-756.50	285.91	253.03	32.87	8.697		
3,420.00	3,296.03	3,410.07	3,305.13	18.17	16.31	175.14	9.10	-765.34	288.91	255.66	33.25	8.689		
3,450.00	3,324.61	3,439.92	3,333.64	18.36	16.49	175.26	9.25	-774.18	291.92	258.29	33.63	8.681		
3,480.00	3,353.20	3,469.76	3,362.14	18.55	16.68	175.37	9.40	-783.03	294.93	260.93	34.00	8.673		
3,510.00	3,381.79	3,499.60	3,390.64	18.74	16.87	175.48	9.55	-791.87	297.94	263.56	34.38	8.666		
3,540.00	3,410.38	3,529.44	3,419.14	18.93	17.05	175.59	9.70	-800.71	300.95	266.19	34.76	8.658		
3,570.00	3,438.96	3,559.29	3,447.64	19.13	17.24	175.69	9.86	-809.55	303.97	268.83	35.14	8.651		
3,600.00	3,467.55	3,589.13	3,476.15	19.32	17.43	175.80	10.01	-818.40	306.98	271.47	35.51	8.644		
3,630.00	3,496.14	3,618.97	3,504.65	19.51	17.62	175.90	10.16	-827.24	310.00	274.11	35.89	8.637		
3,660.00	3,524.72	3,648.81	3,533.15	19.70	17.80	176.00	10.31	-836.08	313.01	276.74	36.27	8.631		
3,690.00	3,553.31	3,678.66	3,561.65	19.89	17.99	176.09	10.46	-844.92	316.03	279.38	36.64	8.624		
3,720.00	3,581.90	3,708.50	3,590.16	20.08	18.18	176.19	10.61	-853.76	319.05	282.03	37.02	8.618		
3,750.00	3,610.49	3,738.34	3,618.66	20.27	18.36	176.28	10.76	-862.61	322.07	284.67	37.40	8.612		
3,780.00	3,639.07	3,768.19	3,647.16	20.47	18.55	176.38	10.91	-871.45	325.09	287.31	37.78	8.606		
3,810.00	3,667.66	3,798.03	3,675.66	20.66	18.74	176.47	11.06	-880.29	328.11	289.96	38.15	8.600		
3,840.00	3,696.25	3,827.87	3,704.16	20.85	18.93	176.55	11.21	-889.13	331.13	292.60	38.53	8.594		
3,870.00	3,724.83	3,857.71	3,732.67	21.04	19.11	176.64	11.36	-897.98	334.15	295.25	38.91	8.589		
3,900.00	3,753.42	3,887.56	3,761.17	21.23	19.30	176.73	11.51	-906.82	337.18	297.89	39.28	8.583		
3,930.00	3,782.01	3,917.40	3,789.67	21.42	19.49	176.81	11.66	-915.66	340.20	300.54	39.66	8.578		
3,960.00	3,810.60	3,947.24	3,818.17	21.62	19.67	176.89	11.81	-924.50	343.23	303.19	40.04	8.573		
3,990.00	3,839.18	3,977.08	3,846.67	21.81	19.86	176.98	11.96	-933.34	346.25	305.84	40.41	8.568		
4,020.00	3,867.77	4,006.93	3,875.18	22.00	20.05	177.06	12.11	-942.19	349.28	308.49	40.79	8.563		
4,050.00	3,896.36	4,036.77	3,903.68	22.19	20.24	177.13	12.26	-951.03	352.31	311.14	41.17	8.558		
4,080.00	3,924.95	4,066.61	3,932.18	22.38	20.42	177.21	12.41	-959.87	355.33	313.79	41.54	8.553		
4,110.00	3,953.53	4,096.45	3,960.68	22.57	20.61	177.29	12.56	-968.71	358.36	316.44	41.92	8.549		
4,140.00	3,982.12	4,126.30	3,989.19	22.76	20.80	177.36	12.71	-977.56	361.39	319.09	42.30	8.544		
4,170.00	4,010.71	4,156.14	4,017.69	22.96	20.98	177.43	12.86	-986.40	364.42	321.75	42.67	8.540		
4,200.00	4,039.29	4,185.98	4,046.19	23.15	21.17	177.51	13.02	-995.24	367.45	324.40	43.05	8.535		
4,230.00	4,067.88	4,215.82	4,074.69	23.34	21.36	177.58	13.17	-1,004.08	370.48	327.06	43.43	8.531		
4,260.00	4,096.47	4,245.67	4,103.19	23.53	21.55	177.65	13.32	-1,012.92	373.52	329.71	43.80	8.527		
4,290.00	4,125.06	4,275.51	4,131.70	23.72	21.73	177.72	13.47	-1,021.77	376.55	332.37	44.18	8.523		
4,320.00	4,153.64	4,305.35	4,160.20	23.91	21.92	177.78	13.62	-1,030.61	379.58	335.03	44.56	8.519		
4,350.00	4,182.23	4,335.20	4,188.70	24.11	22.11	177.85	13.77	-1,039.45	382.62	337.68	44.93	8.515		
4,380.00	4,210.82	4,365.04	4,217.20	24.30	22.30	177.92	13.92	-1,048.29	385.65	340.34	45.31	8.511		
4,410.00	4,239.40	4,394.88	4,245.71	24.49	22.48	177.98	14.07	-1,057.13	388.68	343.00	45.69	8.508		
4,440.00	4,267.99	4,424.72	4,274.21	24.68	22.67	178.04	14.22	-1,065.98	391.72	345.66	46.06	8.504		
4,470.00	4,296.58	4,454.57	4,302.71	24.87	22.86	178.11	14.37	-1,074.82	394.76	348.32	46.44	8.501		
4,500.00	4,325.17	4,484.41	4,331.21	25.06	23.05	178.17	14.52	-1,083.66	397.79	350.98	46.82	8.497		
4,530.00	4,353.75	4,514.25	4,359.71	25.25	23.23	178.23	14.67	-1,092.50	400.83	353.64	47.19	8.494		
4,560.00	4,382.34	4,544.09	4,388.22	25.45	23.42	178.29	14.82	-1,101.35	403.87	356.30	47.57	8.490		
4,590.00	4,410.93	4,573.94	4,416.72	25.64	23.61	178.35	14.97	-1,110.19	406.90	358.96	47.94	8.487		
4,620.00	4,439.51	4,603.78	4,445.22	25.83	23.80	178.40	15.12	-1,119.03	409.94	361.62	48.32	8.484		

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 29-08M
<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 29-08M	<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 29-10M - 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	4,468.10	4,633.62	4,473.72	26.02	23.98	178.46	15.27	-1,127.87	412.98	364.28	48.70	8.481		
4,680.00	4,496.69	4,663.46	4,502.23	26.21	24.17	178.52	15.42	-1,136.71	416.02	366.95	49.07	8.478		
4,710.00	4,525.28	4,693.31	4,530.73	26.40	24.36	178.57	15.57	-1,145.56	419.06	369.61	49.45	8.475		
4,740.00	4,553.86	4,723.15	4,559.23	26.60	24.55	178.63	15.72	-1,154.40	422.10	372.27	49.83	8.472		
4,770.00	4,582.45	4,752.99	4,587.73	26.79	24.73	178.68	15.87	-1,163.24	425.14	374.94	50.20	8.469		
4,800.00	4,611.04	4,782.83	4,616.23	26.98	24.92	178.73	16.02	-1,172.08	428.18	377.60	50.58	8.466		
4,830.00	4,639.63	4,812.68	4,644.74	27.17	25.11	178.79	16.18	-1,180.93	431.22	380.27	50.95	8.463		
4,860.00	4,668.21	4,842.52	4,673.24	27.36	25.30	178.84	16.33	-1,189.77	434.26	382.93	51.33	8.460		
4,890.00	4,696.80	4,872.36	4,701.74	27.55	25.48	178.89	16.48	-1,198.61	437.31	385.60	51.71	8.458		
4,920.00	4,725.39	4,902.21	4,730.24	27.75	25.67	178.94	16.63	-1,207.45	440.35	388.27	52.08	8.455		
4,950.00	4,753.97	4,932.05	4,758.75	27.94	25.86	178.99	16.78	-1,216.29	443.39	390.93	52.46	8.452		
4,980.00	4,782.56	4,961.89	4,787.25	28.13	26.05	179.04	16.93	-1,225.14	446.43	393.60	52.83	8.450		
5,010.00	4,811.15	4,991.73	4,815.75	28.32	26.23	179.08	17.08	-1,233.98	449.48	396.27	53.21	8.447		
5,040.00	4,839.74	5,021.58	4,844.25	28.51	26.42	179.13	17.23	-1,242.82	452.52	398.94	53.59	8.445		
5,070.00	4,868.33	5,051.42	4,872.75	28.70	26.61	179.18	17.38	-1,251.66	455.56	401.60	53.96	8.443		
5,100.00	4,896.98	5,081.16	4,901.18	28.87	26.78	179.24	17.53	-1,260.40	458.53	404.23	54.30	8.445		
5,130.00	4,925.73	5,110.87	4,929.67	29.00	26.93	179.30	17.67	-1,268.85	461.39	406.80	54.59	8.452		
5,160.00	4,954.57	5,140.59	4,958.25	29.14	27.06	179.35	17.81	-1,277.00	464.16	409.29	54.86	8.461		
5,190.00	4,983.49	5,170.33	4,986.93	29.28	27.19	179.40	17.94	-1,284.86	466.82	411.69	55.13	8.467		
5,220.00	5,012.50	5,200.00	5,015.62	29.41	27.32	179.45	18.07	-1,292.41	469.38	413.99	55.39	8.474		
5,250.00	5,041.58	5,229.85	5,044.56	29.53	27.44	179.50	18.20	-1,299.70	471.84	416.21	55.63	8.481		
5,280.00	5,070.74	5,259.62	5,073.51	29.65	27.56	179.55	18.32	-1,306.67	474.20	418.33	55.87	8.487		
5,310.00	5,099.97	5,289.41	5,102.54	29.77	27.68	179.60	18.43	-1,313.35	476.46	420.35	56.11	8.492		
5,340.00	5,129.27	5,319.21	5,131.65	29.88	27.78	179.64	18.54	-1,319.72	478.61	422.29	56.33	8.497		
5,370.00	5,158.63	5,349.02	5,160.84	29.98	27.89	179.68	18.64	-1,325.80	480.67	424.13	56.54	8.502		
5,400.00	5,188.06	5,378.84	5,190.09	30.09	27.99	179.72	18.74	-1,331.57	482.62	425.87	56.75	8.505		
5,430.00	5,217.55	5,408.67	5,219.42	30.18	28.09	179.75	18.83	-1,337.04	484.46	427.53	56.94	8.509		
5,460.00	5,247.09	5,438.51	5,248.81	30.27	28.17	179.79	18.92	-1,342.20	486.21	429.09	57.12	8.513		
5,490.00	5,276.69	5,468.36	5,278.26	30.36	28.26	179.82	19.00	-1,347.06	487.85	430.55	57.30	8.515		
5,520.00	5,306.33	5,498.22	5,307.76	30.45	28.35	179.85	19.08	-1,351.61	489.39	431.92	57.47	8.516		
5,550.00	5,336.03	5,528.08	5,337.32	30.52	28.42	179.88	19.15	-1,355.86	490.82	433.20	57.62	8.519		
5,580.00	5,365.76	5,557.95	5,366.93	30.60	28.50	179.91	19.22	-1,359.80	492.15	434.38	57.77	8.520		
5,610.00	5,395.54	5,587.83	5,396.59	30.67	28.57	179.93	19.28	-1,363.43	493.37	435.46	57.91	8.519		
5,640.00	5,425.35	5,617.72	5,426.29	30.73	28.64	179.95	19.34	-1,366.75	494.49	436.45	58.04	8.520		
5,670.00	5,455.20	5,647.61	5,456.03	30.80	28.70	179.97	19.39	-1,369.77	495.51	437.35	58.16	8.520		
5,700.00	5,485.07	5,677.50	5,485.80	30.86	28.75	179.99	19.44	-1,372.47	496.42	438.14	58.28	8.518		
5,730.00	5,514.98	5,707.40	5,515.61	30.91	28.81	-179.99	19.48	-1,374.86	497.23	438.84	58.38	8.517		
5,760.00	5,544.90	5,737.31	5,545.44	30.95	28.86	-179.98	19.51	-1,376.95	497.93	439.45	58.47	8.515		
5,790.00	5,574.85	5,767.22	5,575.29	31.00	28.90	-179.97	19.54	-1,378.72	498.52	439.96	58.57	8.512		
5,820.00	5,604.81	5,797.13	5,605.17	31.04	28.95	-179.96	19.57	-1,380.18	499.02	440.37	58.65	8.509		
5,850.00	5,634.79	5,827.04	5,635.06	31.08	28.98	-179.95	19.59	-1,381.32	499.40	440.69	58.71	8.506		
5,880.00	5,664.78	5,856.95	5,664.96	31.11	29.01	-179.94	19.60	-1,382.16	499.68	440.91	58.78	8.501		
5,910.00	5,694.77	5,886.87	5,694.87	31.14	29.04	-179.94	19.61	-1,382.68	499.86	441.02	58.84	8.495		
5,940.00	5,724.77	5,916.79	5,724.79	31.17	29.07	-179.94	19.61	-1,382.89	499.93	441.04	58.89	8.490		
5,970.00	5,754.77	5,946.77	5,754.77	31.19	29.10	-179.94	19.61	-1,382.90	499.93	440.99	58.94	8.482		
6,000.00	5,784.77	5,976.77	5,784.77	31.21	29.12	-179.94	19.61	-1,382.90	499.93	440.94	58.99	8.475		
6,030.00	5,814.77	6,006.77	5,814.77	31.24	29.15	-179.94	19.61	-1,382.90	499.93	440.89	59.04	8.467		
6,060.00	5,844.77	6,036.77	5,844.77	31.27	29.18	-179.94	19.61	-1,382.90	499.93	440.83	59.10	8.459		
6,090.00	5,874.77	6,066.77	5,874.77	31.29	29.21	-179.94	19.61	-1,382.90	499.93	440.78	59.15	8.451		
6,120.00	5,904.77	6,096.77	5,904.77	31.32	29.23	-179.94	19.61	-1,382.90	499.93	440.72	59.21	8.443		
6,150.00	5,934.77	6,126.77	5,934.77	31.35	29.26	-179.94	19.61	-1,382.90	499.93	440.66	59.27	8.435		
6,180.00	5,964.77	6,156.77	5,964.77	31.38	29.29	-179.94	19.61	-1,382.90	499.93	440.61	59.32	8.427		

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 29-08M
<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 29-08M	<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 29-10M - Wellbore #1 - Design #1													Offset Site Error:	0.00 usft
Survey Program: 0-MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
6,210.00	5,994.77	6,186.77	5,994.77	31.40	29.32	-179.94	19.61	-1,382.90	499.93	440.55	59.38	8.419		
6,240.00	6,024.77	6,216.77	6,024.77	31.43	29.35	-179.94	19.61	-1,382.90	499.93	440.49	59.44	8.411		
6,270.00	6,054.77	6,246.77	6,054.77	31.46	29.38	-179.94	19.61	-1,382.90	499.93	440.44	59.50	8.403		
6,300.00	6,084.77	6,276.77	6,084.77	31.48	29.41	-179.94	19.61	-1,382.90	499.93	440.38	59.55	8.395		
6,330.00	6,114.77	6,306.77	6,114.77	31.51	29.44	-179.94	19.61	-1,382.90	499.93	440.32	59.61	8.386		
6,360.00	6,144.77	6,336.77	6,144.77	31.54	29.47	-179.94	19.61	-1,382.90	499.93	440.26	59.67	8.378		
6,390.00	6,174.77	6,366.77	6,174.77	31.57	29.49	-179.94	19.61	-1,382.90	499.93	440.20	59.73	8.370		
6,420.00	6,204.77	6,396.77	6,204.77	31.60	29.52	-179.94	19.61	-1,382.90	499.93	440.14	59.79	8.362		
6,450.00	6,234.77	6,426.77	6,234.77	31.63	29.55	-179.94	19.61	-1,382.90	499.93	440.09	59.85	8.353		
6,480.00	6,264.77	6,456.77	6,264.77	31.65	29.58	-179.94	19.61	-1,382.90	499.93	440.03	59.91	8.345		
6,510.00	6,294.77	6,486.77	6,294.77	31.68	29.61	-179.94	19.61	-1,382.90	499.93	439.97	59.97	8.337		
6,540.00	6,324.77	6,516.77	6,324.77	31.71	29.64	-179.94	19.61	-1,382.90	499.93	439.91	60.03	8.329		
6,570.00	6,354.77	6,546.77	6,354.77	31.74	29.67	-179.94	19.61	-1,382.90	499.93	439.85	60.09	8.320		
6,600.00	6,384.77	6,576.77	6,384.77	31.77	29.70	-179.94	19.61	-1,382.90	499.93	439.79	60.15	8.312		
6,630.00	6,414.77	6,606.77	6,414.77	31.80	29.73	-179.94	19.61	-1,382.90	499.93	439.73	60.21	8.304		
6,660.00	6,444.77	6,636.77	6,444.77	31.83	29.76	-179.94	19.61	-1,382.90	499.93	439.66	60.27	8.295		
6,690.00	6,474.77	6,666.77	6,474.77	31.86	29.80	-179.94	19.61	-1,382.90	499.93	439.60	60.33	8.287		
6,720.00	6,504.77	6,696.77	6,504.77	31.88	29.83	-179.94	19.61	-1,382.90	499.93	439.54	60.39	8.278		
6,750.00	6,534.77	6,726.77	6,534.77	31.91	29.86	-179.94	19.61	-1,382.90	499.93	439.48	60.45	8.270		
6,780.00	6,564.77	6,756.77	6,564.77	31.94	29.89	-179.94	19.61	-1,382.90	499.93	439.42	60.51	8.262		
6,810.00	6,594.77	6,786.77	6,594.77	31.97	29.92	-179.94	19.61	-1,382.90	499.93	439.36	60.57	8.253		
6,840.00	6,624.77	6,816.77	6,624.77	32.00	29.95	-179.94	19.61	-1,382.90	499.93	439.30	60.64	8.245		
6,870.00	6,654.77	6,846.77	6,654.77	32.03	29.98	-179.94	19.61	-1,382.90	499.93	439.23	60.70	8.236		
6,900.00	6,684.77	6,876.77	6,684.77	32.06	30.01	-179.94	19.61	-1,382.90	499.93	439.17	60.76	8.228		
6,930.00	6,714.77	6,906.77	6,714.77	32.09	30.04	-179.94	19.61	-1,382.90	499.93	439.11	60.82	8.219		
6,960.00	6,744.77	6,936.77	6,744.77	32.12	30.08	-179.94	19.61	-1,382.90	499.93	439.04	60.89	8.211		
6,990.00	6,774.77	6,966.77	6,774.77	32.15	30.11	-179.94	19.61	-1,382.90	499.93	438.98	60.95	8.202		
7,020.00	6,804.77	6,996.77	6,804.77	32.18	30.14	-179.94	19.61	-1,382.90	499.93	438.92	61.01	8.194		
7,050.00	6,834.77	7,026.77	6,834.77	32.21	30.17	-179.94	19.61	-1,382.90	499.93	438.85	61.08	8.185		
7,080.00	6,864.77	7,056.77	6,864.77	32.24	30.20	-179.94	19.61	-1,382.90	499.93	438.79	61.14	8.176		
7,110.00	6,894.77	7,086.77	6,894.77	32.28	30.24	-179.94	19.61	-1,382.90	499.93	438.73	61.21	8.168		
7,140.00	6,924.77	7,116.77	6,924.77	32.31	30.27	-179.94	19.61	-1,382.90	499.93	438.66	61.27	8.159		
7,170.00	6,954.77	7,146.77	6,954.77	32.34	30.30	-179.94	19.61	-1,382.90	499.93	438.60	61.34	8.151		
7,200.00	6,984.77	7,176.77	6,984.77	32.37	30.33	-179.94	19.61	-1,382.90	499.93	438.53	61.40	8.142		
7,230.00	7,014.77	7,206.77	7,014.77	32.40	30.37	-179.94	19.61	-1,382.90	499.93	438.47	61.47	8.133		
7,260.00	7,044.77	7,236.77	7,044.77	32.43	30.40	-179.94	19.61	-1,382.90	499.93	438.40	61.53	8.125		
7,290.00	7,074.77	7,266.77	7,074.77	32.46	30.43	-179.94	19.61	-1,382.90	499.93	438.33	61.60	8.116		
7,320.00	7,104.77	7,296.77	7,104.77	32.49	30.47	-179.94	19.61	-1,382.90	499.93	438.27	61.66	8.107		
7,350.00	7,134.77	7,326.77	7,134.77	32.53	30.50	-179.94	19.61	-1,382.90	499.93	438.20	61.73	8.099		
7,380.00	7,164.77	7,356.77	7,164.77	32.56	30.53	-179.94	19.61	-1,382.90	499.93	438.14	61.80	8.090		
7,410.00	7,194.77	7,386.77	7,194.77	32.59	30.57	-179.94	19.61	-1,382.90	499.93	438.07	61.86	8.081		
7,440.00	7,224.77	7,416.77	7,224.77	32.62	30.60	-179.94	19.61	-1,382.90	499.93	438.00	61.93	8.073		
7,470.00	7,254.77	7,446.77	7,254.77	32.65	30.63	-179.94	19.61	-1,382.90	499.93	437.94	62.00	8.064		
7,500.00	7,284.77	7,476.77	7,284.77	32.69	30.67	-179.94	19.61	-1,382.90	499.93	437.87	62.06	8.055		
7,530.00	7,314.77	7,506.77	7,314.77	32.72	30.70	-179.94	19.61	-1,382.90	499.93	437.80	62.13	8.046		
7,560.00	7,344.77	7,536.77	7,344.77	32.75	30.73	-179.94	19.61	-1,382.90	499.93	437.73	62.20	8.038		
7,590.00	7,374.77	7,566.77	7,374.77	32.78	30.77	-179.94	19.61	-1,382.90	499.93	437.67	62.27	8.029		
7,620.00	7,404.77	7,596.77	7,404.77	32.82	30.80	-179.94	19.61	-1,382.90	499.93	437.60	62.33	8.020		
7,650.00	7,434.77	7,626.77	7,434.77	32.85	30.84	-179.94	19.61	-1,382.90	499.93	437.53	62.40	8.011		
7,680.00	7,464.77	7,656.77	7,464.77	32.88	30.87	-179.94	19.61	-1,382.90	499.93	437.46	62.47	8.003		
7,710.00	7,494.77	7,686.77	7,494.77	32.91	30.91	-179.94	19.61	-1,382.90	499.93	437.39	62.54	7.994		
7,740.00	7,524.77	7,716.77	7,524.77	32.95	30.94	-179.94	19.61	-1,382.90	499.93	437.32	62.61	7.985		

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 29-08M
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 29-08M	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 29-10M - 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	
7,770.00	7,554.77	7,746.77	7,554.77	32.98	30.97	-179.94	19.61	-1,382.90	499.93	437.25	62.68	7.976	
7,800.00	7,584.77	7,776.77	7,584.77	33.01	31.01	-179.94	19.61	-1,382.90	499.93	437.19	62.75	7.967	
7,830.00	7,614.77	7,806.77	7,614.77	33.05	31.04	-179.94	19.61	-1,382.90	499.93	437.12	62.82	7.959	
7,860.00	7,644.77	7,836.77	7,644.77	33.08	31.08	-179.94	19.61	-1,382.90	499.93	437.05	62.89	7.950	
7,890.00	7,674.77	7,866.77	7,674.77	33.11	31.11	-179.94	19.61	-1,382.90	499.93	436.98	62.96	7.941	
7,895.23	7,680.00	7,872.00	7,680.00	33.12	31.12	-179.94	19.61	-1,382.90	499.93	436.96	62.97	7.939	



# Archer

## Anticollision Report



<b>Company:</b>	Piceance Energy, LLC	<b>Local Co-ordinate Reference:</b>	Well Gunderson 29-08M
<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 29-08M	<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 29-11M - Wellbore #1 - Design #1													Offset Site Error:	0.00 usft
Survey Program: 0-MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.00	-110.58	-14.50	-38.60	41.23					
30.00	30.00	30.00	30.00	0.01	0.03	-110.58	-14.50	-38.60	41.23	41.20	0.03	1,273.891		
60.00	60.00	60.00	60.00	0.04	0.05	-110.58	-14.50	-38.60	41.23	41.14	0.09	449.609		
90.00	90.00	90.00	90.00	0.07	0.08	-110.58	-14.50	-38.60	41.23	41.08	0.15	272.977		
120.00	120.00	120.00	120.00	0.13	0.13	-110.58	-14.50	-38.60	41.23	40.97	0.26	158.138		
150.00	150.00	150.00	150.00	0.20	0.20	-110.58	-14.50	-38.60	41.23	40.84	0.40	104.228		
180.00	180.00	180.00	180.00	0.27	0.27	-110.58	-14.50	-38.60	41.23	40.70	0.53	77.729		
210.00	210.00	210.00	210.00	0.33	0.33	-110.60	-14.50	-38.60	41.22	40.55	0.66	61.992		
240.00	240.00	240.00	240.00	0.40	0.40	-110.84	-14.50	-38.60	41.02	40.22	0.80	51.330		
270.00	269.99	269.99	269.99	0.46	0.47	-111.38	-14.50	-38.60	40.59	39.66	0.93	43.483		
300.00	299.98	299.98	299.98	0.53	0.53	-112.23	-14.50	-38.60	39.93	38.87	1.07	37.418		
330.00	329.96	329.96	329.96	0.60	0.60	-113.43	-14.50	-38.60	39.06	37.86	1.20	32.462		
360.00	359.92	359.92	359.92	0.67	0.67	-115.02	-14.50	-38.60	37.98	36.64	1.34	28.375		
390.00	389.86	389.86	389.86	0.74	0.74	-117.07	-14.50	-38.60	36.73	35.25	1.47	24.928		
420.00	419.78	419.78	419.78	0.81	0.80	-119.64	-14.50	-38.60	35.32	33.70	1.61	21.909		
450.00	449.68	449.68	449.68	0.88	0.87	-122.85	-14.50	-38.60	33.80	32.05	1.75	19.290		
480.00	479.55	479.55	479.55	0.96	0.94	-126.81	-14.50	-38.60	32.22	30.33	1.89	17.030		
510.00	509.40	509.40	509.40	1.04	1.01	-131.67	-14.50	-38.60	30.67	28.64	2.04	15.063		
540.00	539.20	539.20	539.20	1.12	1.07	-137.56	-14.50	-38.60	29.25	27.06	2.19	13.367		
570.00	568.97	568.97	568.97	1.21	1.14	-144.61	-14.50	-38.60	28.08	25.74	2.34	11.983		
600.00	598.70	598.70	598.70	1.30	1.21	-152.78	-14.50	-38.60	27.33	24.83	2.50	10.929		
622.04	620.52	620.52	620.52	1.37	1.26	-159.40	-14.50	-38.60	27.15	24.52	2.62	10.343 CC		
630.00	628.39	628.39	628.39	1.40	1.27	-161.89	-14.50	-38.60	27.17	24.50	2.67	10.179 ES		
660.00	658.03	658.03	658.03	1.50	1.34	-171.50	-14.50	-38.60	27.77	24.93	2.83	9.795		
690.00	687.61	687.61	687.61	1.60	1.41	-178.96	-14.50	-38.60	29.21	26.22	2.99	9.765 SF		
720.00	717.15	717.15	717.15	1.71	1.47	-170.13	-14.50	-38.65	31.53	28.38	3.14	10.029		
750.00	746.63	746.71	746.71	1.82	1.53	-162.71	-14.56	-38.98	34.64	31.35	3.29	10.532		
780.00	776.05	776.31	776.30	1.94	1.59	-156.71	-14.66	-39.60	38.37	34.94	3.43	11.199		
810.00	805.40	805.94	805.91	2.06	1.66	-151.94	-14.81	-40.53	42.58	39.01	3.56	11.953		
840.00	834.69	835.60	835.55	2.19	1.72	-148.16	-15.00	-41.77	47.15	43.45	3.70	12.740		
870.00	863.91	865.30	865.21	2.32	1.78	-145.17	-15.25	-43.31	52.02	48.18	3.84	13.558		
900.00	893.06	895.04	894.89	2.46	1.84	-142.82	-15.55	-45.15	57.12	53.15	3.97	14.387		
930.00	922.13	924.80	924.57	2.61	1.90	-140.95	-15.89	-47.30	62.42	58.30	4.12	15.157		
960.00	951.12	954.60	954.26	2.76	1.97	-139.48	-16.29	-49.76	67.88	63.61	4.26	15.916		
990.00	980.03	984.43	983.96	2.91	2.04	-138.33	-16.73	-52.53	73.49	69.07	4.41	16.660		
1,020.00	1,008.85	1,014.28	1,013.65	3.07	2.11	-137.42	-17.23	-55.60	79.22	74.66	4.57	17.351		
1,050.00	1,037.58	1,044.16	1,043.34	3.24	2.18	-136.73	-17.77	-58.99	85.08	80.36	4.73	17.999		
1,080.00	1,066.23	1,074.07	1,073.01	3.41	2.26	-136.20	-18.36	-62.68	91.06	86.17	4.89	18.630		
1,110.00	1,094.81	1,104.03	1,102.69	3.59	2.33	-135.85	-19.00	-66.68	97.02	91.96	5.06	19.181		
1,140.00	1,123.40	1,134.07	1,132.41	3.77	2.42	-135.68	-19.70	-71.01	102.81	97.57	5.24	19.616		
1,170.00	1,151.99	1,164.19	1,162.16	3.95	2.51	-135.67	-20.44	-75.65	108.42	103.00	5.43	19.984		
1,200.00	1,180.58	1,194.37	1,191.92	4.13	2.59	-135.80	-21.24	-80.61	113.86	108.24	5.61	20.288		
1,230.00	1,209.16	1,224.62	1,221.69	4.32	2.69	-136.05	-22.09	-85.90	119.11	113.29	5.82	20.462		
1,260.00	1,237.75	1,254.92	1,251.46	4.50	2.79	-136.39	-22.99	-91.50	124.18	118.15	6.03	20.601		
1,290.00	1,266.34	1,285.27	1,281.21	4.68	2.90	-136.83	-23.94	-97.42	129.08	122.84	6.24	20.691		
1,320.00	1,294.92	1,315.66	1,310.94	4.87	3.01	-137.36	-24.94	-103.67	133.81	127.34	6.46	20.700		
1,350.00	1,323.51	1,346.09	1,340.63	5.05	3.12	-137.96	-26.00	-110.23	138.37	131.67	6.70	20.644		
1,380.00	1,352.10	1,376.55	1,370.28	5.24	3.24	-138.64	-27.10	-117.11	142.77	135.82	6.95	20.546		
1,410.00	1,380.69	1,407.03	1,399.87	5.42	3.37	-139.38	-28.26	-124.31	147.02	139.82	7.21	20.404		
1,440.00	1,409.27	1,437.52	1,429.40	5.61	3.50	-140.19	-29.46	-131.82	151.12	143.64	7.48	20.205		
1,470.00	1,437.86	1,468.02	1,458.86	5.80	3.64	-141.05	-30.72	-139.64	155.09	147.33	7.76	19.982		
1,500.00	1,466.45	1,498.53	1,488.23	5.99	3.78	-141.97	-32.02	-147.77	158.93	150.88	8.05	19.739		

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 29-08M
<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 29-08M	<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 29-11M - 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	1,495.03	1,529.02	1,517.50	6.17	3.94	142.95	-33.38	-156.21	162.65	154.28	8.37	19.442		
1,560.00	1,523.62	1,559.51	1,546.67	6.36	4.10	143.98	-34.78	-164.95	166.26	157.57	8.69	19.134		
1,590.00	1,552.21	1,589.97	1,575.72	6.55	4.26	145.05	-36.23	-174.00	169.77	160.75	9.02	18.818		
1,620.00	1,580.80	1,620.34	1,604.59	6.74	4.42	146.17	-37.73	-183.31	173.20	163.83	9.37	18.486		
1,650.00	1,609.38	1,649.96	1,632.70	6.93	4.59	147.21	-39.21	-192.52	176.64	166.91	9.73	18.159		
1,680.00	1,637.97	1,679.58	1,660.82	7.11	4.77	148.21	-40.69	-201.73	180.13	170.04	10.09	17.858		
1,710.00	1,666.56	1,709.20	1,688.93	7.30	4.94	149.17	-42.16	-210.94	183.68	173.23	10.45	17.579		
1,740.00	1,695.14	1,738.82	1,717.04	7.49	5.12	150.10	-43.64	-220.15	187.29	176.47	10.82	17.315		
1,770.00	1,723.73	1,768.44	1,745.16	7.68	5.29	150.98	-45.12	-229.36	190.94	179.75	11.19	17.066		
1,800.00	1,752.32	1,798.06	1,773.27	7.87	5.47	151.83	-46.60	-238.57	194.64	183.08	11.56	16.832		
1,830.00	1,780.91	1,827.68	1,801.39	8.06	5.65	152.65	-48.08	-247.78	198.39	186.45	11.94	16.613		
1,860.00	1,809.49	1,857.30	1,829.50	8.25	5.83	153.44	-49.56	-256.99	202.18	189.86	12.32	16.409		
1,890.00	1,838.08	1,886.93	1,857.61	8.44	6.02	154.20	-51.04	-266.20	206.01	193.30	12.70	16.218		
1,920.00	1,866.67	1,916.55	1,885.73	8.63	6.20	154.93	-52.51	-275.41	209.87	196.79	13.09	16.039		
1,950.00	1,895.25	1,946.17	1,913.84	8.82	6.38	155.63	-53.99	-284.62	213.78	200.31	13.47	15.870		
1,980.00	1,923.84	1,975.79	1,941.95	9.01	6.57	156.31	-55.47	-293.83	217.71	203.86	13.86	15.713		
2,010.00	1,952.43	2,005.41	1,970.07	9.20	6.75	156.96	-56.95	-303.04	221.68	207.44	14.24	15.565		
2,040.00	1,981.02	2,035.03	1,998.18	9.39	6.94	157.59	-58.43	-312.25	225.68	211.05	14.63	15.425		
2,070.00	2,009.60	2,064.65	2,026.30	9.58	7.13	158.19	-59.91	-321.46	229.71	214.69	15.02	15.294		
2,100.00	2,038.19	2,094.27	2,054.41	9.77	7.31	158.78	-61.39	-330.67	233.76	218.36	15.41	15.171		
2,130.00	2,066.78	2,123.89	2,082.52	9.96	7.50	159.34	-62.86	-339.88	237.84	222.05	15.80	15.055		
2,160.00	2,095.37	2,153.51	2,110.64	10.15	7.69	159.89	-64.34	-349.09	241.95	225.76	16.19	14.945		
2,190.00	2,123.95	2,183.13	2,138.75	10.34	7.88	160.42	-65.82	-358.30	246.08	229.50	16.58	14.842		
2,220.00	2,152.54	2,212.76	2,166.86	10.53	8.07	160.93	-67.30	-367.51	250.23	233.26	16.97	14.745		
2,250.00	2,181.13	2,242.38	2,194.98	10.72	8.26	161.42	-68.78	-376.72	254.40	237.04	17.36	14.653		
2,280.00	2,209.71	2,272.00	2,223.09	10.91	8.45	161.90	-70.26	-385.93	258.59	240.84	17.75	14.566		
2,310.00	2,238.30	2,301.62	2,251.21	11.10	8.64	162.36	-71.74	-395.14	262.81	244.66	18.14	14.484		
2,340.00	2,266.89	2,331.24	2,279.32	11.29	8.83	162.80	-73.21	-404.35	267.04	248.50	18.54	14.406		
2,370.00	2,295.48	2,360.86	2,307.43	11.48	9.02	163.24	-74.69	-413.56	271.28	252.35	18.93	14.332		
2,400.00	2,324.06	2,390.48	2,335.55	11.67	9.21	163.66	-76.17	-422.77	275.55	256.23	19.32	14.262		
2,430.00	2,352.65	2,420.10	2,363.66	11.86	9.41	164.06	-77.65	-431.98	279.83	260.11	19.71	14.196		
2,460.00	2,381.24	2,449.72	2,391.78	12.05	9.60	164.46	-79.13	-441.19	284.12	264.02	20.10	14.133		
2,490.00	2,409.82	2,479.34	2,419.89	12.24	9.79	164.84	-80.61	-450.40	288.43	267.93	20.49	14.073		
2,520.00	2,438.41	2,508.96	2,448.00	12.44	9.98	165.21	-82.09	-459.61	292.75	271.86	20.89	14.016		
2,550.00	2,467.00	2,538.59	2,476.12	12.63	10.18	165.57	-83.56	-468.82	297.09	275.81	21.28	13.962		
2,580.00	2,495.59	2,568.21	2,504.23	12.82	10.37	165.92	-85.04	-478.03	301.44	279.77	21.67	13.911		
2,610.00	2,524.17	2,597.83	2,532.34	13.01	10.56	166.26	-86.52	-487.24	305.80	283.74	22.06	13.862		
2,640.00	2,552.76	2,627.45	2,560.46	13.20	10.76	166.59	-88.00	-496.45	310.17	287.72	22.45	13.815		
2,670.00	2,581.35	2,657.07	2,588.57	13.39	10.95	166.91	-89.48	-505.66	314.55	291.71	22.84	13.770		
2,700.00	2,609.93	2,686.69	2,616.69	13.58	11.14	167.22	-90.96	-514.87	318.95	295.71	23.23	13.728		
2,730.00	2,638.52	2,716.31	2,644.80	13.77	11.34	167.52	-92.44	-524.08	323.35	299.73	23.62	13.688		
2,760.00	2,667.11	2,745.93	2,672.91	13.96	11.53	167.82	-93.91	-533.29	327.76	303.75	24.01	13.649		
2,790.00	2,695.70	2,775.55	2,701.03	14.15	11.73	168.11	-95.39	-542.50	332.19	307.78	24.40	13.612		
2,820.00	2,724.28	2,805.17	2,729.14	14.34	11.92	168.39	-96.87	-551.71	336.62	311.82	24.79	13.576		
2,850.00	2,752.87	2,834.79	2,757.26	14.54	12.11	168.66	-98.35	-560.92	341.06	315.87	25.18	13.543		
2,880.00	2,781.46	2,864.42	2,785.37	14.73	12.31	168.92	-99.83	-570.13	345.51	319.93	25.57	13.510		
2,910.00	2,810.04	2,894.04	2,813.48	14.92	12.50	169.18	-101.31	-579.34	349.97	324.00	25.96	13.479		
2,940.00	2,838.63	2,923.66	2,841.60	15.11	12.70	169.43	-102.79	-588.55	354.43	328.08	26.35	13.449		
2,970.00	2,867.22	2,953.28	2,869.71	15.30	12.89	169.68	-104.26	-597.76	358.90	332.16	26.74	13.421		
3,000.00	2,895.81	2,982.90	2,897.82	15.49	13.09	169.92	-105.74	-606.97	363.38	336.25	27.13	13.394		
3,030.00	2,924.39	3,012.52	2,925.94	15.68	13.28	170.15	-107.22	-616.18	367.87	340.35	27.52	13.367		
3,060.00	2,952.98	3,042.14	2,954.05	15.87	13.48	170.38	-108.70	-625.39	372.36	344.45	27.91	13.342		

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 29-08M
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 29-08M	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 29-11M - Wellbore #1 - Design #1													Offset Site Error:	0.00 usft
Survey Program:      0-MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
3,090.00	2,981.57	3,071.76	2,982.17	16.07	13.67	170.61	-110.18	-634.60	376.86	348.56	28.30	13.318		
3,120.00	3,010.16	3,101.38	3,010.28	16.26	13.87	170.82	-111.66	-643.81	381.37	352.68	28.69	13.295		
3,150.00	3,038.74	3,131.00	3,038.39	16.45	14.06	171.04	-113.14	-653.02	385.88	356.81	29.07	13.273		
3,180.00	3,067.33	3,160.62	3,066.51	16.64	14.26	171.24	-114.61	-662.23	390.40	360.93	29.46	13.251		
3,210.00	3,095.92	3,190.25	3,094.62	16.83	14.46	171.45	-116.09	-671.44	394.92	365.07	29.85	13.231		
3,240.00	3,124.50	3,219.87	3,122.73	17.02	14.65	171.64	-117.57	-680.65	399.45	369.21	30.24	13.211		
3,270.00	3,153.09	3,249.49	3,150.85	17.21	14.85	171.84	-119.05	-689.86	403.98	373.36	30.62	13.192		
3,300.00	3,181.68	3,279.11	3,178.96	17.40	15.04	172.03	-120.53	-699.07	408.52	377.51	31.01	13.173		
3,330.00	3,210.27	3,308.73	3,207.08	17.60	15.24	172.21	-122.01	-708.28	413.06	381.66	31.40	13.155		
3,360.00	3,238.85	3,338.35	3,235.19	17.79	15.43	172.39	-123.49	-717.49	417.61	385.82	31.79	13.138		
3,390.00	3,267.44	3,367.97	3,263.30	17.98	15.63	172.57	-124.97	-726.70	422.16	389.99	32.17	13.122		
3,420.00	3,296.03	3,397.59	3,291.42	18.17	15.83	172.75	-126.44	-735.91	426.72	394.16	32.56	13.106		
3,450.00	3,324.61	3,427.21	3,319.53	18.36	16.02	172.92	-127.92	-745.12	431.28	398.34	32.95	13.091		
3,480.00	3,353.20	3,456.83	3,347.65	18.55	16.22	173.08	-129.40	-754.33	435.85	402.51	33.33	13.076		
3,510.00	3,381.79	3,486.46	3,375.76	18.74	16.41	173.24	-130.88	-763.54	440.42	406.70	33.72	13.062		
3,540.00	3,410.38	3,516.08	3,403.87	18.93	16.61	173.40	-132.36	-772.75	444.99	410.88	34.10	13.048		
3,570.00	3,438.96	3,545.70	3,431.99	19.13	16.81	173.56	-133.84	-781.96	449.57	415.08	34.49	13.035		
3,600.00	3,467.55	3,575.32	3,460.10	19.32	17.00	173.71	-135.32	-791.17	454.15	419.27	34.88	13.022		
3,630.00	3,496.14	3,604.94	3,488.21	19.51	17.20	173.86	-136.79	-800.38	458.73	423.47	35.26	13.009		
3,660.00	3,524.72	3,634.56	3,516.33	19.70	17.40	174.01	-138.27	-809.59	463.32	427.67	35.65	12.997		
3,690.00	3,553.31	3,664.18	3,544.44	19.89	17.59	174.16	-139.75	-818.80	467.91	431.88	36.03	12.986		
3,720.00	3,581.90	3,693.80	3,572.56	20.08	17.79	174.30	-141.23	-828.02	472.50	436.09	36.42	12.974		
3,750.00	3,610.49	3,723.42	3,600.67	20.27	17.99	174.44	-142.71	-837.23	477.10	440.30	36.80	12.964		
3,780.00	3,639.07	3,753.04	3,628.78	20.47	18.18	174.57	-144.19	-846.44	481.70	444.51	37.19	12.953		
3,810.00	3,667.66	3,782.66	3,656.90	20.66	18.38	174.71	-145.67	-855.65	486.30	448.73	37.57	12.943		
3,840.00	3,696.25	3,812.29	3,685.01	20.85	18.57	174.84	-147.14	-864.86	490.91	452.95	37.96	12.933		
3,870.00	3,724.83	3,841.91	3,713.13	21.04	18.77	174.96	-148.62	-874.07	495.52	457.18	38.34	12.923		
3,900.00	3,753.42	3,871.53	3,741.24	21.23	18.97	175.09	-150.10	-883.28	500.13	461.40	38.73	12.914		
3,930.00	3,782.01	3,901.15	3,769.35	21.42	19.16	175.22	-151.58	-892.49	504.75	465.63	39.11	12.905		
3,960.00	3,810.60	3,930.77	3,797.47	21.62	19.36	175.34	-153.06	-901.70	509.36	469.87	39.50	12.897		
3,990.00	3,839.18	3,960.39	3,825.58	21.81	19.56	175.46	-154.54	-910.91	513.98	474.10	39.88	12.888		
4,020.00	3,867.77	3,990.01	3,853.69	22.00	19.76	175.57	-156.02	-920.12	518.60	478.34	40.26	12.880		
4,050.00	3,896.36	4,019.63	3,881.81	22.19	19.95	175.69	-157.49	-929.33	523.23	482.58	40.65	12.872		
4,080.00	3,924.95	4,049.25	3,909.92	22.38	20.15	175.80	-158.97	-938.54	527.85	486.82	41.03	12.864		
4,110.00	3,953.53	4,078.87	3,938.04	22.57	20.35	175.91	-160.45	-947.75	532.48	491.07	41.42	12.857		
4,140.00	3,982.12	4,108.49	3,966.15	22.76	20.54	176.02	-161.93	-956.96	537.11	495.31	41.80	12.850		
4,170.00	4,010.71	4,138.12	3,994.26	22.96	20.74	176.13	-163.41	-966.17	541.75	499.56	42.18	12.843		
4,200.00	4,039.29	4,167.74	4,022.38	23.15	20.94	176.24	-164.89	-975.38	546.38	503.81	42.57	12.836		
4,230.00	4,067.88	4,197.36	4,050.49	23.34	21.13	176.34	-166.37	-984.59	551.02	508.07	42.95	12.829		
4,260.00	4,096.47	4,226.98	4,078.60	23.53	21.33	176.44	-167.84	-993.80	555.66	512.32	43.33	12.823		
4,290.00	4,125.06	4,256.60	4,106.72	23.72	21.53	176.54	-169.32	-1,003.01	560.30	516.58	43.72	12.816		
4,320.00	4,153.64	4,286.22	4,134.83	23.91	21.72	176.64	-170.80	-1,012.22	564.94	520.84	44.10	12.810		
4,350.00	4,182.23	4,315.84	4,162.95	24.11	21.92	176.74	-172.28	-1,021.43	569.59	525.10	44.48	12.804		
4,380.00	4,210.82	4,345.46	4,191.06	24.30	22.12	176.84	-173.76	-1,030.64	574.23	529.37	44.87	12.799		
4,410.00	4,239.40	4,375.08	4,219.17	24.49	22.32	176.93	-175.24	-1,039.85	578.88	533.63	45.25	12.793		
4,440.00	4,267.99	4,404.70	4,247.29	24.68	22.51	177.02	-176.72	-1,049.06	583.53	537.90	45.63	12.788		
4,470.00	4,296.58	4,434.32	4,275.40	24.87	22.71	177.11	-178.19	-1,058.27	588.18	542.17	46.02	12.782		
4,500.00	4,325.17	4,463.95	4,303.52	25.06	22.91	177.20	-179.67	-1,067.48	592.84	546.44	46.40	12.777		
4,530.00	4,353.75	4,493.57	4,331.63	25.25	23.10	177.29	-181.15	-1,076.69	597.49	550.71	46.78	12.772		
4,560.00	4,382.34	4,523.19	4,359.74	25.45	23.30	177.38	-182.63	-1,085.90	602.15	554.98	47.16	12.767		
4,590.00	4,410.93	4,552.81	4,387.86	25.64	23.50	177.46	-184.11	-1,095.11	606.81	559.26	47.55	12.763		
4,620.00	4,439.51	4,582.43	4,415.97	25.83	23.70	177.55	-185.59	-1,104.32	611.47	563.54	47.93	12.758		

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 29-08M
<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 29-08M	<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 29-11M - 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	4,468.10	4,612.05	4,444.08	26.02	23.89	177.63	-187.07	-1,113.53	616.13	567.82	48.31	12.753		
4,680.00	4,496.69	4,641.67	4,472.20	26.21	24.09	177.71	-188.54	-1,122.74	620.79	572.10	48.69	12.749		
4,710.00	4,525.28	4,671.29	4,500.31	26.40	24.29	177.79	-190.02	-1,131.95	625.45	576.38	49.08	12.745		
4,740.00	4,553.86	4,700.91	4,528.43	26.60	24.48	177.87	-191.50	-1,141.16	630.12	580.66	49.46	12.741		
4,770.00	4,582.45	4,730.53	4,556.54	26.79	24.68	177.95	-192.98	-1,150.37	634.78	584.94	49.84	12.737		
4,800.00	4,611.04	4,760.15	4,584.65	26.98	24.88	178.03	-194.46	-1,159.58	639.45	589.23	50.22	12.733		
4,830.00	4,639.63	4,789.78	4,612.77	27.17	25.08	178.11	-195.94	-1,168.79	644.12	593.52	50.60	12.729		
4,860.00	4,668.21	4,819.40	4,640.88	27.36	25.27	178.18	-197.42	-1,178.00	648.79	597.80	50.99	12.725		
4,890.00	4,696.80	4,849.02	4,669.00	27.55	25.47	178.25	-198.89	-1,187.21	653.46	602.09	51.37	12.721		
4,920.00	4,725.39	4,878.64	4,697.11	27.75	25.67	178.33	-200.37	-1,196.42	658.13	606.39	51.75	12.718		
4,950.00	4,753.97	4,908.26	4,725.22	27.94	25.87	178.40	-201.85	-1,205.63	662.81	610.68	52.13	12.714		
4,980.00	4,782.56	4,937.88	4,753.34	28.13	26.06	178.47	-203.33	-1,214.84	667.48	614.97	52.51	12.711		
5,010.00	4,811.15	4,967.50	4,781.45	28.32	26.26	178.54	-204.81	-1,224.05	672.16	619.26	52.89	12.708		
5,040.00	4,839.74	4,997.12	4,809.56	28.51	26.46	178.61	-206.29	-1,233.26	676.84	623.56	53.28	12.704		
5,070.00	4,868.33	5,027.11	4,838.03	28.70	26.65	178.68	-207.78	-1,242.56	681.51	627.86	53.65	12.704		
5,100.00	4,896.98	5,057.80	4,867.25	28.87	26.82	178.78	-209.27	-1,251.84	686.07	632.08	53.99	12.707		
5,130.00	4,925.73	5,088.53	4,896.60	29.00	27.00	178.86	-210.71	-1,260.83	690.48	636.17	54.31	12.715		
5,160.00	4,954.57	5,119.30	4,926.09	29.14	27.15	178.95	-212.11	-1,269.51	694.73	640.13	54.60	12.725		
5,190.00	4,983.49	5,150.11	4,955.70	29.28	27.29	179.03	-213.45	-1,277.89	698.83	643.95	54.88	12.735		
5,220.00	5,012.50	5,180.95	4,985.44	29.41	27.43	179.11	-214.75	-1,285.96	702.78	647.63	55.14	12.744		
5,250.00	5,041.58	5,211.83	5,015.31	29.53	27.56	179.18	-216.00	-1,293.73	706.57	651.16	55.40	12.753		
5,280.00	5,070.74	5,242.75	5,045.28	29.65	27.68	179.26	-217.19	-1,301.18	710.20	654.55	55.65	12.762		
5,310.00	5,099.97	5,273.70	5,075.38	29.77	27.81	179.33	-218.34	-1,308.32	713.68	657.79	55.89	12.769		
5,340.00	5,129.27	5,304.68	5,105.57	29.88	27.93	179.39	-219.44	-1,315.15	717.00	660.88	56.12	12.775		
5,370.00	5,158.63	5,335.68	5,135.87	29.98	28.03	179.46	-220.48	-1,321.66	720.17	663.83	56.34	12.782		
5,400.00	5,188.06	5,366.72	5,166.27	30.09	28.14	179.52	-221.47	-1,327.86	723.18	666.62	56.56	12.786		
5,430.00	5,217.55	5,397.79	5,196.76	30.18	28.25	179.57	-222.42	-1,333.73	726.02	669.26	56.76	12.791		
5,460.00	5,247.09	5,428.88	5,227.34	30.27	28.35	179.63	-223.31	-1,339.28	728.71	671.76	56.95	12.795		
5,490.00	5,276.69	5,460.00	5,258.00	30.36	28.44	179.68	-224.15	-1,344.51	731.24	674.11	57.14	12.798		
5,520.00	5,306.33	5,491.14	5,288.75	30.45	28.53	179.73	-224.93	-1,349.41	733.62	676.30	57.31	12.800		
5,550.00	5,336.03	5,522.30	5,319.56	30.52	28.62	179.77	-225.67	-1,353.98	735.83	678.35	57.48	12.802		
5,580.00	5,365.76	5,553.48	5,350.45	30.60	28.69	179.82	-226.35	-1,358.23	737.88	680.25	57.63	12.803		
5,610.00	5,395.54	5,584.68	5,381.39	30.67	28.77	179.85	-226.98	-1,362.14	739.77	681.98	57.78	12.802		
5,640.00	5,425.35	5,615.90	5,412.40	30.73	28.84	179.89	-227.55	-1,365.72	741.50	683.58	57.92	12.802		
5,670.00	5,455.20	5,647.14	5,443.46	30.80	28.91	179.92	-228.08	-1,368.98	743.07	685.02	58.05	12.801		
5,700.00	5,485.07	5,678.38	5,474.57	30.86	28.97	179.95	-228.54	-1,371.90	744.47	686.30	58.17	12.798		
5,730.00	5,514.98	5,709.65	5,505.72	30.91	29.03	179.98	-228.96	-1,374.48	745.72	687.44	58.28	12.795		
5,760.00	5,544.90	5,740.92	5,536.91	30.95	29.08	180.00	-229.32	-1,376.73	746.80	688.42	58.38	12.793		
5,790.00	5,574.85	5,772.20	5,568.13	31.00	29.13	-179.98	-229.63	-1,378.64	747.72	689.25	58.47	12.787		
5,820.00	5,604.81	5,803.49	5,599.38	31.04	29.18	-179.97	-229.88	-1,380.22	748.48	689.92	58.56	12.781		
5,850.00	5,634.79	5,834.79	5,630.65	31.08	29.21	-179.96	-230.08	-1,381.46	749.08	690.45	58.63	12.776		
5,880.00	5,664.78	5,866.09	5,661.94	31.11	29.25	-179.95	-230.23	-1,382.36	749.51	690.82	58.70	12.769		
5,910.00	5,694.77	5,897.39	5,693.24	31.14	29.28	-179.94	-230.32	-1,382.93	749.79	691.02	58.76	12.759		
5,940.00	5,724.77	5,928.70	5,724.55	31.17	29.31	-179.94	-230.35	-1,383.16	749.90	691.08	58.81	12.750		
5,970.00	5,754.77	5,958.93	5,754.77	31.19	29.34	-179.94	-230.35	-1,383.16	749.90	691.03	58.87	12.739		
6,000.00	5,784.77	5,988.93	5,784.77	31.21	29.36	-179.94	-230.35	-1,383.16	749.90	690.98	58.92	12.728		
6,030.00	5,814.77	6,018.93	5,814.77	31.24	29.39	-179.94	-230.35	-1,383.16	749.90	690.93	58.97	12.716		
6,060.00	5,844.77	6,048.93	5,844.77	31.27	29.41	-179.94	-230.35	-1,383.16	749.90	690.87	59.03	12.704		
6,090.00	5,874.77	6,078.93	5,874.77	31.29	29.44	-179.94	-230.35	-1,383.16	749.90	690.82	59.08	12.692		
6,120.00	5,904.77	6,108.93	5,904.77	31.32	29.47	-179.94	-230.35	-1,383.16	749.90	690.76	59.14	12.680		
6,150.00	5,934.77	6,138.93	5,934.77	31.35	29.50	-179.94	-230.35	-1,383.16	749.90	690.70	59.19	12.668		
6,180.00	5,964.77	6,168.93	5,964.77	31.38	29.53	-179.94	-230.35	-1,383.16	749.90	690.65	59.25	12.656		

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 29-08M
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 29-08M	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 29-11M - Wellbore #1 - Design #1													Offset Site Error:	0.00 usft
Survey Program: 0-MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
6,210.00	5,994.77	6,198.93	5,994.77	31.40	29.55	-179.94	-230.35	-1,383.16	749.90	690.59	59.31	12.644		
6,240.00	6,024.77	6,228.93	6,024.77	31.43	29.58	-179.94	-230.35	-1,383.16	749.90	690.53	59.37	12.632		
6,270.00	6,054.77	6,258.93	6,054.77	31.46	29.61	-179.94	-230.35	-1,383.16	749.90	690.48	59.42	12.620		
6,300.00	6,084.77	6,288.93	6,084.77	31.48	29.64	-179.94	-230.35	-1,383.16	749.90	690.42	59.48	12.608		
6,330.00	6,114.77	6,318.93	6,114.77	31.51	29.67	-179.94	-230.35	-1,383.16	749.90	690.36	59.54	12.595		
6,360.00	6,144.77	6,348.93	6,144.77	31.54	29.69	-179.94	-230.35	-1,383.16	749.90	690.30	59.60	12.583		
6,390.00	6,174.77	6,378.93	6,174.77	31.57	29.72	-179.94	-230.35	-1,383.16	749.90	690.24	59.65	12.571		
6,420.00	6,204.77	6,408.93	6,204.77	31.60	29.75	-179.94	-230.35	-1,383.16	749.90	690.19	59.71	12.559		
6,450.00	6,234.77	6,438.93	6,234.77	31.63	29.78	-179.94	-230.35	-1,383.16	749.90	690.13	59.77	12.546		
6,480.00	6,264.77	6,468.93	6,264.77	31.65	29.81	-179.94	-230.35	-1,383.16	749.90	690.07	59.83	12.534		
6,510.00	6,294.77	6,498.93	6,294.77	31.68	29.84	-179.94	-230.35	-1,383.16	749.90	690.01	59.89	12.521		
6,540.00	6,324.77	6,528.93	6,324.77	31.71	29.87	-179.94	-230.35	-1,383.16	749.90	689.95	59.95	12.509		
6,570.00	6,354.77	6,558.93	6,354.77	31.74	29.90	-179.94	-230.35	-1,383.16	749.90	689.89	60.01	12.496		
6,600.00	6,384.77	6,588.93	6,384.77	31.77	29.93	-179.94	-230.35	-1,383.16	749.90	689.83	60.07	12.484		
6,630.00	6,414.77	6,618.93	6,414.77	31.80	29.96	-179.94	-230.35	-1,383.16	749.90	689.77	60.13	12.472		
6,660.00	6,444.77	6,648.93	6,444.77	31.83	29.99	-179.94	-230.35	-1,383.16	749.90	689.71	60.19	12.459		
6,690.00	6,474.77	6,678.93	6,474.77	31.86	30.02	-179.94	-230.35	-1,383.16	749.90	689.65	60.25	12.446		
6,720.00	6,504.77	6,708.93	6,504.77	31.88	30.05	-179.94	-230.35	-1,383.16	749.90	689.59	60.31	12.434		
6,750.00	6,534.77	6,738.93	6,534.77	31.91	30.08	-179.94	-230.35	-1,383.16	749.90	689.53	60.37	12.421		
6,780.00	6,564.77	6,768.93	6,564.77	31.94	30.11	-179.94	-230.35	-1,383.16	749.90	689.46	60.43	12.409		
6,810.00	6,594.77	6,798.93	6,594.77	31.97	30.14	-179.94	-230.35	-1,383.16	749.90	689.40	60.50	12.396		
6,840.00	6,624.77	6,828.93	6,624.77	32.00	30.17	-179.94	-230.35	-1,383.16	749.90	689.34	60.56	12.383		
6,870.00	6,654.77	6,858.93	6,654.77	32.03	30.20	-179.94	-230.35	-1,383.16	749.90	689.28	60.62	12.371		
6,900.00	6,684.77	6,888.93	6,684.77	32.06	30.23	-179.94	-230.35	-1,383.16	749.90	689.22	60.68	12.358		
6,930.00	6,714.77	6,918.93	6,714.77	32.09	30.26	-179.94	-230.35	-1,383.16	749.90	689.15	60.74	12.345		
6,960.00	6,744.77	6,948.93	6,744.77	32.12	30.29	-179.94	-230.35	-1,383.16	749.90	689.09	60.81	12.332		
6,990.00	6,774.77	6,978.93	6,774.77	32.15	30.32	-179.94	-230.35	-1,383.16	749.90	689.03	60.87	12.320		
7,020.00	6,804.77	7,008.93	6,804.77	32.18	30.35	-179.94	-230.35	-1,383.16	749.90	688.96	60.93	12.307		
7,050.00	6,834.77	7,038.93	6,834.77	32.21	30.39	-179.94	-230.35	-1,383.16	749.90	688.90	61.00	12.294		
7,080.00	6,864.77	7,068.93	6,864.77	32.24	30.42	-179.94	-230.35	-1,383.16	749.90	688.84	61.06	12.281		
7,110.00	6,894.77	7,098.93	6,894.77	32.28	30.45	-179.94	-230.35	-1,383.16	749.90	688.77	61.12	12.268		
7,140.00	6,924.77	7,128.93	6,924.77	32.31	30.48	-179.94	-230.35	-1,383.16	749.90	688.71	61.19	12.255		
7,170.00	6,954.77	7,158.93	6,954.77	32.34	30.51	-179.94	-230.35	-1,383.16	749.90	688.64	61.25	12.242		
7,200.00	6,984.77	7,188.93	6,984.77	32.37	30.54	-179.94	-230.35	-1,383.16	749.90	688.58	61.32	12.230		
7,230.00	7,014.77	7,218.93	7,014.77	32.40	30.58	-179.94	-230.35	-1,383.16	749.90	688.52	61.38	12.217		
7,260.00	7,044.77	7,248.93	7,044.77	32.43	30.61	-179.94	-230.35	-1,383.16	749.90	688.45	61.45	12.204		
7,290.00	7,074.77	7,278.93	7,074.77	32.46	30.64	-179.94	-230.35	-1,383.16	749.90	688.38	61.51	12.191		
7,320.00	7,104.77	7,308.93	7,104.77	32.49	30.67	-179.94	-230.35	-1,383.16	749.90	688.32	61.58	12.178		
7,350.00	7,134.77	7,338.93	7,134.77	32.53	30.71	-179.94	-230.35	-1,383.16	749.90	688.25	61.65	12.165		
7,380.00	7,164.77	7,368.93	7,164.77	32.56	30.74	-179.94	-230.35	-1,383.16	749.90	688.19	61.71	12.152		
7,410.00	7,194.77	7,398.93	7,194.77	32.59	30.77	-179.94	-230.35	-1,383.16	749.90	688.12	61.78	12.139		
7,440.00	7,224.77	7,428.93	7,224.77	32.62	30.80	-179.94	-230.35	-1,383.16	749.90	688.05	61.84	12.126		
7,470.00	7,254.77	7,458.93	7,254.77	32.65	30.84	-179.94	-230.35	-1,383.16	749.90	687.99	61.91	12.113		
7,500.00	7,284.77	7,488.93	7,284.77	32.69	30.87	-179.94	-230.35	-1,383.16	749.90	687.92	61.98	12.099		
7,530.00	7,314.77	7,518.93	7,314.77	32.72	30.90	-179.94	-230.35	-1,383.16	749.90	687.85	62.05	12.086		
7,560.00	7,344.77	7,548.93	7,344.77	32.75	30.94	-179.94	-230.35	-1,383.16	749.90	687.79	62.11	12.073		
7,590.00	7,374.77	7,578.93	7,374.77	32.78	30.97	-179.94	-230.35	-1,383.16	749.90	687.72	62.18	12.060		
7,620.00	7,404.77	7,608.93	7,404.77	32.82	31.00	-179.94	-230.35	-1,383.16	749.90	687.65	62.25	12.047		
7,650.00	7,434.77	7,638.93	7,434.77	32.85	31.04	-179.94	-230.35	-1,383.16	749.90	687.58	62.32	12.034		
7,680.00	7,464.77	7,668.93	7,464.77	32.88	31.07	-179.94	-230.35	-1,383.16	749.90	687.51	62.38	12.021		
7,710.00	7,494.77	7,698.93	7,494.77	32.91	31.10	-179.94	-230.35	-1,383.16	749.90	687.45	62.45	12.007		
7,740.00	7,524.77	7,728.93	7,524.77	32.95	31.14	-179.94	-230.35	-1,383.16	749.90	687.38	62.52	11.994		

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 29-08M
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 29-08M	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 29-11M - 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	
7,770.00	7,554.77	7,758.93	7,554.77	32.98	31.17	-179.94	-230.35	-1,383.16	749.90	687.31	62.59	11.981	
7,800.00	7,584.77	7,788.93	7,584.77	33.01	31.21	-179.94	-230.35	-1,383.16	749.90	687.24	62.66	11.968	
7,830.00	7,614.77	7,818.93	7,614.77	33.05	31.24	-179.94	-230.35	-1,383.16	749.90	687.17	62.73	11.955	
7,860.00	7,644.77	7,848.93	7,644.77	33.08	31.28	-179.94	-230.35	-1,383.16	749.90	687.10	62.80	11.941	
7,890.00	7,674.77	7,878.93	7,674.77	33.11	31.31	-179.94	-230.35	-1,383.16	749.90	687.03	62.87	11.928	
7,895.23	7,680.00	7,884.16	7,680.00	33.12	31.32	-179.94	-230.35	-1,383.16	749.90	687.02	62.88	11.926	



# Archer

## Anticollision Report



<b>Company:</b>	Piceance Energy, LLC	<b>Local Co-ordinate Reference:</b>	Well Gunderson 29-08M
<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 29-08M	<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 29-12M - 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	-114.98	-13.37	-28.69	31.65					
30.00	30.00	30.00	30.00	0.01	0.03	-114.98	-13.37	-28.69	31.65	31.62	0.03	977.823		
60.00	60.00	60.00	60.00	0.04	0.05	-114.98	-13.37	-28.69	31.65	31.56	0.09	345.114		
90.00	90.00	90.00	90.00	0.07	0.08	-114.98	-13.37	-28.69	31.65	31.50	0.15	209.534		
120.00	120.00	120.00	120.00	0.13	0.13	-114.98	-13.37	-28.69	31.65	31.39	0.26	121.385		
150.00	150.00	150.00	150.00	0.20	0.20	-114.98	-13.37	-28.69	31.65	31.25	0.40	80.004		
180.00	180.00	180.00	180.00	0.27	0.27	-114.98	-13.37	-28.69	31.65	31.12	0.53	59.664		
210.00	210.00	210.00	210.00	0.33	0.33	-115.01	-13.37	-28.69	31.64	30.97	0.66	47.582		
240.00	240.00	240.00	240.00	0.40	0.40	-115.35	-13.37	-28.69	31.45	30.65	0.80	39.367		
270.00	269.99	269.99	269.99	0.46	0.47	-116.11	-13.37	-28.69	31.06	30.12	0.93	33.283		
300.00	299.98	299.98	299.98	0.53	0.53	-117.33	-13.37	-28.69	30.45	29.39	1.07	28.550		
330.00	329.96	329.96	329.96	0.60	0.60	-119.06	-13.37	-28.69	29.66	28.46	1.20	24.666		
360.00	359.92	359.92	359.92	0.67	0.67	-121.37	-13.37	-28.69	28.70	27.36	1.34	21.456		
390.00	389.86	389.86	389.86	0.74	0.74	-124.36	-13.37	-28.69	27.61	26.14	1.47	18.754		
420.00	419.78	419.78	419.78	0.81	0.80	-128.17	-13.37	-28.69	26.44	24.82	1.61	16.405		
450.00	449.68	449.68	449.68	0.88	0.87	-132.94	-13.37	-28.69	25.25	23.50	1.75	14.408		
480.00	479.55	479.55	479.55	0.96	0.94	-138.84	-13.37	-28.69	24.14	22.25	1.89	12.747		
510.00	509.40	509.40	509.40	1.04	1.01	-145.98	-13.37	-28.69	23.24	21.20	2.04	11.390		
540.00	539.20	539.20	539.20	1.12	1.07	-154.35	-13.37	-28.69	22.69	20.50	2.19	10.340		
556.48	555.56	555.56	555.56	1.17	1.11	-159.40	-13.37	-28.69	22.60	20.32	2.28	9.913 CC		
570.00	568.97	568.97	568.97	1.21	1.14	-163.73	-13.37	-28.69	22.67	20.32	2.35	9.646 ES		
600.00	598.70	598.70	598.70	1.30	1.21	-173.62	-13.37	-28.69	23.32	20.82	2.50	9.316		
630.00	628.39	628.39	628.39	1.40	1.27	176.61	-13.37	-28.69	24.74	22.08	2.66	9.294 SF		
660.00	658.03	658.03	658.03	1.50	1.34	167.56	-13.37	-28.69	26.96	24.15	2.81	9.587		
690.00	687.61	687.61	687.61	1.60	1.41	159.59	-13.37	-28.69	29.95	27.00	2.95	10.138		
720.00	717.15	717.15	717.15	1.71	1.47	152.82	-13.37	-28.69	33.64	30.54	3.10	10.862		
750.00	746.63	746.63	746.63	1.82	1.54	147.16	-13.37	-28.69	37.95	34.71	3.24	11.725		
780.00	776.05	776.05	776.05	1.94	1.60	142.47	-13.37	-28.69	42.82	39.44	3.37	12.698		
810.00	805.40	805.44	805.44	2.06	1.67	138.58	-13.37	-28.69	48.18	44.67	3.51	13.741		
840.00	834.69	834.97	834.97	2.19	1.73	135.55	-13.44	-28.89	53.91	50.27	3.64	14.807		
870.00	863.91	864.54	864.54	2.32	1.79	133.25	-13.60	-29.37	59.90	56.13	3.77	15.875		
900.00	893.06	894.14	894.14	2.46	1.85	131.51	-13.87	-30.15	66.12	62.21	3.90	16.934		
930.00	922.13	923.77	923.73	2.61	1.91	130.19	-14.24	-31.21	72.51	68.47	4.04	17.941		
960.00	951.12	953.42	953.35	2.76	1.97	129.21	-14.71	-32.57	79.07	74.89	4.18	18.929		
990.00	980.03	983.10	982.97	2.91	2.03	128.49	-15.27	-34.22	85.78	81.47	4.31	19.895		
1,020.00	1,008.85	1,012.80	1,012.60	3.07	2.09	127.98	-15.94	-36.16	92.62	88.17	4.45	20.802		
1,050.00	1,037.58	1,042.51	1,042.22	3.24	2.16	127.63	-16.71	-38.39	99.60	95.00	4.60	21.659		
1,080.00	1,066.23	1,072.25	1,071.84	3.41	2.22	127.43	-17.58	-40.91	106.70	101.96	4.74	22.493		
1,110.00	1,094.81	1,102.03	1,101.47	3.59	2.29	127.35	-18.55	-43.73	113.81	108.91	4.90	23.234		
1,140.00	1,123.40	1,131.90	1,131.16	3.77	2.36	127.41	-19.62	-46.84	120.75	115.69	5.06	23.851		
1,170.00	1,151.99	1,161.84	1,160.88	3.95	2.43	127.58	-20.80	-50.26	127.52	122.29	5.23	24.395		
1,200.00	1,180.58	1,191.86	1,190.64	4.13	2.51	127.85	-22.09	-53.98	134.12	128.73	5.39	24.870		
1,230.00	1,209.16	1,221.94	1,220.42	4.32	2.59	128.21	-23.47	-58.01	140.56	134.98	5.58	25.193		
1,260.00	1,237.75	1,252.08	1,250.21	4.50	2.67	128.64	-24.97	-62.34	146.83	141.07	5.76	25.488		
1,290.00	1,266.34	1,282.27	1,280.00	4.68	2.76	129.13	-26.56	-66.98	152.95	147.00	5.94	25.730		
1,320.00	1,294.92	1,312.51	1,309.78	4.87	2.85	129.69	-28.27	-71.91	158.91	152.77	6.14	25.881		
1,350.00	1,323.51	1,342.79	1,339.55	5.05	2.94	130.31	-30.07	-77.16	164.72	158.38	6.35	25.953		
1,380.00	1,352.10	1,373.10	1,369.29	5.24	3.04	130.98	-31.98	-82.70	170.39	163.83	6.56	25.969		
1,410.00	1,380.69	1,403.44	1,398.99	5.42	3.14	131.69	-34.00	-88.55	175.93	169.15	6.78	25.937		
1,440.00	1,409.27	1,433.80	1,428.64	5.61	3.26	132.46	-36.12	-94.70	181.33	174.31	7.02	25.833		
1,470.00	1,437.86	1,464.16	1,458.23	5.80	3.37	133.26	-38.34	-101.15	186.62	179.35	7.26	25.696		
1,500.00	1,466.45	1,494.54	1,487.75	5.99	3.49	134.11	-40.67	-107.89	191.79	184.27	7.51	25.529		

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 29-08M
<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 29-08M	<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 29-12M - 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	1,495.03	1,524.91	1,517.20	6.17	3.62	134.99	-43.09	-114.94	196.85	189.07	7.78	25.301		
1,560.00	1,523.62	1,555.28	1,546.56	6.36	3.75	135.91	-45.62	-122.27	201.82	193.76	8.06	25.045		
1,590.00	1,552.21	1,585.63	1,575.82	6.55	3.89	136.86	-48.25	-129.89	206.70	198.35	8.34	24.775		
1,620.00	1,580.80	1,615.95	1,604.97	6.74	4.03	137.85	-50.98	-137.80	211.50	202.86	8.64	24.467		
1,650.00	1,609.38	1,646.25	1,634.00	6.93	4.19	138.86	-53.80	-146.00	216.24	207.28	8.96	24.131		
1,680.00	1,637.97	1,676.52	1,662.91	7.11	4.34	139.90	-56.72	-154.47	220.92	211.63	9.29	23.792		
1,710.00	1,666.56	1,706.74	1,691.68	7.30	4.50	140.97	-59.74	-163.22	225.55	215.93	9.62	23.441		
1,740.00	1,695.14	1,736.92	1,720.30	7.49	4.67	142.07	-62.85	-172.24	230.16	220.17	9.98	23.056		
1,770.00	1,723.73	1,767.03	1,748.77	7.68	4.85	143.18	-66.05	-181.53	234.74	224.39	10.35	22.685		
1,800.00	1,752.32	1,797.09	1,777.08	7.87	5.02	144.32	-69.34	-191.09	239.30	228.58	10.72	22.324		
1,830.00	1,780.91	1,826.56	1,804.75	8.06	5.21	145.41	-72.64	-200.65	243.90	232.80	11.10	21.967		
1,860.00	1,809.49	1,855.81	1,832.23	8.25	5.39	146.45	-75.92	-210.16	248.58	237.09	11.49	21.632		
1,890.00	1,838.08	1,885.06	1,859.70	8.44	5.58	147.45	-79.19	-219.67	253.35	241.47	11.88	21.321		
1,920.00	1,866.67	1,914.32	1,887.17	8.63	5.76	148.42	-82.47	-229.18	258.21	245.93	12.28	21.029		
1,950.00	1,895.25	1,943.57	1,914.64	8.82	5.96	149.34	-85.75	-238.68	263.14	250.46	12.68	20.755		
1,980.00	1,923.84	1,972.83	1,942.11	9.01	6.15	150.23	-89.03	-248.19	268.15	255.07	13.08	20.504		
2,010.00	1,952.43	2,002.08	1,969.58	9.20	6.34	151.09	-92.30	-257.70	273.23	259.75	13.48	20.274		
2,040.00	1,981.02	2,031.33	1,997.05	9.39	6.53	151.91	-95.58	-267.21	278.37	264.49	13.88	20.054		
2,070.00	2,009.60	2,060.59	2,024.52	9.58	6.73	152.71	-98.86	-276.72	283.58	269.29	14.29	19.851		
2,100.00	2,038.19	2,089.84	2,051.99	9.77	6.92	153.47	-102.13	-286.22	288.84	274.15	14.69	19.663		
2,130.00	2,066.78	2,119.10	2,079.47	9.96	7.12	154.21	-105.41	-295.73	294.16	279.07	15.10	19.487		
2,160.00	2,095.37	2,148.35	2,106.94	10.15	7.32	154.92	-108.69	-305.24	299.54	284.03	15.50	19.322		
2,190.00	2,123.95	2,177.61	2,134.41	10.34	7.52	155.61	-111.97	-314.75	304.96	289.05	15.91	19.170		
2,220.00	2,152.54	2,206.86	2,161.88	10.53	7.72	156.27	-115.24	-324.26	310.43	294.12	16.32	19.027		
2,250.00	2,181.13	2,236.11	2,189.35	10.72	7.92	156.90	-118.52	-333.76	315.95	299.23	16.72	18.894		
2,280.00	2,209.71	2,265.37	2,216.82	10.91	8.12	157.52	-121.80	-343.27	321.51	304.38	17.13	18.769		
2,310.00	2,238.30	2,294.62	2,244.29	11.10	8.32	158.11	-125.08	-352.78	327.11	309.57	17.54	18.654		
2,340.00	2,266.89	2,323.88	2,271.76	11.29	8.52	158.69	-128.35	-362.29	332.75	314.81	17.94	18.545		
2,370.00	2,295.48	2,353.13	2,299.23	11.48	8.72	159.24	-131.63	-371.80	338.42	320.08	18.35	18.443		
2,400.00	2,324.06	2,382.38	2,326.71	11.67	8.93	159.78	-134.91	-381.30	344.14	325.38	18.76	18.349		
2,430.00	2,352.65	2,411.64	2,354.18	11.86	9.13	160.30	-138.18	-390.81	349.88	330.72	19.16	18.260		
2,460.00	2,381.24	2,440.89	2,381.65	12.05	9.33	160.80	-141.46	-400.32	355.65	336.09	19.57	18.176		
2,490.00	2,409.82	2,470.15	2,409.12	12.24	9.54	161.29	-144.74	-409.83	361.46	341.49	19.97	18.098		
2,520.00	2,438.41	2,499.40	2,436.59	12.44	9.74	161.76	-148.02	-419.34	367.29	346.92	20.38	18.025		
2,550.00	2,467.00	2,528.66	2,464.06	12.63	9.95	162.21	-151.29	-428.84	373.15	352.37	20.78	17.957		
2,580.00	2,495.59	2,557.91	2,491.53	12.82	10.15	162.66	-154.57	-438.35	379.04	357.86	21.18	17.892		
2,610.00	2,524.17	2,587.16	2,519.00	13.01	10.36	163.08	-157.85	-447.86	384.95	363.36	21.59	17.832		
2,640.00	2,552.76	2,616.42	2,546.47	13.20	10.56	163.50	-161.12	-457.37	390.89	368.90	21.99	17.775		
2,670.00	2,581.35	2,645.67	2,573.95	13.39	10.77	163.90	-164.40	-466.88	396.84	374.45	22.39	17.722		
2,700.00	2,609.93	2,674.93	2,601.42	13.58	10.98	164.29	-167.68	-476.38	402.82	380.03	22.80	17.671		
2,730.00	2,638.52	2,704.18	2,628.89	13.77	11.18	164.67	-170.96	-485.89	408.82	385.63	23.20	17.624		
2,760.00	2,667.11	2,733.43	2,656.36	13.96	11.39	165.04	-174.23	-495.40	414.84	391.25	23.60	17.580		
2,790.00	2,695.70	2,762.69	2,683.83	14.15	11.60	165.40	-177.51	-504.91	420.88	396.88	24.00	17.538		
2,820.00	2,724.28	2,791.94	2,711.30	14.34	11.80	165.75	-180.79	-514.42	426.94	402.54	24.40	17.499		
2,850.00	2,752.87	2,821.20	2,738.77	14.54	12.01	166.09	-184.07	-523.92	433.01	408.22	24.80	17.462		
2,880.00	2,781.46	2,850.45	2,766.24	14.73	12.22	166.42	-187.34	-533.43	439.10	413.91	25.20	17.427		
2,910.00	2,810.04	2,879.71	2,793.72	14.92	12.43	166.74	-190.62	-542.94	445.21	419.62	25.60	17.394		
2,940.00	2,838.63	2,908.96	2,821.19	15.11	12.63	167.05	-193.90	-552.45	451.33	425.34	25.99	17.363		
2,970.00	2,867.22	2,938.21	2,848.66	15.30	12.84	167.35	-197.17	-561.96	457.47	431.08	26.39	17.334		
3,000.00	2,895.81	2,967.47	2,876.13	15.49	13.05	167.65	-200.45	-571.46	463.62	436.83	26.79	17.307		
3,030.00	2,924.39	2,996.72	2,903.60	15.68	13.26	167.93	-203.73	-580.97	469.79	442.60	27.19	17.281		
3,060.00	2,952.98	3,025.98	2,931.07	15.87	13.47	168.21	-207.01	-590.48	475.96	448.38	27.58	17.256		

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 29-08M
<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 29-08M	<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 29-12M - 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	2,981.57	3,055.23	2,958.54	16.07	13.68	168.49	-210.28	-599.99	482.15	454.17	27.98	17.233		
3,120.00	3,010.16	3,084.48	2,986.01	16.26	13.89	168.75	-213.56	-609.50	488.35	459.98	28.37	17.212		
3,150.00	3,038.74	3,113.74	3,013.48	16.45	14.09	169.01	-216.84	-619.00	494.57	465.80	28.77	17.191		
3,180.00	3,067.33	3,142.99	3,040.96	16.64	14.30	169.26	-220.12	-628.51	500.79	471.63	29.16	17.172		
3,210.00	3,095.92	3,172.25	3,068.43	16.83	14.51	169.51	-223.39	-638.02	507.03	477.47	29.56	17.154		
3,240.00	3,124.50	3,201.50	3,095.90	17.02	14.72	169.75	-226.67	-647.53	513.27	483.32	29.95	17.136		
3,270.00	3,153.09	3,230.76	3,123.37	17.21	14.93	169.99	-229.95	-657.04	519.53	489.18	30.35	17.120		
3,300.00	3,181.68	3,260.01	3,150.84	17.40	15.14	170.22	-233.22	-666.54	525.79	495.06	30.74	17.105		
3,330.00	3,210.27	3,289.26	3,178.31	17.60	15.35	170.44	-236.50	-676.05	532.07	500.94	31.13	17.090		
3,360.00	3,238.85	3,318.52	3,205.78	17.79	15.56	170.66	-239.78	-685.56	538.35	506.83	31.53	17.077		
3,390.00	3,267.44	3,347.77	3,233.25	17.98	15.77	170.87	-243.06	-695.07	544.65	512.73	31.92	17.064		
3,420.00	3,296.03	3,377.03	3,260.72	18.17	15.98	171.08	-246.33	-704.58	550.95	518.64	32.31	17.052		
3,450.00	3,324.61	3,406.28	3,288.20	18.36	16.19	171.29	-249.61	-714.08	557.25	524.55	32.70	17.041		
3,480.00	3,353.20	3,435.53	3,315.67	18.55	16.40	171.49	-252.89	-723.59	563.57	530.48	33.09	17.030		
3,510.00	3,381.79	3,464.79	3,343.14	18.74	16.61	171.68	-256.16	-733.10	569.89	536.41	33.48	17.020		
3,540.00	3,410.38	3,494.04	3,370.61	18.93	16.82	171.87	-259.44	-742.61	576.23	542.35	33.88	17.010		
3,570.00	3,438.96	3,523.30	3,398.08	19.13	17.03	172.06	-262.72	-752.12	582.56	548.30	34.27	17.001		
3,600.00	3,467.55	3,552.55	3,425.55	19.32	17.24	172.24	-266.00	-761.63	588.91	554.25	34.66	16.993		
3,630.00	3,496.14	3,581.81	3,453.02	19.51	17.45	172.42	-269.27	-771.13	595.26	560.22	35.05	16.985		
3,660.00	3,524.72	3,611.06	3,480.49	19.70	17.66	172.60	-272.55	-780.64	601.62	566.18	35.44	16.978		
3,690.00	3,553.31	3,640.31	3,507.96	19.89	17.87	172.77	-275.83	-790.15	607.98	572.16	35.83	16.971		
3,720.00	3,581.90	3,669.57	3,535.44	20.08	18.08	172.94	-279.11	-799.66	614.35	578.14	36.21	16.964		
3,750.00	3,610.49	3,698.82	3,562.91	20.27	18.29	173.10	-282.38	-809.17	620.73	584.13	36.60	16.958		
3,780.00	3,639.07	3,728.08	3,590.38	20.47	18.50	173.27	-285.66	-818.67	627.11	590.12	36.99	16.952		
3,810.00	3,667.66	3,757.33	3,617.85	20.66	18.71	173.42	-288.94	-828.18	633.50	596.12	37.38	16.947		
3,840.00	3,696.25	3,786.58	3,645.32	20.85	18.92	173.58	-292.21	-837.69	639.89	602.12	37.77	16.942		
3,870.00	3,724.83	3,815.84	3,672.79	21.04	19.13	173.73	-295.49	-847.20	646.29	608.13	38.16	16.937		
3,900.00	3,753.42	3,845.09	3,700.26	21.23	19.34	173.88	-298.77	-856.71	652.69	614.15	38.55	16.933		
3,930.00	3,782.01	3,874.35	3,727.73	21.42	19.55	174.03	-302.05	-866.21	659.10	620.17	38.93	16.929		
3,960.00	3,810.60	3,903.60	3,755.21	21.62	19.77	174.17	-305.32	-875.72	665.51	626.19	39.32	16.925		
3,990.00	3,839.18	3,932.86	3,782.68	21.81	19.98	174.31	-308.60	-885.23	671.93	632.22	39.71	16.921		
4,020.00	3,867.77	3,962.11	3,810.15	22.00	20.19	174.45	-311.88	-894.74	678.35	638.25	40.10	16.918		
4,050.00	3,896.36	3,991.36	3,837.62	22.19	20.40	174.58	-315.16	-904.25	684.78	644.29	40.48	16.915		
4,080.00	3,924.95	4,020.62	3,865.09	22.38	20.61	174.72	-318.43	-913.75	691.21	650.34	40.87	16.912		
4,110.00	3,953.53	4,049.87	3,892.56	22.57	20.82	174.85	-321.71	-923.26	697.64	656.38	41.26	16.910		
4,140.00	3,982.12	4,079.13	3,920.03	22.76	21.03	174.98	-324.99	-932.77	704.08	662.44	41.64	16.908		
4,170.00	4,010.71	4,108.38	3,947.50	22.96	21.24	175.10	-328.26	-942.28	710.52	668.49	42.03	16.905		
4,200.00	4,039.29	4,137.63	3,974.97	23.15	21.45	175.23	-331.54	-951.79	716.97	674.55	42.42	16.904		
4,230.00	4,067.88	4,166.89	4,002.45	23.34	21.66	175.35	-334.82	-961.29	723.41	680.61	42.80	16.902		
4,260.00	4,096.47	4,196.14	4,029.92	23.53	21.88	175.47	-338.10	-970.80	729.87	686.68	43.19	16.900		
4,290.00	4,125.06	4,225.40	4,057.39	23.72	22.09	175.58	-341.37	-980.31	736.32	692.75	43.57	16.899		
4,320.00	4,153.64	4,254.65	4,084.86	23.91	22.30	175.70	-344.65	-989.82	742.78	698.83	43.96	16.898		
4,350.00	4,182.23	4,283.91	4,112.33	24.11	22.51	175.81	-347.93	-999.33	749.25	704.90	44.34	16.896		
4,380.00	4,210.82	4,313.16	4,139.80	24.30	22.72	175.92	-351.20	-1,008.83	755.71	710.98	44.73	16.896		
4,410.00	4,239.40	4,342.41	4,167.27	24.49	22.93	176.03	-354.48	-1,018.34	762.18	717.07	45.11	16.895		
4,440.00	4,267.99	4,371.67	4,194.74	24.68	23.14	176.14	-357.76	-1,027.85	768.65	723.16	45.50	16.894		
4,470.00	4,296.58	4,400.92	4,222.21	24.87	23.35	176.25	-361.04	-1,037.36	775.13	729.25	45.88	16.894		
4,500.00	4,325.17	4,430.18	4,249.69	25.06	23.57	176.35	-364.31	-1,046.87	781.61	735.34	46.27	16.893		
4,530.00	4,353.75	4,459.43	4,277.16	25.25	23.78	176.45	-367.59	-1,056.37	788.09	741.44	46.65	16.893		
4,560.00	4,382.34	4,488.68	4,304.63	25.45	23.99	176.55	-370.87	-1,065.88	794.57	747.54	47.04	16.893		
4,590.00	4,410.93	4,517.94	4,332.10	25.64	24.20	176.65	-374.15	-1,075.39	801.06	753.64	47.42	16.892		
4,620.00	4,439.51	4,547.19	4,359.57	25.83	24.41	176.75	-377.42	-1,084.90	807.55	759.74	47.81	16.892		

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 29-08M
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 29-08M	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 29-12M - 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	4,468.10	4,576.45	4,387.04	26.02	24.62	176.85	-380.70	-1,094.41	814.04	765.85	48.19	16.893		
4,680.00	4,496.69	4,605.70	4,414.51	26.21	24.83	176.94	-383.98	-1,103.91	820.53	771.96	48.57	16.893		
4,710.00	4,525.28	4,634.96	4,441.98	26.40	25.05	177.03	-387.25	-1,113.42	827.03	778.07	48.96	16.893		
4,740.00	4,553.86	4,664.21	4,469.45	26.60	25.26	177.13	-390.53	-1,122.93	833.53	784.19	49.34	16.893		
4,770.00	4,582.45	4,693.46	4,496.93	26.79	25.47	177.22	-393.81	-1,132.44	840.03	790.31	49.72	16.894		
4,800.00	4,611.04	4,722.72	4,524.40	26.98	25.68	177.30	-397.09	-1,141.95	846.53	796.43	50.11	16.894		
4,830.00	4,639.63	4,751.97	4,551.87	27.17	25.89	177.39	-400.36	-1,151.45	853.04	802.55	50.49	16.895		
4,860.00	4,668.21	4,781.23	4,579.34	27.36	26.10	177.48	-403.64	-1,160.96	859.55	808.67	50.87	16.895		
4,890.00	4,696.80	4,810.48	4,606.81	27.55	26.32	177.56	-406.92	-1,170.47	866.06	814.80	51.26	16.896		
4,920.00	4,725.39	4,839.74	4,634.28	27.75	26.53	177.65	-410.20	-1,179.98	872.57	820.93	51.64	16.897		
4,950.00	4,753.97	4,868.99	4,661.75	27.94	26.74	177.73	-413.47	-1,189.49	879.08	827.06	52.02	16.898		
4,980.00	4,782.56	4,898.24	4,689.22	28.13	26.95	177.81	-416.75	-1,198.99	885.60	833.19	52.41	16.899		
5,010.00	4,811.15	4,927.50	4,716.70	28.32	27.16	177.89	-420.03	-1,208.50	892.12	839.33	52.79	16.900		
5,040.00	4,839.74	4,956.75	4,744.17	28.51	27.37	177.97	-423.30	-1,218.01	898.64	845.47	53.17	16.900		
5,070.00	4,868.33	4,985.08	4,774.58	28.70	27.58	178.10	-426.57	-1,228.36	905.11	851.56	53.55	16.903		
5,100.00	4,896.98	5,021.60	4,805.30	28.87	27.76	178.23	-430.35	-1,238.45	911.40	857.50	53.90	16.910		
5,130.00	4,925.73	5,054.21	4,836.22	29.00	27.93	178.35	-433.72	-1,248.24	917.49	863.28	54.21	16.926		
5,160.00	4,954.57	5,086.90	4,867.34	29.14	28.10	178.47	-436.99	-1,257.71	923.37	868.85	54.51	16.938		
5,190.00	4,983.49	5,119.67	4,898.65	29.28	28.25	178.58	-440.15	-1,266.87	929.04	874.22	54.81	16.949		
5,220.00	5,012.50	5,152.52	4,930.14	29.41	28.41	178.70	-443.19	-1,275.72	934.49	879.40	55.10	16.961		
5,250.00	5,041.58	5,185.45	4,961.81	29.53	28.56	178.80	-446.13	-1,284.24	939.74	884.36	55.38	16.970		
5,280.00	5,070.74	5,218.46	4,993.66	29.65	28.71	178.91	-448.96	-1,292.43	944.77	889.13	55.65	16.978		
5,310.00	5,099.97	5,251.53	5,025.67	29.77	28.84	179.01	-451.67	-1,300.29	949.59	893.68	55.90	16.986		
5,340.00	5,129.27	5,284.67	5,057.84	29.88	28.98	179.10	-454.26	-1,307.82	954.19	898.04	56.15	16.993		
5,370.00	5,158.63	5,317.88	5,090.17	29.98	29.11	179.19	-456.74	-1,315.01	958.58	902.19	56.39	16.999		
5,400.00	5,188.06	5,351.16	5,122.64	30.09	29.23	179.28	-459.10	-1,321.86	962.75	906.12	56.62	17.003		
5,430.00	5,217.55	5,384.49	5,155.26	30.18	29.35	179.36	-461.34	-1,328.36	966.70	909.86	56.84	17.007		
5,460.00	5,247.09	5,417.88	5,188.00	30.27	29.47	179.44	-463.46	-1,334.51	970.43	913.38	57.05	17.011		
5,490.00	5,276.69	5,451.32	5,220.88	30.36	29.57	179.51	-465.46	-1,340.31	973.94	916.69	57.25	17.012		
5,520.00	5,306.33	5,484.81	5,253.87	30.45	29.68	179.58	-467.34	-1,345.76	977.23	919.79	57.44	17.013		
5,550.00	5,336.03	5,518.36	5,286.98	30.52	29.78	179.65	-469.09	-1,350.85	980.30	922.69	57.62	17.014		
5,580.00	5,365.76	5,551.94	5,320.19	30.60	29.86	179.71	-470.72	-1,355.57	983.15	925.37	57.79	17.013		
5,610.00	5,395.54	5,585.57	5,353.50	30.67	29.95	179.76	-472.22	-1,359.93	985.78	927.83	57.95	17.011		
5,640.00	5,425.35	5,619.24	5,386.90	30.73	30.03	179.81	-473.60	-1,363.93	988.18	930.09	58.10	17.009		
5,670.00	5,455.20	5,652.94	5,420.38	30.80	30.11	179.86	-474.85	-1,367.56	990.36	932.13	58.24	17.006		
5,700.00	5,485.07	5,686.67	5,453.94	30.86	30.18	179.90	-475.98	-1,370.82	992.32	933.95	58.37	16.999		
5,730.00	5,514.98	5,720.43	5,487.56	30.91	30.24	179.94	-476.97	-1,373.71	994.05	935.56	58.49	16.996		
5,760.00	5,544.90	5,754.22	5,521.24	30.95	30.30	179.97	-477.84	-1,376.23	995.56	936.96	58.60	16.990		
5,790.00	5,574.85	5,788.02	5,554.97	31.00	30.36	180.00	-478.58	-1,378.37	996.84	938.14	58.70	16.981		
5,820.00	5,604.81	5,821.85	5,588.75	31.04	30.41	-179.98	-479.18	-1,380.13	997.90	939.10	58.79	16.973		
5,850.00	5,634.79	5,855.69	5,622.55	31.08	30.45	-179.96	-479.66	-1,381.52	998.73	939.86	58.87	16.965		
5,880.00	5,664.78	5,889.54	5,656.39	31.11	30.49	-179.95	-480.01	-1,382.53	999.33	940.38	58.95	16.953		
5,910.00	5,694.77	5,923.40	5,690.24	31.14	30.52	-179.94	-480.23	-1,383.17	999.71	940.69	59.01	16.940		
5,940.00	5,724.77	5,957.26	5,724.10	31.17	30.55	-179.94	-480.32	-1,383.42	999.86	940.79	59.07	16.927		
5,970.00	5,754.77	5,987.93	5,754.77	31.19	30.58	-179.94	-480.32	-1,383.43	999.86	940.74	59.12	16.912		
6,000.00	5,784.77	6,017.93	5,784.77	31.21	30.61	-179.94	-480.32	-1,383.43	999.86	940.69	59.17	16.897		
6,030.00	5,814.77	6,047.93	5,814.77	31.24	30.63	-179.94	-480.32	-1,383.43	999.86	940.64	59.23	16.882		
6,060.00	5,844.77	6,077.93	5,844.77	31.27	30.66	-179.94	-480.32	-1,383.43	999.86	940.58	59.28	16.866		
6,090.00	5,874.77	6,107.93	5,874.77	31.29	30.68	-179.94	-480.32	-1,383.43	999.86	940.53	59.34	16.851		
6,120.00	5,904.77	6,137.93	5,904.77	31.32	30.71	-179.94	-480.32	-1,383.43	999.86	940.47	59.39	16.835		
6,150.00	5,934.77	6,167.93	5,934.77	31.35	30.73	-179.94	-480.32	-1,383.43	999.86	940.42	59.45	16.819		
6,180.00	5,964.77	6,197.93	5,964.77	31.38	30.76	-179.94	-480.32	-1,383.43	999.86	940.36	59.50	16.803		

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 29-08M
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 29-08M	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 29-12M - Wellbore #1 - Design #1											Offset Site Error:		0.00 usft
Survey Program: 0-MWD													Offset Well Error:		0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor			
6,210.00	5,994.77	6,227.93	5,994.77	31.40	30.79	-179.94	-480.32	-1,383.43	999.86	940.30	59.56	16.788			
6,240.00	6,024.77	6,257.93	6,024.77	31.43	30.81	-179.94	-480.32	-1,383.43	999.86	940.25	59.62	16.772			
6,270.00	6,054.77	6,287.93	6,054.77	31.46	30.84	-179.94	-480.32	-1,383.43	999.86	940.19	59.67	16.756			
6,300.00	6,084.77	6,317.93	6,084.77	31.48	30.87	-179.94	-480.32	-1,383.43	999.86	940.14	59.73	16.740			
6,330.00	6,114.77	6,347.93	6,114.77	31.51	30.89	-179.94	-480.32	-1,383.43	999.86	940.08	59.79	16.724			
6,360.00	6,144.77	6,377.93	6,144.77	31.54	30.92	-179.94	-480.32	-1,383.43	999.86	940.02	59.84	16.708			
6,390.00	6,174.77	6,407.93	6,174.77	31.57	30.95	-179.94	-480.32	-1,383.43	999.86	939.96	59.90	16.692			
6,420.00	6,204.77	6,437.93	6,204.77	31.60	30.97	-179.94	-480.32	-1,383.43	999.86	939.91	59.96	16.676			
6,450.00	6,234.77	6,467.93	6,234.77	31.63	31.00	-179.94	-480.32	-1,383.43	999.86	939.85	60.02	16.660			
6,480.00	6,264.77	6,497.93	6,264.77	31.65	31.03	-179.94	-480.32	-1,383.43	999.86	939.79	60.08	16.643			
6,510.00	6,294.77	6,527.93	6,294.77	31.68	31.06	-179.94	-480.32	-1,383.43	999.86	939.73	60.13	16.627			
6,540.00	6,324.77	6,557.93	6,324.77	31.71	31.08	-179.94	-480.32	-1,383.43	999.86	939.67	60.19	16.611			
6,570.00	6,354.77	6,587.93	6,354.77	31.74	31.11	-179.94	-480.32	-1,383.43	999.86	939.61	60.25	16.595			
6,600.00	6,384.77	6,617.93	6,384.77	31.77	31.14	-179.94	-480.32	-1,383.43	999.86	939.55	60.31	16.578			
6,630.00	6,414.77	6,647.93	6,414.77	31.80	31.17	-179.94	-480.32	-1,383.43	999.86	939.49	60.37	16.562			
6,660.00	6,444.77	6,677.93	6,444.77	31.83	31.20	-179.94	-480.32	-1,383.43	999.86	939.43	60.43	16.546			
6,690.00	6,474.77	6,707.93	6,474.77	31.86	31.22	-179.94	-480.32	-1,383.43	999.86	939.37	60.49	16.529			
6,720.00	6,504.77	6,737.93	6,504.77	31.88	31.25	-179.94	-480.32	-1,383.43	999.86	939.31	60.55	16.513			
6,750.00	6,534.77	6,767.93	6,534.77	31.91	31.28	-179.94	-480.32	-1,383.43	999.86	939.25	60.61	16.496			
6,780.00	6,564.77	6,797.93	6,564.77	31.94	31.31	-179.94	-480.32	-1,383.43	999.86	939.19	60.67	16.480			
6,810.00	6,594.77	6,827.93	6,594.77	31.97	31.34	-179.94	-480.32	-1,383.43	999.86	939.13	60.73	16.463			
6,840.00	6,624.77	6,857.93	6,624.77	32.00	31.37	-179.94	-480.32	-1,383.43	999.86	939.07	60.79	16.447			
6,870.00	6,654.77	6,887.93	6,654.77	32.03	31.40	-179.94	-480.32	-1,383.43	999.86	939.01	60.86	16.430			
6,900.00	6,684.77	6,917.93	6,684.77	32.06	31.42	-179.94	-480.32	-1,383.43	999.86	938.95	60.92	16.413			
6,930.00	6,714.77	6,947.93	6,714.77	32.09	31.45	-179.94	-480.32	-1,383.43	999.86	938.89	60.98	16.397			
6,960.00	6,744.77	6,977.93	6,744.77	32.12	31.48	-179.94	-480.32	-1,383.43	999.86	938.82	61.04	16.380			
6,990.00	6,774.77	7,007.93	6,774.77	32.15	31.51	-179.94	-480.32	-1,383.43	999.86	938.76	61.10	16.363			
7,020.00	6,804.77	7,037.93	6,804.77	32.18	31.54	-179.94	-480.32	-1,383.43	999.86	938.70	61.17	16.347			
7,050.00	6,834.77	7,067.93	6,834.77	32.21	31.57	-179.94	-480.32	-1,383.43	999.86	938.64	61.23	16.330			
7,080.00	6,864.77	7,097.93	6,864.77	32.24	31.60	-179.94	-480.32	-1,383.43	999.86	938.57	61.29	16.313			
7,110.00	6,894.77	7,127.93	6,894.77	32.28	31.63	-179.94	-480.32	-1,383.43	999.86	938.51	61.36	16.296			
7,140.00	6,924.77	7,157.93	6,924.77	32.31	31.66	-179.94	-480.32	-1,383.43	999.86	938.45	61.42	16.279			
7,170.00	6,954.77	7,187.93	6,954.77	32.34	31.69	-179.94	-480.32	-1,383.43	999.86	938.38	61.48	16.262			
7,200.00	6,984.77	7,217.93	6,984.77	32.37	31.72	-179.94	-480.32	-1,383.43	999.86	938.32	61.55	16.246			
7,230.00	7,014.77	7,247.93	7,014.77	32.40	31.75	-179.94	-480.32	-1,383.43	999.86	938.25	61.61	16.229			
7,260.00	7,044.77	7,277.93	7,044.77	32.43	31.78	-179.94	-480.32	-1,383.43	999.86	938.19	61.68	16.212			
7,290.00	7,074.77	7,307.93	7,074.77	32.46	31.81	-179.94	-480.32	-1,383.43	999.86	938.12	61.74	16.195			
7,320.00	7,104.77	7,337.93	7,104.77	32.49	31.84	-179.94	-480.32	-1,383.43	999.86	938.06	61.81	16.178			
7,350.00	7,134.77	7,367.93	7,134.77	32.53	31.87	-179.94	-480.32	-1,383.43	999.86	937.99	61.87	16.161			
7,380.00	7,164.77	7,397.93	7,164.77	32.56	31.91	-179.94	-480.32	-1,383.43	999.86	937.93	61.94	16.144			
7,410.00	7,194.77	7,427.93	7,194.77	32.59	31.94	-179.94	-480.32	-1,383.43	999.86	937.86	62.00	16.126			
7,440.00	7,224.77	7,457.93	7,224.77	32.62	31.97	-179.94	-480.32	-1,383.43	999.86	937.80	62.07	16.109			
7,470.00	7,254.77	7,487.93	7,254.77	32.65	32.00	-179.94	-480.32	-1,383.43	999.86	937.73	62.13	16.092			
7,500.00	7,284.77	7,517.93	7,284.77	32.69	32.03	-179.94	-480.32	-1,383.43	999.86	937.67	62.20	16.075			
7,530.00	7,314.77	7,547.93	7,314.77	32.72	32.06	-179.94	-480.32	-1,383.43	999.86	937.60	62.27	16.058			
7,560.00	7,344.77	7,577.93	7,344.77	32.75	32.09	-179.94	-480.32	-1,383.43	999.86	937.53	62.33	16.041			
7,590.00	7,374.77	7,607.93	7,374.77	32.78	32.12	-179.94	-480.32	-1,383.43	999.86	937.47	62.40	16.024			
7,620.00	7,404.77	7,637.93	7,404.77	32.82	32.16	-179.94	-480.32	-1,383.43	999.86	937.40	62.47	16.006			
7,650.00	7,434.77	7,667.93	7,434.77	32.85	32.19	-179.94	-480.32	-1,383.43	999.86	937.33	62.53	15.989			
7,680.00	7,464.77	7,697.93	7,464.77	32.88	32.22	-179.94	-480.32	-1,383.43	999.86	937.26	62.60	15.972			
7,710.00	7,494.77	7,727.93	7,494.77	32.91	32.25	-179.94	-480.32	-1,383.43	999.86	937.20	62.67	15.955			
7,740.00	7,524.77	7,757.93	7,524.77	32.95	32.28	-179.94	-480.32	-1,383.43	999.86	937.13	62.74	15.937			

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 29-08M
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 29-08M	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 29-12M - 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	
7,770.00	7,554.77	7,787.93	7,554.77	32.98	32.32	-179.94	-480.32	-1,383.43	999.86	937.06	62.81	15.920	
7,800.00	7,584.77	7,817.93	7,584.77	33.01	32.35	-179.94	-480.32	-1,383.43	999.86	936.99	62.87	15.903	
7,830.00	7,614.77	7,847.93	7,614.77	33.05	32.38	-179.94	-480.32	-1,383.43	999.86	936.92	62.94	15.885	
7,860.00	7,644.77	7,877.93	7,644.77	33.08	32.41	-179.94	-480.32	-1,383.43	999.86	936.85	63.01	15.868	
7,890.00	7,674.77	7,907.93	7,674.77	33.11	32.45	-179.94	-480.32	-1,383.43	999.86	936.78	63.08	15.851	
7,895.23	7,680.00	7,913.16	7,680.00	33.12	32.45	-179.94	-480.32	-1,383.43	999.86	936.77	63.09	15.847	





# Archer

## Anticollision Report



<b>Company:</b>	Piceance Energy, LLC	<b>Local Co-ordinate Reference:</b>	Well Gunderson 29-08M
<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 29-08M	<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 29-13M - Wellbore #1 - Design #1													Offset Site Error:	0.00 usft
Survey Program: 0-MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.00	-141.50	-11.07	-8.81	14.15					
30.00	30.00	30.00	30.00	0.01	0.03	-141.50	-11.07	-8.81	14.15	14.12	0.03	437.115		
60.00	60.00	60.00	60.00	0.04	0.05	-141.50	-11.07	-8.81	14.15	14.06	0.09	154.276		
90.00	90.00	90.00	90.00	0.07	0.08	-141.50	-11.07	-8.81	14.15	14.00	0.15	93.668		
120.00	120.00	120.00	120.00	0.13	0.13	-141.50	-11.07	-8.81	14.15	13.89	0.26	54.263		
150.00	150.00	150.00	150.00	0.20	0.20	-141.50	-11.07	-8.81	14.15	13.75	0.40	35.764		
180.00	180.00	180.00	180.00	0.27	0.27	-141.50	-11.07	-8.81	14.15	13.62	0.53	26.671		
210.00	210.00	210.00	210.00	0.33	0.33	-141.57	-11.07	-8.81	14.14	13.48	0.66	21.274		
240.00	240.00	240.00	240.00	0.40	0.40	-142.58	-11.07	-8.81	14.06	13.27	0.80	17.624		
270.00	269.99	269.99	269.99	0.46	0.47	-144.85	-11.07	-8.81	13.91	12.98	0.93	14.937		
300.00	299.98	299.98	299.98	0.53	0.53	-148.46	-11.07	-8.81	13.71	12.65	1.06	12.888		
330.00	329.96	329.96	329.96	0.60	0.60	-153.47	-11.07	-8.81	13.54	12.34	1.20	11.285		
357.87	357.79	357.79	357.79	0.66	0.66	-159.40	-11.07	-8.81	13.46	12.14	1.33	10.157 CC		
360.00	359.92	359.92	359.92	0.67	0.67	-159.90	-11.07	-8.81	13.46	12.13	1.34	10.084 ES		
390.00	389.86	389.86	389.86	0.74	0.74	-167.64	-11.07	-8.81	13.60	12.13	1.47	9.247		
420.00	419.78	419.78	419.78	0.81	0.80	-176.32	-11.07	-8.81	14.07	12.46	1.61	8.725		
450.00	449.68	449.68	449.68	0.88	0.87	174.65	-11.07	-8.81	14.97	13.22	1.76	8.525 SF		
480.00	479.55	479.55	479.55	0.96	0.94	165.89	-11.07	-8.81	16.38	14.48	1.90	8.624		
510.00	509.40	509.40	509.40	1.04	1.01	157.93	-11.07	-8.81	18.31	16.27	2.04	8.967		
540.00	539.20	539.20	539.20	1.12	1.07	151.03	-11.07	-8.81	20.76	18.57	2.19	9.495		
570.00	568.97	568.97	568.97	1.21	1.14	145.20	-11.07	-8.81	23.71	21.38	2.33	10.186		
600.00	598.70	598.70	598.70	1.30	1.21	140.37	-11.07	-8.81	27.11	24.65	2.46	11.001		
630.00	628.39	628.39	628.39	1.40	1.27	136.39	-11.07	-8.81	30.94	28.34	2.61	11.869		
660.00	658.03	658.03	658.03	1.50	1.34	133.10	-11.07	-8.81	35.18	32.43	2.75	12.809		
690.00	687.61	687.61	687.61	1.60	1.41	130.37	-11.07	-8.81	39.80	36.92	2.88	13.802		
720.00	717.15	717.15	717.15	1.71	1.47	128.09	-11.07	-8.81	44.79	41.76	3.02	14.813		
750.00	746.63	746.63	746.63	1.82	1.54	126.18	-11.07	-8.81	50.13	46.96	3.16	15.846		
780.00	776.05	776.05	776.05	1.94	1.60	124.56	-11.07	-8.81	55.81	52.51	3.30	16.906		
810.00	805.40	805.46	805.46	2.06	1.67	123.18	-11.07	-8.81	61.83	58.39	3.44	17.981		
840.00	834.69	835.11	835.11	2.19	1.73	122.14	-11.17	-9.00	68.08	64.50	3.57	19.043		
870.00	863.91	864.78	864.78	2.32	1.79	121.44	-11.41	-9.46	74.49	70.78	3.71	20.083		
900.00	893.06	894.46	894.45	2.46	1.85	120.99	-11.79	-10.19	81.05	77.21	3.84	21.101		
930.00	922.13	924.16	924.12	2.61	1.91	120.75	-12.32	-11.19	87.76	83.78	3.98	22.064		
960.00	951.12	953.86	953.79	2.76	1.97	120.67	-12.99	-12.47	94.61	90.50	4.11	23.009		
990.00	980.03	983.57	983.45	2.91	2.03	120.72	-13.80	-14.02	101.61	97.36	4.25	23.936		
1,020.00	1,008.85	1,013.28	1,013.09	3.07	2.09	120.87	-14.75	-15.84	108.74	104.36	4.38	24.802		
1,050.00	1,037.58	1,042.99	1,042.70	3.24	2.15	121.11	-15.85	-17.93	116.02	111.49	4.53	25.623		
1,080.00	1,066.23	1,072.70	1,072.28	3.41	2.21	121.41	-17.08	-20.30	123.45	118.77	4.67	26.426		
1,110.00	1,094.81	1,102.43	1,101.86	3.59	2.28	121.78	-18.46	-22.94	130.89	126.07	4.82	27.133		
1,140.00	1,123.40	1,132.22	1,131.47	3.77	2.35	122.23	-19.99	-25.86	138.19	133.20	4.99	27.714		
1,170.00	1,151.99	1,162.07	1,161.11	3.95	2.42	122.74	-21.66	-29.05	145.35	140.20	5.15	28.229		
1,200.00	1,180.58	1,191.97	1,190.75	4.13	2.49	123.30	-23.48	-32.53	152.36	147.05	5.31	28.681		
1,230.00	1,209.16	1,221.92	1,220.40	4.32	2.57	123.91	-25.45	-36.29	159.24	153.74	5.50	28.968		
1,260.00	1,237.75	1,251.91	1,250.03	4.50	2.66	124.58	-27.56	-40.32	165.99	160.31	5.68	29.241		
1,290.00	1,266.34	1,281.92	1,279.65	4.68	2.74	125.28	-29.82	-44.64	172.62	166.76	5.86	29.472		
1,320.00	1,294.92	1,311.97	1,309.25	4.87	2.83	126.02	-32.22	-49.24	179.13	173.08	6.05	29.608		
1,350.00	1,323.51	1,342.03	1,338.80	5.05	2.93	126.80	-34.77	-54.11	185.53	179.28	6.26	29.661		
1,380.00	1,352.10	1,372.11	1,368.31	5.24	3.02	127.61	-37.46	-59.26	191.84	185.37	6.47	29.662		
1,410.00	1,380.69	1,402.19	1,397.77	5.42	3.12	128.45	-40.30	-64.68	198.04	191.36	6.69	29.618		
1,440.00	1,409.27	1,432.27	1,427.15	5.61	3.23	129.32	-43.28	-70.38	204.16	197.24	6.92	29.500		
1,470.00	1,437.86	1,462.34	1,456.46	5.80	3.35	130.22	-46.40	-76.35	210.20	203.04	7.16	29.352		
1,500.00	1,466.45	1,492.40	1,485.68	5.99	3.46	131.14	-49.67	-82.59	216.18	208.77	7.41	29.179		

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 29-08M
<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 29-08M	<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 29-13M - 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	1,495.03	1,522.44	1,514.81	6.17	3.59	132.08	-53.07	-89.10	222.09	214.42	7.67	28.946		
1,560.00	1,523.62	1,552.46	1,543.83	6.36	3.72	133.05	-56.61	-95.87	227.95	220.01	7.95	28.685		
1,590.00	1,552.21	1,582.43	1,572.74	6.55	3.85	134.04	-60.29	-102.90	233.78	225.55	8.23	28.413		
1,620.00	1,580.80	1,612.37	1,601.53	6.74	3.99	135.04	-64.10	-110.19	239.57	231.04	8.52	28.111		
1,650.00	1,609.38	1,642.26	1,630.18	6.93	4.14	136.07	-68.05	-117.73	245.33	236.50	8.83	27.775		
1,680.00	1,637.97	1,672.10	1,658.69	7.11	4.29	137.10	-72.13	-125.52	251.09	241.94	9.15	27.441		
1,710.00	1,666.56	1,701.88	1,687.05	7.30	4.45	138.15	-76.33	-133.56	256.85	247.37	9.48	27.106		
1,740.00	1,695.14	1,731.59	1,715.26	7.49	4.62	139.22	-80.66	-141.85	262.61	252.79	9.83	26.726		
1,770.00	1,723.73	1,761.23	1,743.30	7.68	4.79	140.29	-85.12	-150.37	268.40	258.22	10.18	26.364		
1,800.00	1,752.32	1,790.80	1,771.16	7.87	4.96	141.37	-89.70	-159.12	274.21	263.67	10.54	26.019		
1,830.00	1,780.91	1,820.28	1,798.84	8.06	5.15	142.45	-94.40	-168.10	280.07	269.15	10.92	25.656		
1,860.00	1,809.49	1,849.67	1,826.34	8.25	5.34	143.54	-99.21	-177.30	285.98	274.67	11.31	25.292		
1,890.00	1,838.08	1,878.96	1,853.63	8.44	5.53	144.63	-104.14	-186.73	291.95	280.24	11.71	24.942		
1,920.00	1,866.67	1,908.15	1,880.72	8.63	5.72	145.73	-109.18	-196.36	297.99	285.89	12.11	24.613		
1,950.00	1,895.25	1,936.92	1,907.36	8.82	5.92	146.77	-114.22	-205.98	304.14	291.62	12.52	24.292		
1,980.00	1,923.84	1,965.68	1,934.00	9.01	6.12	147.78	-119.25	-215.60	310.39	297.46	12.93	24.000		
2,010.00	1,952.43	1,994.44	1,960.63	9.20	6.33	148.74	-124.28	-225.22	316.75	303.41	13.35	23.733		
2,040.00	1,981.02	2,023.20	1,987.27	9.39	6.53	149.67	-129.31	-234.84	323.21	309.45	13.76	23.484		
2,070.00	2,009.60	2,051.97	2,013.90	9.58	6.74	150.55	-134.34	-244.46	329.77	315.59	14.18	23.255		
2,100.00	2,038.19	2,080.73	2,040.54	9.77	6.95	151.41	-139.37	-254.07	336.41	321.82	14.60	23.047		
2,130.00	2,066.78	2,109.49	2,067.17	9.96	7.16	152.23	-144.40	-263.69	343.14	328.13	15.01	22.855		
2,160.00	2,095.37	2,138.25	2,093.80	10.15	7.37	153.01	-149.43	-273.31	349.95	334.52	15.43	22.676		
2,190.00	2,123.95	2,167.01	2,120.44	10.34	7.58	153.77	-154.47	-282.93	356.83	340.98	15.85	22.514		
2,220.00	2,152.54	2,195.77	2,147.07	10.53	7.79	154.50	-159.50	-292.55	363.78	347.51	16.27	22.365		
2,250.00	2,181.13	2,224.53	2,173.71	10.72	8.01	155.20	-164.53	-302.17	370.80	354.11	16.68	22.226		
2,280.00	2,209.71	2,253.29	2,200.34	10.91	8.22	155.88	-169.56	-311.78	377.87	360.78	17.10	22.099		
2,310.00	2,238.30	2,282.06	2,226.98	11.10	8.44	156.53	-174.59	-321.40	385.01	367.50	17.51	21.983		
2,340.00	2,266.89	2,310.82	2,253.61	11.29	8.65	157.15	-179.62	-331.02	392.21	374.28	17.93	21.876		
2,370.00	2,295.48	2,339.58	2,280.24	11.48	8.87	157.76	-184.65	-340.64	399.45	381.11	18.34	21.777		
2,400.00	2,324.06	2,368.34	2,306.88	11.67	9.08	158.34	-189.68	-350.26	406.75	387.99	18.76	21.687		
2,430.00	2,352.65	2,397.10	2,333.51	11.86	9.30	158.90	-194.72	-359.87	414.09	394.92	19.17	21.604		
2,460.00	2,381.24	2,425.86	2,360.15	12.05	9.52	159.45	-199.75	-369.49	421.48	401.90	19.58	21.526		
2,490.00	2,409.82	2,454.62	2,386.78	12.24	9.74	159.97	-204.78	-379.11	428.91	408.92	19.99	21.456		
2,520.00	2,438.41	2,483.38	2,413.42	12.44	9.96	160.48	-209.81	-388.73	436.38	415.98	20.40	21.391		
2,550.00	2,467.00	2,512.15	2,440.05	12.63	10.18	160.97	-214.84	-398.35	443.89	423.08	20.81	21.332		
2,580.00	2,495.59	2,540.91	2,466.68	12.82	10.40	161.44	-219.87	-407.96	451.44	430.22	21.22	21.277		
2,610.00	2,524.17	2,569.67	2,493.32	13.01	10.62	161.90	-224.90	-417.58	459.02	437.39	21.62	21.227		
2,640.00	2,552.76	2,598.43	2,519.95	13.20	10.84	162.34	-229.93	-427.20	466.63	444.60	22.03	21.181		
2,670.00	2,581.35	2,627.19	2,546.59	13.39	11.06	162.77	-234.97	-436.82	474.27	451.84	22.44	21.138		
2,700.00	2,609.93	2,655.95	2,573.22	13.58	11.28	163.19	-240.00	-446.44	481.95	459.11	22.84	21.100		
2,730.00	2,638.52	2,684.71	2,599.86	13.77	11.50	163.59	-245.03	-456.05	489.65	466.40	23.25	21.064		
2,760.00	2,667.11	2,713.47	2,626.49	13.96	11.72	163.98	-250.06	-465.67	497.38	473.73	23.65	21.032		
2,790.00	2,695.70	2,742.23	2,653.12	14.15	11.94	164.36	-255.09	-475.29	505.13	481.08	24.05	21.002		
2,820.00	2,724.28	2,771.00	2,679.76	14.34	12.16	164.73	-260.12	-484.91	512.91	488.46	24.45	20.975		
2,850.00	2,752.87	2,799.76	2,706.39	14.54	12.38	165.09	-265.15	-494.53	520.72	495.86	24.85	20.951		
2,880.00	2,781.46	2,828.52	2,733.03	14.73	12.61	165.43	-270.18	-504.15	528.54	503.29	25.25	20.929		
2,910.00	2,810.04	2,857.28	2,759.66	14.92	12.83	165.77	-275.22	-513.76	536.39	510.74	25.65	20.909		
2,940.00	2,838.63	2,886.04	2,786.30	15.11	13.05	166.10	-280.25	-523.38	544.26	518.21	26.05	20.890		
2,970.00	2,867.22	2,914.80	2,812.93	15.30	13.28	166.42	-285.28	-533.00	552.15	525.70	26.45	20.874		
3,000.00	2,895.81	2,943.56	2,839.57	15.49	13.50	166.73	-290.31	-542.62	560.05	533.21	26.85	20.859		
3,030.00	2,924.39	2,972.32	2,866.20	15.68	13.72	167.03	-295.34	-552.24	567.98	540.73	27.25	20.846		
3,060.00	2,952.98	3,001.09	2,892.83	15.87	13.94	167.32	-300.37	-561.85	575.92	548.28	27.64	20.835		

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 29-08M
<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 29-08M	<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 29-13M - 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	2,981.57	3,029.85	2,919.47	16.07	14.17	167.60	-305.40	-571.47	583.88	555.84	28.04	20.824		
3,120.00	3,010.16	3,058.61	2,946.10	16.26	14.39	167.88	-310.43	-581.09	591.86	563.42	28.43	20.815		
3,150.00	3,038.74	3,087.37	2,972.74	16.45	14.62	168.15	-315.46	-590.71	599.85	571.02	28.83	20.807		
3,180.00	3,067.33	3,116.13	2,999.37	16.64	14.84	168.41	-320.50	-600.33	607.85	578.63	29.22	20.801		
3,210.00	3,095.92	3,144.89	3,026.01	16.83	15.06	168.67	-325.53	-609.94	615.87	586.25	29.62	20.795		
3,240.00	3,124.50	3,173.65	3,052.64	17.02	15.29	168.92	-330.56	-619.56	623.90	593.89	30.01	20.790		
3,270.00	3,153.09	3,202.41	3,079.27	17.21	15.51	169.16	-335.59	-629.18	631.95	601.54	30.40	20.786		
3,300.00	3,181.68	3,231.18	3,105.91	17.40	15.74	169.40	-340.62	-638.80	640.01	609.21	30.79	20.783		
3,330.00	3,210.27	3,259.94	3,132.54	17.60	15.96	169.63	-345.65	-648.42	648.08	616.89	31.19	20.780		
3,360.00	3,238.85	3,288.70	3,159.18	17.79	16.19	169.85	-350.68	-658.03	656.16	624.58	31.58	20.779		
3,390.00	3,267.44	3,317.46	3,185.81	17.98	16.41	170.07	-355.71	-667.65	664.25	632.28	31.97	20.778		
3,420.00	3,296.03	3,346.22	3,212.45	18.17	16.63	170.29	-360.75	-677.27	672.36	640.00	32.36	20.778		
3,450.00	3,324.61	3,374.98	3,239.08	18.36	16.86	170.50	-365.78	-686.89	680.47	647.72	32.75	20.778		
3,480.00	3,353.20	3,403.74	3,265.71	18.55	17.08	170.70	-370.81	-696.51	688.59	655.46	33.14	20.779		
3,510.00	3,381.79	3,432.50	3,292.35	18.74	17.31	170.90	-375.84	-706.13	696.73	663.20	33.53	20.780		
3,540.00	3,410.38	3,461.26	3,318.98	18.93	17.53	171.10	-380.87	-715.74	704.87	670.96	33.92	20.782		
3,570.00	3,438.96	3,490.03	3,345.62	19.13	17.76	171.29	-385.90	-725.36	713.03	678.72	34.31	20.784		
3,600.00	3,467.55	3,518.79	3,372.25	19.32	17.98	171.48	-390.93	-734.98	721.19	686.49	34.69	20.787		
3,630.00	3,496.14	3,547.55	3,398.89	19.51	18.21	171.66	-395.96	-744.60	729.36	694.28	35.08	20.790		
3,660.00	3,524.72	3,576.31	3,425.52	19.70	18.44	171.84	-401.00	-754.22	737.54	702.07	35.47	20.793		
3,690.00	3,553.31	3,605.07	3,452.15	19.89	18.66	172.02	-406.03	-763.83	745.72	709.87	35.86	20.797		
3,720.00	3,581.90	3,633.83	3,478.79	20.08	18.89	172.19	-411.06	-773.45	753.92	717.67	36.24	20.801		
3,750.00	3,610.49	3,662.59	3,505.42	20.27	19.11	172.36	-416.09	-783.07	762.12	725.49	36.63	20.805		
3,780.00	3,639.07	3,691.35	3,532.06	20.47	19.34	172.52	-421.12	-792.69	770.33	733.31	37.02	20.810		
3,810.00	3,667.66	3,720.12	3,558.69	20.66	19.56	172.68	-426.15	-802.31	778.54	741.14	37.40	20.814		
3,840.00	3,696.25	3,748.88	3,585.33	20.85	19.79	172.84	-431.18	-811.92	786.76	748.97	37.79	20.819		
3,870.00	3,724.83	3,777.64	3,611.96	21.04	20.01	172.99	-436.21	-821.54	794.99	756.82	38.18	20.825		
3,900.00	3,753.42	3,806.40	3,638.59	21.23	20.24	173.14	-441.25	-831.16	803.23	764.67	38.56	20.830		
3,930.00	3,782.01	3,835.16	3,665.23	21.42	20.47	173.29	-446.28	-840.78	811.47	772.52	38.95	20.836		
3,960.00	3,810.60	3,863.92	3,691.86	21.62	20.69	173.44	-451.31	-850.40	819.72	780.39	39.33	20.842		
3,990.00	3,839.18	3,892.68	3,718.50	21.81	20.92	173.58	-456.34	-860.01	827.97	788.25	39.72	20.848		
4,020.00	3,867.77	3,921.44	3,745.13	22.00	21.14	173.72	-461.37	-869.63	836.23	796.13	40.10	20.854		
4,050.00	3,896.36	3,950.21	3,771.77	22.19	21.37	173.86	-466.40	-879.25	844.49	804.01	40.48	20.860		
4,080.00	3,924.95	3,978.97	3,798.40	22.38	21.60	173.99	-471.43	-888.87	852.76	811.89	40.87	20.866		
4,110.00	3,953.53	4,007.73	3,825.03	22.57	21.82	174.12	-476.46	-898.49	861.04	819.78	41.25	20.873		
4,140.00	3,982.12	4,036.49	3,851.67	22.76	22.05	174.25	-481.50	-908.11	869.31	827.68	41.64	20.879		
4,170.00	4,010.71	4,065.25	3,878.30	22.96	22.27	174.38	-486.53	-917.72	877.60	835.58	42.02	20.886		
4,200.00	4,039.29	4,094.01	3,904.94	23.15	22.50	174.50	-491.56	-927.34	885.89	843.49	42.40	20.893		
4,230.00	4,067.88	4,122.77	3,931.57	23.34	22.73	174.63	-496.59	-936.96	894.18	851.40	42.78	20.900		
4,260.00	4,096.47	4,151.53	3,958.21	23.53	22.95	174.75	-501.62	-946.58	902.48	859.31	43.17	20.907		
4,290.00	4,125.06	4,180.30	3,984.84	23.72	23.18	174.86	-506.65	-956.20	910.78	867.23	43.55	20.914		
4,320.00	4,153.64	4,209.06	4,011.47	23.91	23.41	174.98	-511.68	-965.81	919.09	875.16	43.93	20.921		
4,350.00	4,182.23	4,237.82	4,038.11	24.11	23.63	175.09	-516.71	-975.43	927.40	883.08	44.31	20.928		
4,380.00	4,210.82	4,266.58	4,064.74	24.30	23.86	175.20	-521.75	-985.05	935.71	891.02	44.70	20.935		
4,410.00	4,239.40	4,295.34	4,091.38	24.49	24.08	175.31	-526.78	-994.67	944.03	898.95	45.08	20.942		
4,440.00	4,267.99	4,324.10	4,118.01	24.68	24.31	175.42	-531.81	-1,004.29	952.35	906.89	45.46	20.949		
4,470.00	4,296.58	4,352.86	4,144.65	24.87	24.54	175.53	-536.84	-1,013.90	960.68	914.84	45.84	20.956		
4,500.00	4,325.17	4,381.62	4,171.28	25.06	24.76	175.63	-541.87	-1,023.52	969.01	922.79	46.22	20.964		
4,530.00	4,353.75	4,410.38	4,197.91	25.25	24.99	175.73	-546.90	-1,033.14	977.34	930.74	46.60	20.971		
4,560.00	4,382.34	4,439.15	4,224.55	25.45	25.22	175.84	-551.93	-1,042.76	985.68	938.69	46.99	20.978		
4,590.00	4,410.93	4,467.91	4,251.18	25.64	25.44	175.93	-556.96	-1,052.38	994.02	946.65	47.37	20.985		
4,620.00	4,439.51	4,496.67	4,277.82	25.83	25.67	176.03	-562.00	-1,061.99	1,002.36	954.61	47.75	20.993		

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 29-08M
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 29-08M	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 29-13M - 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	4,468.10	4,525.43	4,304.45	26.02	25.90	176.13	-567.03	-1,071.61	1,010.71	962.58	48.13	21.000		
4,680.00	4,496.69	4,554.19	4,331.09	26.21	26.12	176.22	-572.06	-1,081.23	1,019.06	970.55	48.51	21.007		
4,710.00	4,525.28	4,582.95	4,357.72	26.40	26.35	176.31	-577.09	-1,090.85	1,027.41	978.52	48.89	21.015		
4,740.00	4,553.86	4,611.71	4,384.35	26.60	26.58	176.41	-582.12	-1,100.47	1,035.76	986.49	49.27	21.022		
4,770.00	4,582.45	4,640.47	4,410.99	26.79	26.80	176.50	-587.15	-1,110.08	1,044.12	994.47	49.65	21.029		
4,800.00	4,611.04	4,669.24	4,437.62	26.98	27.03	176.58	-592.18	-1,119.70	1,052.48	1,002.45	50.03	21.037		
4,830.00	4,639.63	4,698.00	4,464.26	27.17	27.26	176.67	-597.21	-1,129.32	1,060.85	1,010.43	50.41	21.044		
4,860.00	4,668.21	4,726.76	4,490.89	27.36	27.48	176.76	-602.25	-1,138.94	1,069.21	1,018.42	50.79	21.051		
4,890.00	4,696.80	4,755.52	4,517.53	27.55	27.71	176.84	-607.28	-1,148.56	1,077.58	1,026.41	51.17	21.059		
4,920.00	4,725.39	4,784.28	4,544.16	27.75	27.94	176.92	-612.31	-1,158.18	1,085.95	1,034.40	51.55	21.066		
4,950.00	4,753.97	4,813.04	4,570.79	27.94	28.16	177.01	-617.34	-1,167.79	1,094.32	1,042.40	51.93	21.073		
4,980.00	4,782.56	4,841.80	4,597.43	28.13	28.39	177.09	-622.37	-1,177.41	1,102.70	1,050.39	52.31	21.080		
5,010.00	4,811.15	4,870.56	4,624.06	28.32	28.62	177.17	-627.40	-1,187.03	1,111.08	1,058.39	52.69	21.088		
5,040.00	4,839.74	4,899.75	4,651.09	28.51	28.85	177.25	-632.51	-1,196.79	1,119.46	1,066.39	53.07	21.094		
5,070.00	4,868.33	4,934.69	4,683.54	28.70	29.05	177.43	-638.51	-1,208.27	1,127.75	1,074.32	53.43	21.105		
5,100.00	4,896.98	4,969.78	4,716.28	28.87	29.26	177.60	-644.36	-1,219.45	1,135.81	1,082.00	53.81	21.109		
5,130.00	4,925.73	5,005.04	4,749.33	29.00	29.46	177.76	-650.05	-1,230.33	1,143.61	1,089.47	54.15	21.120		
5,160.00	4,954.57	5,040.44	4,782.67	29.14	29.65	177.92	-655.57	-1,240.89	1,151.15	1,096.68	54.48	21.131		
5,190.00	4,983.49	5,076.00	4,816.30	29.28	29.84	178.07	-660.93	-1,251.12	1,158.43	1,103.62	54.81	21.137		
5,220.00	5,012.50	5,111.71	4,850.21	29.41	30.03	178.22	-666.11	-1,261.02	1,165.44	1,110.32	55.12	21.144		
5,250.00	5,041.58	5,147.55	4,884.40	29.53	30.20	178.36	-671.11	-1,270.59	1,172.18	1,116.76	55.42	21.151		
5,280.00	5,070.74	5,183.54	4,918.85	29.65	30.38	178.50	-675.93	-1,279.81	1,178.66	1,122.94	55.72	21.154		
5,310.00	5,099.97	5,219.66	4,953.55	29.77	30.55	178.63	-680.57	-1,288.68	1,184.86	1,128.85	56.00	21.157		
5,340.00	5,129.27	5,255.91	4,988.50	29.88	30.71	178.76	-685.02	-1,297.19	1,190.79	1,134.51	56.27	21.161		
5,370.00	5,158.63	5,292.28	5,023.70	29.98	30.87	178.88	-689.29	-1,305.33	1,196.44	1,139.90	56.54	21.160		
5,400.00	5,188.06	5,328.77	5,059.12	30.09	31.01	179.00	-693.35	-1,313.10	1,201.82	1,145.02	56.80	21.160		
5,430.00	5,217.55	5,365.38	5,094.76	30.18	31.15	179.11	-697.22	-1,320.50	1,206.91	1,149.88	57.03	21.161		
5,460.00	5,247.09	5,402.09	5,130.61	30.27	31.29	179.22	-700.89	-1,327.51	1,211.73	1,154.46	57.27	21.158		
5,490.00	5,276.69	5,438.91	5,166.66	30.36	31.42	179.32	-704.35	-1,334.13	1,216.27	1,158.78	57.49	21.156		
5,520.00	5,306.33	5,475.82	5,202.90	30.45	31.54	179.41	-707.61	-1,340.35	1,220.52	1,162.82	57.70	21.152		
5,550.00	5,336.03	5,512.83	5,239.32	30.52	31.66	179.50	-710.65	-1,346.18	1,224.49	1,166.59	57.90	21.148		
5,580.00	5,365.76	5,549.92	5,275.90	30.60	31.77	179.58	-713.49	-1,351.60	1,228.18	1,170.09	58.09	21.143		
5,610.00	5,395.54	5,587.09	5,312.64	30.67	31.87	179.65	-716.11	-1,356.61	1,231.58	1,173.30	58.27	21.135		
5,640.00	5,425.35	5,624.33	5,349.52	30.73	31.97	179.72	-718.51	-1,361.20	1,234.69	1,176.25	58.43	21.130		
5,670.00	5,455.20	5,661.64	5,386.53	30.80	32.06	179.79	-720.70	-1,365.38	1,237.51	1,178.92	58.59	21.122		
5,700.00	5,485.07	5,699.01	5,423.66	30.86	32.15	179.84	-722.66	-1,369.14	1,240.04	1,181.30	58.74	21.109		
5,730.00	5,514.98	5,736.44	5,460.89	30.91	32.22	179.89	-724.40	-1,372.47	1,242.29	1,183.42	58.87	21.103		
5,760.00	5,544.90	5,773.91	5,498.22	30.95	32.29	179.94	-725.92	-1,375.37	1,244.24	1,185.25	58.99	21.092		
5,790.00	5,574.85	5,811.43	5,535.63	31.00	32.35	179.97	-727.22	-1,377.84	1,245.90	1,186.79	59.11	21.078		
5,820.00	5,604.81	5,848.98	5,573.11	31.04	32.41	-180.00	-728.28	-1,379.88	1,247.27	1,188.06	59.21	21.067		
5,850.00	5,634.79	5,886.55	5,610.65	31.08	32.46	-179.97	-729.12	-1,381.49	1,248.34	1,189.05	59.30	21.052		
5,880.00	5,664.78	5,924.15	5,648.22	31.11	32.50	-179.95	-729.73	-1,382.66	1,249.13	1,189.75	59.38	21.037		
5,910.00	5,694.77	5,961.77	5,685.83	31.14	32.54	-179.94	-730.12	-1,383.39	1,249.62	1,190.17	59.45	21.020		
5,940.00	5,724.77	5,999.39	5,723.45	31.17	32.57	-179.94	-730.27	-1,383.68	1,249.82	1,190.30	59.51	21.001		
5,970.00	5,754.77	6,030.72	5,754.77	31.19	32.60	-179.94	-730.28	-1,383.69	1,249.82	1,190.25	59.57	20.982		
6,000.00	5,784.77	6,060.72	5,784.77	31.21	32.62	-179.94	-730.28	-1,383.69	1,249.82	1,190.20	59.62	20.965		
6,030.00	5,814.77	6,090.72	5,814.77	31.24	32.64	-179.94	-730.28	-1,383.69	1,249.82	1,190.15	59.67	20.946		
6,060.00	5,844.77	6,120.72	5,844.77	31.27	32.67	-179.94	-730.28	-1,383.69	1,249.82	1,190.10	59.72	20.927		
6,090.00	5,874.77	6,150.72	5,874.77	31.29	32.69	-179.94	-730.28	-1,383.69	1,249.82	1,190.04	59.78	20.908		
6,120.00	5,904.77	6,180.72	5,904.77	31.32	32.71	-179.94	-730.28	-1,383.69	1,249.82	1,189.99	59.83	20.889		
6,150.00	5,934.77	6,210.72	5,934.77	31.35	32.74	-179.94	-730.28	-1,383.69	1,249.82	1,189.94	59.89	20.870		
6,180.00	5,964.77	6,240.72	5,964.77	31.38	32.76	-179.94	-730.28	-1,383.69	1,249.82	1,189.88	59.94	20.851		

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 29-08M
<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 29-08M	<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 29-13M - Wellbore #1 - Design #1													Offset Site Error:	0.00 usft
Survey Program: 0-MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
6,210.00	5,994.77	6,270.72	5,994.77	31.40	32.79	-179.94	-730.28	-1,383.69	1,249.82	1,189.83	60.00	20.832		
6,240.00	6,024.77	6,300.72	6,024.77	31.43	32.81	-179.94	-730.28	-1,383.69	1,249.82	1,189.77	60.05	20.813		
6,270.00	6,054.77	6,330.72	6,054.77	31.46	32.84	-179.94	-730.28	-1,383.69	1,249.82	1,189.71	60.11	20.794		
6,300.00	6,084.77	6,360.72	6,084.77	31.48	32.86	-179.94	-730.28	-1,383.69	1,249.82	1,189.66	60.16	20.774		
6,330.00	6,114.77	6,390.72	6,114.77	31.51	32.88	-179.94	-730.28	-1,383.69	1,249.82	1,189.60	60.22	20.755		
6,360.00	6,144.77	6,420.72	6,144.77	31.54	32.91	-179.94	-730.28	-1,383.69	1,249.82	1,189.55	60.27	20.735		
6,390.00	6,174.77	6,450.72	6,174.77	31.57	32.93	-179.94	-730.28	-1,383.69	1,249.82	1,189.49	60.33	20.716		
6,420.00	6,204.77	6,480.72	6,204.77	31.60	32.96	-179.94	-730.28	-1,383.69	1,249.82	1,189.43	60.39	20.697		
6,450.00	6,234.77	6,510.72	6,234.77	31.63	32.98	-179.94	-730.28	-1,383.69	1,249.82	1,189.38	60.45	20.677		
6,480.00	6,264.77	6,540.72	6,264.77	31.65	33.01	-179.94	-730.28	-1,383.69	1,249.82	1,189.32	60.50	20.657		
6,510.00	6,294.77	6,570.72	6,294.77	31.68	33.03	-179.94	-730.28	-1,383.69	1,249.82	1,189.26	60.56	20.638		
6,540.00	6,324.77	6,600.72	6,324.77	31.71	33.06	-179.94	-730.28	-1,383.69	1,249.82	1,189.20	60.62	20.618		
6,570.00	6,354.77	6,630.72	6,354.77	31.74	33.08	-179.94	-730.28	-1,383.69	1,249.82	1,189.14	60.68	20.598		
6,600.00	6,384.77	6,660.72	6,384.77	31.77	33.11	-179.94	-730.28	-1,383.69	1,249.82	1,189.09	60.73	20.579		
6,630.00	6,414.77	6,690.72	6,414.77	31.80	33.14	-179.94	-730.28	-1,383.69	1,249.82	1,189.03	60.79	20.559		
6,660.00	6,444.77	6,720.72	6,444.77	31.83	33.16	-179.94	-730.28	-1,383.69	1,249.82	1,188.97	60.85	20.539		
6,690.00	6,474.77	6,750.72	6,474.77	31.86	33.19	-179.94	-730.28	-1,383.69	1,249.82	1,188.91	60.91	20.519		
6,720.00	6,504.77	6,780.72	6,504.77	31.88	33.21	-179.94	-730.28	-1,383.69	1,249.82	1,188.85	60.97	20.499		
6,750.00	6,534.77	6,810.72	6,534.77	31.91	33.24	-179.94	-730.28	-1,383.69	1,249.82	1,188.79	61.03	20.479		
6,780.00	6,564.77	6,840.72	6,564.77	31.94	33.27	-179.94	-730.28	-1,383.69	1,249.82	1,188.73	61.09	20.459		
6,810.00	6,594.77	6,870.72	6,594.77	31.97	33.29	-179.94	-730.28	-1,383.69	1,249.82	1,188.67	61.15	20.439		
6,840.00	6,624.77	6,900.72	6,624.77	32.00	33.32	-179.94	-730.28	-1,383.69	1,249.82	1,188.61	61.21	20.419		
6,870.00	6,654.77	6,930.72	6,654.77	32.03	33.35	-179.94	-730.28	-1,383.69	1,249.82	1,188.55	61.27	20.398		
6,900.00	6,684.77	6,960.72	6,684.77	32.06	33.37	-179.94	-730.28	-1,383.69	1,249.82	1,188.49	61.33	20.378		
6,930.00	6,714.77	6,990.72	6,714.77	32.09	33.40	-179.94	-730.28	-1,383.69	1,249.82	1,188.43	61.39	20.358		
6,960.00	6,744.77	7,020.72	6,744.77	32.12	33.43	-179.94	-730.28	-1,383.69	1,249.82	1,188.37	61.45	20.338		
6,990.00	6,774.77	7,050.72	6,774.77	32.15	33.45	-179.94	-730.28	-1,383.69	1,249.82	1,188.31	61.51	20.317		
7,020.00	6,804.77	7,080.72	6,804.77	32.18	33.48	-179.94	-730.28	-1,383.69	1,249.82	1,188.24	61.58	20.297		
7,050.00	6,834.77	7,110.72	6,834.77	32.21	33.51	-179.94	-730.28	-1,383.69	1,249.82	1,188.18	61.64	20.277		
7,080.00	6,864.77	7,140.72	6,864.77	32.24	33.54	-179.94	-730.28	-1,383.69	1,249.82	1,188.12	61.70	20.256		
7,110.00	6,894.77	7,170.72	6,894.77	32.28	33.56	-179.94	-730.28	-1,383.69	1,249.82	1,188.06	61.76	20.236		
7,140.00	6,924.77	7,200.72	6,924.77	32.31	33.59	-179.94	-730.28	-1,383.69	1,249.82	1,188.00	61.83	20.215		
7,170.00	6,954.77	7,230.72	6,954.77	32.34	33.62	-179.94	-730.28	-1,383.69	1,249.82	1,187.93	61.89	20.195		
7,200.00	6,984.77	7,260.72	6,984.77	32.37	33.65	-179.94	-730.28	-1,383.69	1,249.82	1,187.87	61.95	20.174		
7,230.00	7,014.77	7,290.72	7,014.77	32.40	33.68	-179.94	-730.28	-1,383.69	1,249.82	1,187.81	62.01	20.154		
7,260.00	7,044.77	7,320.72	7,044.77	32.43	33.70	-179.94	-730.28	-1,383.69	1,249.82	1,187.74	62.08	20.133		
7,290.00	7,074.77	7,350.72	7,074.77	32.46	33.73	-179.94	-730.28	-1,383.69	1,249.82	1,187.68	62.14	20.112		
7,320.00	7,104.77	7,380.72	7,104.77	32.49	33.76	-179.94	-730.28	-1,383.69	1,249.82	1,187.61	62.21	20.092		
7,350.00	7,134.77	7,410.72	7,134.77	32.53	33.79	-179.94	-730.28	-1,383.69	1,249.82	1,187.55	62.27	20.071		
7,380.00	7,164.77	7,440.72	7,164.77	32.56	33.82	-179.94	-730.28	-1,383.69	1,249.82	1,187.49	62.33	20.050		
7,410.00	7,194.77	7,470.72	7,194.77	32.59	33.85	-179.94	-730.28	-1,383.69	1,249.82	1,187.42	62.40	20.030		
7,440.00	7,224.77	7,500.72	7,224.77	32.62	33.87	-179.94	-730.28	-1,383.69	1,249.82	1,187.36	62.46	20.009		
7,470.00	7,254.77	7,530.72	7,254.77	32.65	33.90	-179.94	-730.28	-1,383.69	1,249.82	1,187.29	62.53	19.988		
7,500.00	7,284.77	7,560.72	7,284.77	32.69	33.93	-179.94	-730.28	-1,383.69	1,249.82	1,187.23	62.59	19.967		
7,530.00	7,314.77	7,590.72	7,314.77	32.72	33.96	-179.94	-730.28	-1,383.69	1,249.82	1,187.16	62.66	19.946		
7,560.00	7,344.77	7,620.72	7,344.77	32.75	33.99	-179.94	-730.28	-1,383.69	1,249.82	1,187.10	62.73	19.925		
7,590.00	7,374.77	7,650.72	7,374.77	32.78	34.02	-179.94	-730.28	-1,383.69	1,249.82	1,187.03	62.79	19.904		
7,620.00	7,404.77	7,680.72	7,404.77	32.82	34.05	-179.94	-730.28	-1,383.69	1,249.82	1,186.96	62.86	19.883		
7,650.00	7,434.77	7,710.72	7,434.77	32.85	34.08	-179.94	-730.28	-1,383.69	1,249.82	1,186.90	62.92	19.862		
7,680.00	7,464.77	7,740.72	7,464.77	32.88	34.11	-179.94	-730.28	-1,383.69	1,249.82	1,186.83	62.99	19.841		
7,710.00	7,494.77	7,770.72	7,494.77	32.91	34.14	-179.94	-730.28	-1,383.69	1,249.82	1,186.76	63.06	19.820		
7,740.00	7,524.77	7,800.72	7,524.77	32.95	34.17	-179.94	-730.28	-1,383.69	1,249.82	1,186.70	63.12	19.799		

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 29-08M
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 29-08M	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

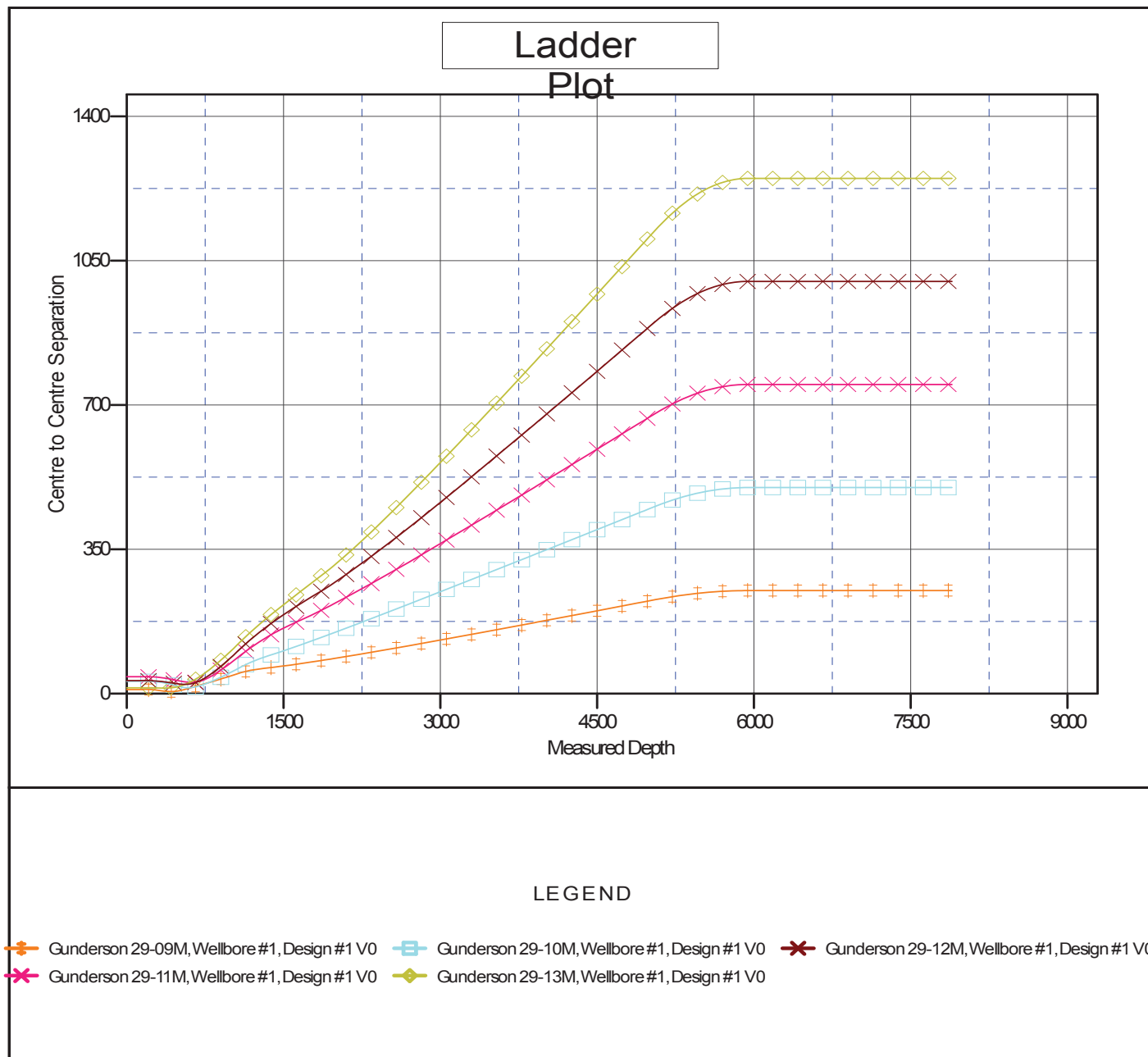
Offset Design										Gunderson - Gunderson 29-13M - Wellbore #1 - Design #1				Offset Site Error:		0.00 usft	
Survey Program: 0-MWD														Offset Well Error:		0.00 usft	
Reference		Offset		Semi Major Axis			Distance							Warning			
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	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					
7,770.00	7,554.77	7,830.72	7,554.77	32.98	34.20	-179.94	-730.28	-1,383.69	1,249.82	1,186.63	63.19	19.778					
7,800.00	7,584.77	7,860.72	7,584.77	33.01	34.23	-179.94	-730.28	-1,383.69	1,249.82	1,186.56	63.26	19.757					
7,830.00	7,614.77	7,890.72	7,614.77	33.05	34.26	-179.94	-730.28	-1,383.69	1,249.82	1,186.49	63.33	19.736					
7,860.00	7,644.77	7,920.72	7,644.77	33.08	34.29	-179.94	-730.28	-1,383.69	1,249.82	1,186.43	63.40	19.715					
7,890.00	7,674.77	7,950.72	7,674.77	33.11	34.32	-179.94	-730.28	-1,383.69	1,249.82	1,186.36	63.46	19.694					
7,895.23	7,680.00	7,955.94	7,680.00	33.12	34.32	-179.94	-730.28	-1,383.69	1,249.82	1,186.35	63.47	19.690					



Company:	Piceance Energy, LLC	Local Co-ordinate Reference:	Well Gunderson 29-08M
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 29-08M	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 29-08M  
Coordinate System is US State Plane 1983, Colorado Central Zone  
Grid Convergence at Surface is: -1.44°





Company:	Piceance Energy, LLC	Local Co-ordinate Reference:	Well Gunderson 29-08M
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 29-08M	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 29-08M  
Coordinate System is US State Plane 1983, Colorado Central Zone  
Grid Convergence at Surface is: -1.44°

