



Piceance Energy, LLC

**Mesa County, CO
Gunderson
Gunderson 29-13E**

Wellbore #1

Plan: Design #1

Standard Planning Report

03 October, 2014

Archer



Project: Mesa County, CO
Site: Gunderson
Well: Gunderson 29-13E
Wellbore: Wellbore #1
Design: Design #1
Latitude: 39.248810
Longitude: -107.787831
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 29-13E, 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 29-13E

+N/-S	+E/-W	Northing	Ground Level: Easting	7536.00 2352174.221	Latitude 39.248810	Longitude -107.787831	Slot
0.00	0.00	1523671.174					

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

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
Gunderson 29-13E tgt	7680.00	-733.62	295.68	1522930.341	2352451.330	39.246796	-107.786787	Circle (Radius: 50.00)

SECTION DETAILS

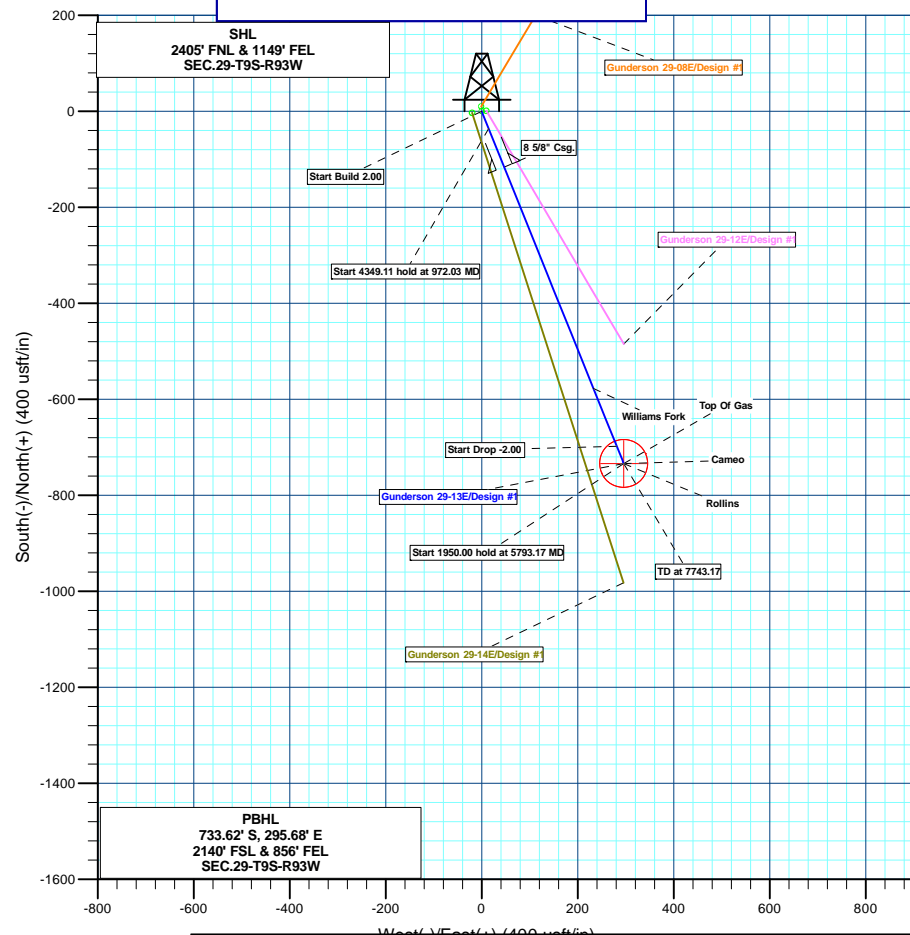
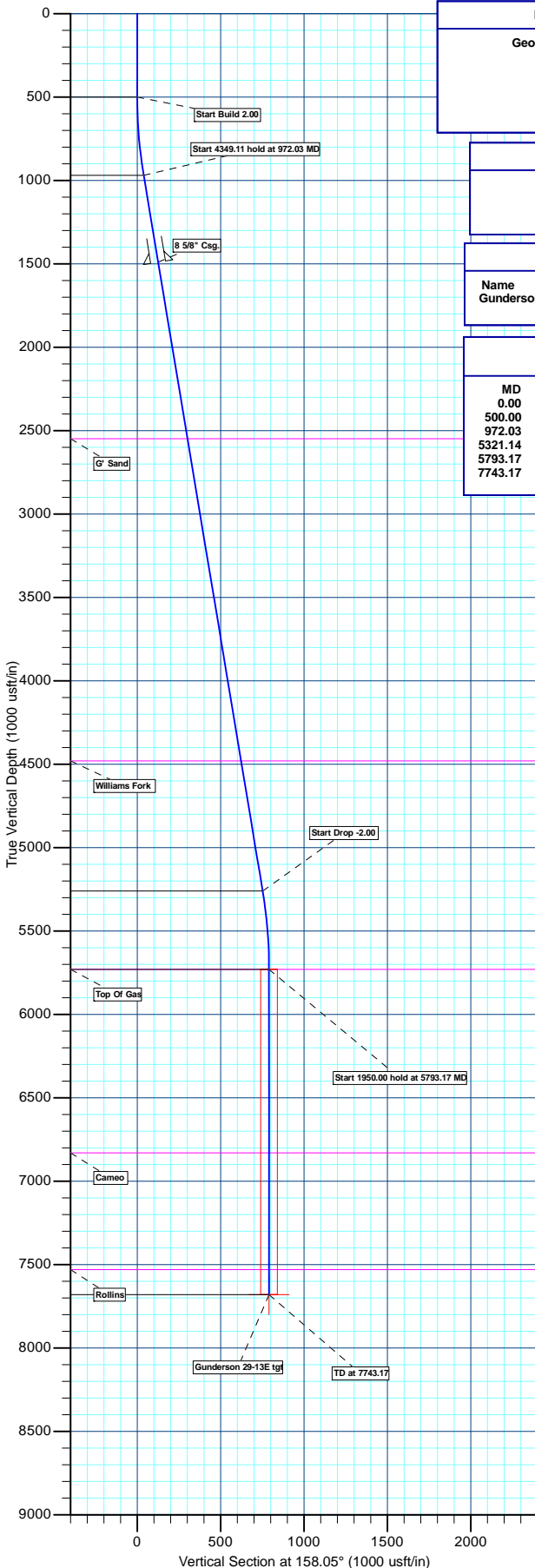
MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Annotation
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	Start Build 2.00
972.03	9.44	158.05	969.90	-35.99	14.50	2.00	158.05	38.80	Start 4349.11 hold at 972.03 MD
5321.14	9.44	158.05	5260.10	-697.63	281.17	0.00	0.00	752.16	Start Drop -2.00
5793.17	0.00	0.00	5730.00	-733.62	295.68	2.00	180.00	790.96	Start 1950.00 hold at 5793.17 MD
7743.17	0.00	0.00	7680.00	-733.62	295.68	0.00	0.00	790.96	TD at 7743.17



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

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
2548.00	2571.80	G' Sand
4480.00	4530.33	Williams Fork
5730.00	5793.17	Top Of Gas
6830.00	6893.17	Cameo
7530.00	7593.17	Rollins



Plan: Design #1 (Gunderson 29-13E/Wellbore #1)

Created By: Ricky Osburn Date: 6:24, October 03 2014



Database:	EDMDBBW	Local Co-ordinate Reference:	Well Gunderson 29-13E
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 29-13E	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Project	Mesa County, CO		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	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 29-13E					
Well Position	+N/-S	2.54 usft	Northing:	1,523,671.174 usft	Latitude:	39.248810
	+E/-W	110.44 usft	Easting:	2,352,174.221 usft	Longitude:	-107.787831
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	7,536.00 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	10/02/14	9.80	65.48	51,797

Design	Design #1			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	158.05

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00	
972.03	9.44	158.05	969.90	-35.99	14.50	2.00	2.00	0.00	158.05	
5,321.14	9.44	158.05	5,260.10	-697.63	281.17	0.00	0.00	0.00	0.00	
5,793.17	0.00	0.00	5,730.00	-733.62	295.68	2.00	-2.00	0.00	180.00	
7,743.17	0.00	0.00	7,680.00	-733.62	295.68	0.00	0.00	0.00	0.00	Gunderson 29-13E tg



Database:	EDMDBBW	Local Co-ordinate Reference:	Well Gunderson 29-13E
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 29-13E	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
Start Build 2.00									
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	2.00	158.05	599.98	-1.62	0.65	1.75	2.00	2.00	0.00
700.00	4.00	158.05	699.84	-6.47	2.61	6.98	2.00	2.00	0.00
800.00	6.00	158.05	799.45	-14.56	5.87	15.69	2.00	2.00	0.00
900.00	8.00	158.05	898.70	-25.86	10.42	27.88	2.00	2.00	0.00
Start 4349.11 hold at 972.03 MD									
972.03	9.44	158.05	969.90	-35.99	14.50	38.80	2.00	2.00	0.00
1,000.00	9.44	158.05	997.49	-40.24	16.22	43.39	0.00	0.00	0.00
1,100.00	9.44	158.05	1,096.13	-55.46	22.35	59.79	0.00	0.00	0.00
1,200.00	9.44	158.05	1,194.78	-70.67	28.48	76.19	0.00	0.00	0.00
1,300.00	9.44	158.05	1,293.43	-85.88	34.61	92.60	0.00	0.00	0.00
1,400.00	9.44	158.05	1,392.07	-101.10	40.75	109.00	0.00	0.00	0.00
8 5/8" Csg.									
1,500.00	9.44	158.05	1,490.72	-116.31	46.88	125.40	0.00	0.00	0.00
1,600.00	9.44	158.05	1,589.36	-131.52	53.01	141.80	0.00	0.00	0.00
1,700.00	9.44	158.05	1,688.01	-146.74	59.14	158.21	0.00	0.00	0.00
1,800.00	9.44	158.05	1,786.65	-161.95	65.27	174.61	0.00	0.00	0.00
1,900.00	9.44	158.05	1,885.30	-177.16	71.40	191.01	0.00	0.00	0.00
2,000.00	9.44	158.05	1,983.94	-192.38	77.53	207.41	0.00	0.00	0.00
2,100.00	9.44	158.05	2,082.59	-207.59	83.67	223.82	0.00	0.00	0.00
2,200.00	9.44	158.05	2,181.24	-222.80	89.80	240.22	0.00	0.00	0.00
2,300.00	9.44	158.05	2,279.88	-238.02	95.93	256.62	0.00	0.00	0.00
2,400.00	9.44	158.05	2,378.53	-253.23	102.06	273.02	0.00	0.00	0.00
2,500.00	9.44	158.05	2,477.17	-268.44	108.19	289.43	0.00	0.00	0.00
G' Sand									
2,571.80	9.44	158.05	2,548.00	-279.37	112.60	301.20	0.00	0.00	0.00
2,600.00	9.44	158.05	2,575.82	-283.66	114.32	305.83	0.00	0.00	0.00
2,700.00	9.44	158.05	2,674.46	-298.87	120.46	322.23	0.00	0.00	0.00
2,800.00	9.44	158.05	2,773.11	-314.08	126.59	338.63	0.00	0.00	0.00
2,900.00	9.44	158.05	2,871.75	-329.30	132.72	355.04	0.00	0.00	0.00
3,000.00	9.44	158.05	2,970.40	-344.51	138.85	371.44	0.00	0.00	0.00
3,100.00	9.44	158.05	3,069.05	-359.72	144.98	387.84	0.00	0.00	0.00
3,200.00	9.44	158.05	3,167.69	-374.94	151.11	404.24	0.00	0.00	0.00
3,300.00	9.44	158.05	3,266.34	-390.15	157.25	420.65	0.00	0.00	0.00
3,400.00	9.44	158.05	3,364.98	-405.36	163.38	437.05	0.00	0.00	0.00
3,500.00	9.44	158.05	3,463.63	-420.58	169.51	453.45	0.00	0.00	0.00
3,600.00	9.44	158.05	3,562.27	-435.79	175.64	469.85	0.00	0.00	0.00
3,700.00	9.44	158.05	3,660.92	-451.00	181.77	486.26	0.00	0.00	0.00
3,800.00	9.44	158.05	3,759.57	-466.22	187.90	502.66	0.00	0.00	0.00
3,900.00	9.44	158.05	3,858.21	-481.43	194.03	519.06	0.00	0.00	0.00
4,000.00	9.44	158.05	3,956.86	-496.64	200.17	535.46	0.00	0.00	0.00
4,100.00	9.44	158.05	4,055.50	-511.86	206.30	551.87	0.00	0.00	0.00
4,200.00	9.44	158.05	4,154.15	-527.07	212.43	568.27	0.00	0.00	0.00
4,300.00	9.44	158.05	4,252.79	-542.28	218.56	584.67	0.00	0.00	0.00
4,400.00	9.44	158.05	4,351.44	-557.50	224.69	601.07	0.00	0.00	0.00
4,500.00	9.44	158.05	4,450.08	-572.71	230.82	617.48	0.00	0.00	0.00
Williams Fork									
4,530.33	9.44	158.05	4,480.00	-577.32	232.68	622.45	0.00	0.00	0.00



Database:	EDMDBBW	Local Co-ordinate Reference:	Well Gunderson 29-13E
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 29-13E	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,600.00	9.44	158.05	4,548.73	-587.92	236.96	633.88	0.00	0.00	0.00
4,700.00	9.44	158.05	4,647.38	-603.14	243.09	650.28	0.00	0.00	0.00
4,800.00	9.44	158.05	4,746.02	-618.35	249.22	666.68	0.00	0.00	0.00
4,900.00	9.44	158.05	4,844.67	-633.56	255.35	683.09	0.00	0.00	0.00
5,000.00	9.44	158.05	4,943.31	-648.78	261.48	699.49	0.00	0.00	0.00
5,100.00	9.44	158.05	5,041.96	-663.99	267.61	715.89	0.00	0.00	0.00
5,200.00	9.44	158.05	5,140.60	-679.20	273.74	732.29	0.00	0.00	0.00
5,300.00	9.44	158.05	5,239.25	-694.42	279.88	748.70	0.00	0.00	0.00
Start Drop -2.00									
5,321.14	9.44	158.05	5,260.10	-697.63	281.17	752.16	0.00	0.00	0.00
5,400.00	7.86	158.05	5,338.06	-708.64	285.61	764.03	2.00	-2.00	0.00
5,500.00	5.86	158.05	5,437.34	-719.72	290.07	775.98	2.00	-2.00	0.00
5,600.00	3.86	158.05	5,536.98	-727.58	293.24	784.45	2.00	-2.00	0.00
5,700.00	1.86	158.05	5,636.85	-732.21	295.11	789.45	2.00	-2.00	0.00
Start 1950.00 hold at 5793.17 MD - Top Of Gas									
5,793.17	0.00	0.00	5,730.00	-733.62	295.68	790.96	2.00	-2.00	0.00
5,800.00	0.00	0.00	5,736.83	-733.62	295.68	790.96	0.00	0.00	0.00
5,900.00	0.00	0.00	5,836.83	-733.62	295.68	790.96	0.00	0.00	0.00
6,000.00	0.00	0.00	5,936.83	-733.62	295.68	790.96	0.00	0.00	0.00
6,100.00	0.00	0.00	6,036.83	-733.62	295.68	790.96	0.00	0.00	0.00
6,200.00	0.00	0.00	6,136.83	-733.62	295.68	790.96	0.00	0.00	0.00
6,300.00	0.00	0.00	6,236.83	-733.62	295.68	790.96	0.00	0.00	0.00
6,400.00	0.00	0.00	6,336.83	-733.62	295.68	790.96	0.00	0.00	0.00
6,500.00	0.00	0.00	6,436.83	-733.62	295.68	790.96	0.00	0.00	0.00
6,600.00	0.00	0.00	6,536.83	-733.62	295.68	790.96	0.00	0.00	0.00
6,700.00	0.00	0.00	6,636.83	-733.62	295.68	790.96	0.00	0.00	0.00
6,800.00	0.00	0.00	6,736.83	-733.62	295.68	790.96	0.00	0.00	0.00
Cameo									
6,893.17	0.00	0.00	6,830.00	-733.62	295.68	790.96	0.00	0.00	0.00
6,900.00	0.00	0.00	6,836.83	-733.62	295.68	790.96	0.00	0.00	0.00
7,000.00	0.00	0.00	6,936.83	-733.62	295.68	790.96	0.00	0.00	0.00
7,100.00	0.00	0.00	7,036.83	-733.62	295.68	790.96	0.00	0.00	0.00
7,200.00	0.00	0.00	7,136.83	-733.62	295.68	790.96	0.00	0.00	0.00
7,300.00	0.00	0.00	7,236.83	-733.62	295.68	790.96	0.00	0.00	0.00
7,400.00	0.00	0.00	7,336.83	-733.62	295.68	790.96	0.00	0.00	0.00
7,500.00	0.00	0.00	7,436.83	-733.62	295.68	790.96	0.00	0.00	0.00
Rollins									
7,593.17	0.00	0.00	7,530.00	-733.62	295.68	790.96	0.00	0.00	0.00
7,600.00	0.00	0.00	7,536.83	-733.62	295.68	790.96	0.00	0.00	0.00
7,700.00	0.00	0.00	7,636.83	-733.62	295.68	790.96	0.00	0.00	0.00
TD at 7743.17									
7,743.17	0.00	0.00	7,680.00	-733.62	295.68	790.96	0.00	0.00	0.00

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
Gunderson 29-13E tgt	0.00	0.00	7,680.00	-733.62	295.68	1,522,930.341	2,352,451.330	39.246796	-107.786787
- plan hits target center									
- Circle (radius 50.00)									



Database:	EDMDBBW	Local Co-ordinate Reference:	Well Gunderson 29-13E
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 29-13E	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
1,500.00	1,490.72	8 5/8" Csg.	8-5/8	12-1/4	

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
2,571.80	2,548.00	G' Sand		0.00	
4,530.33	4,480.00	Williams Fork		0.00	
5,793.17	5,730.00	Top Of Gas		0.00	
6,893.17	6,830.00	Cameo		0.00	
7,593.17	7,530.00	Rollins		0.00	

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
500.00	500.00	0.00	0.00	Start Build 2.00	
972.03	969.90	-35.99	14.50	Start 4349.11 hold at 972.03 MD	
5,321.14	5,260.10	-697.63	281.17	Start Drop -2.00	
5,793.17	5,730.00	-733.62	295.68	Start 1950.00 hold at 5793.17 MD	
7,743.17	7,680.00	-733.62	295.68	TD at 7743.17	



Piceance Energy, LLC

Mesa County, CO

Gunderson

Gunderson 29-13E

Wellbore #1

Design #1

Anticollision Report

03 October, 2014

Archer



Company:	Piceance Energy, LLC	Local Co-ordinate Reference:	Well Gunderson 29-13E
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 29-13E	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDMDBBW
Reference Design:	Design #1	Offset TVD Reference:	Reference Datum

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

Survey Tool Program	Date	10/03/14		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.00	7,743.17	Design #1 (Wellbore #1)	MWD	MWD - Standard

Summary						
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 29-08E - Wellbore #1 - Design #1	300.00	300.00	10.01	8.94	9.357	CC
Gunderson 29-08E - Wellbore #1 - Design #1	330.00	329.92	10.14	8.93	8.414	ES
Gunderson 29-08E - Wellbore #1 - Design #1	420.00	419.60	12.10	10.49	7.512	SF
Gunderson 29-12E - Wellbore #1 - Design #1	300.00	300.00	9.98	8.91	9.328	CC
Gunderson 29-12E - Wellbore #1 - Design #1	330.00	329.96	10.04	8.85	8.386	ES
Gunderson 29-12E - Wellbore #1 - Design #1	1,380.00	1,377.53	24.81	17.95	3.618	SF
Gunderson 29-14E - Wellbore #1 - Design #1	328.20	328.25	19.96	18.79	17.063	CC
Gunderson 29-14E - Wellbore #1 - Design #1	360.00	359.99	20.03	18.72	15.313	ES
Gunderson 29-14E - Wellbore #1 - Design #1	7,743.17	7,781.79	248.76	212.57	6.874	SF

Offset Design Gunderson - Gunderson 29-08E - Wellbore #1 - Design #1													Offset Site Error:	0.00 usft
Survey Program:		0-MWD											Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.00	-6.66	9.94	-1.16	10.01					
30.00	30.00	30.00	30.00	0.01	0.03	-6.66	9.94	-1.16	10.01	9.98	0.03	309.293		
60.00	60.00	60.00	60.00	0.04	0.05	-6.66	9.94	-1.16	10.01	9.92	0.09	109.162		
90.00	90.00	90.00	90.00	0.07	0.08	-6.66	9.94	-1.16	10.01	9.86	0.15	66.277		
120.00	120.00	120.00	120.00	0.13	0.13	-6.66	9.94	-1.16	10.01	9.75	0.26	38.395		
150.00	150.00	150.00	150.00	0.20	0.20	-6.66	9.94	-1.16	10.01	9.62	0.40	25.306		
180.00	180.00	180.00	180.00	0.27	0.27	-6.66	9.94	-1.16	10.01	9.48	0.53	18.872		
210.00	210.00	210.00	210.00	0.33	0.33	-6.66	9.94	-1.16	10.01	9.35	0.67	15.047		
240.00	240.00	240.00	240.00	0.40	0.40	-6.66	9.94	-1.16	10.01	9.21	0.80	12.511		
270.00	270.00	270.00	270.00	0.47	0.47	-6.66	9.94	-1.16	10.01	9.08	0.94	10.706		
300.00	300.00	300.00	300.00	0.53	0.53	-6.66	9.94	-1.16	10.01	8.94	1.07	9.357 CC		
330.00	330.00	329.92	329.92	0.60	0.60	-6.12	10.08	-1.08	10.14	8.93	1.20	8.414 ES		
360.00	360.00	359.83	359.82	0.67	0.67	-4.59	10.48	-0.84	10.51	9.18	1.34	7.851		
390.00	390.00	389.72	389.71	0.74	0.74	-2.27	11.15	-0.44	11.16	9.69	1.47	7.572		
420.00	420.00	419.60	419.56	0.80	0.81	0.55	12.09	0.12	12.10	10.49	1.61	7.512 SF		
450.00	450.00	449.45	449.38	0.87	0.88	3.59	13.29	0.83	13.33	11.58	1.75	7.631		
480.00	480.00	479.27	479.15	0.94	0.94	6.61	14.76	1.71	14.88	13.00	1.88	7.901		
510.00	510.00	509.05	508.86	1.00	1.01	9.41	16.49	2.74	16.77	14.75	2.02	8.307		

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



Archer

Anticollision Report



Company:	Piceance Energy, LLC	Local Co-ordinate Reference:	Well Gunderson 29-13E
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 29-13E	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDMDBBW
Reference Design:	Design #1	Offset TVD Reference:	Reference Datum

Offset Design Gunderson - Gunderson 29-08E - Wellbore #1 - Design #1													Offset Site Error:	0.00 usft
Survey Program: 0-MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
540.00	540.00	538.77	538.49	1.06	1.08	11.54	18.49	3.93	19.19	17.04	2.15	8.914		
570.00	569.99	568.41	568.02	1.12	1.16	12.95	20.74	5.27	22.18	19.89	2.29	9.699		
600.00	599.98	597.96	597.42	1.18	1.23	13.81	23.24	6.77	25.73	23.31	2.42	10.630		
630.00	629.96	627.42	626.71	1.24	1.30	14.27	26.00	8.41	29.82	27.27	2.56	11.656		
660.00	659.92	657.09	656.19	1.30	1.38	14.37	28.89	10.13	34.30	31.61	2.69	12.765		
690.00	689.86	686.71	685.62	1.36	1.46	14.17	31.77	11.85	39.02	36.21	2.81	13.870		
720.00	719.78	716.30	715.01	1.42	1.54	13.77	34.65	13.57	44.00	41.06	2.94	14.947		
750.00	749.68	745.83	744.36	1.48	1.63	13.24	37.53	15.28	49.23	46.15	3.08	16.008		
780.00	779.55	775.32	773.66	1.54	1.71	12.62	40.40	16.99	54.71	51.51	3.21	17.064		
810.00	809.40	804.76	802.91	1.61	1.79	11.94	43.27	18.70	60.46	57.12	3.34	18.107		
840.00	839.20	834.14	832.10	1.69	1.88	11.23	46.13	20.41	66.46	62.99	3.48	19.125		
870.00	868.97	863.47	861.23	1.76	1.96	10.51	48.98	22.11	72.74	69.13	3.61	20.143		
900.00	898.70	892.73	890.31	1.84	2.04	9.77	51.83	23.81	79.28	75.53	3.75	21.163		
930.00	928.39	921.93	919.31	1.92	2.13	9.05	54.67	25.50	86.09	82.21	3.89	22.156		
960.00	958.03	951.05	948.26	2.01	2.21	8.32	57.51	27.19	93.18	89.16	4.02	23.152		
990.00	987.62	980.13	977.14	2.10	2.30	7.63	60.34	28.88	100.50	96.33	4.16	24.134		
1,020.00	1,017.22	1,009.19	1,006.02	2.20	2.38	7.03	63.17	30.57	107.85	103.54	4.31	25.046		
1,050.00	1,046.81	1,038.26	1,034.90	2.29	2.47	6.50	66.00	32.25	115.21	110.76	4.45	25.898		
1,080.00	1,076.40	1,067.32	1,063.77	2.39	2.55	6.03	68.83	33.94	122.57	117.98	4.59	26.699		
1,110.00	1,106.00	1,096.39	1,092.65	2.49	2.64	5.62	71.66	35.63	129.95	125.21	4.73	27.448		
1,140.00	1,135.59	1,125.45	1,121.53	2.59	2.72	5.25	74.49	37.31	137.33	132.45	4.88	28.146		
1,170.00	1,165.19	1,154.52	1,150.41	2.69	2.81	4.92	77.32	39.00	144.72	139.69	5.02	28.804		
1,200.00	1,194.78	1,183.58	1,179.28	2.79	2.90	4.63	80.15	40.69	152.11	146.94	5.17	29.425		
1,230.00	1,224.37	1,212.65	1,208.16	2.90	2.98	4.36	82.98	42.37	159.50	154.19	5.32	30.007		
1,260.00	1,253.97	1,241.71	1,237.04	3.01	3.07	4.11	85.81	44.06	166.90	161.44	5.46	30.558		
1,290.00	1,283.56	1,270.78	1,265.92	3.11	3.16	3.88	88.64	45.75	174.30	168.69	5.61	31.074		
1,320.00	1,313.15	1,299.84	1,294.80	3.22	3.24	3.68	91.47	47.44	181.70	175.94	5.76	31.557		
1,350.00	1,342.75	1,328.91	1,323.67	3.32	3.33	3.49	94.30	49.12	189.11	183.20	5.91	32.015		
1,380.00	1,372.34	1,357.97	1,352.55	3.43	3.42	3.31	97.13	50.81	196.51	190.46	6.06	32.455		
1,410.00	1,401.94	1,387.04	1,381.43	3.54	3.50	3.15	99.97	52.50	203.92	197.72	6.20	32.869		
1,440.00	1,431.53	1,416.10	1,410.31	3.65	3.59	2.99	102.80	54.18	211.33	204.98	6.35	33.257		
1,470.00	1,461.12	1,445.17	1,439.19	3.76	3.68	2.85	105.63	55.87	218.74	212.24	6.50	33.638		
1,500.00	1,490.72	1,474.23	1,468.06	3.87	3.76	2.72	108.46	57.56	226.16	219.51	6.65	34.004		
1,530.00	1,520.31	1,503.30	1,496.94	3.98	3.85	2.60	111.29	59.24	233.57	226.77	6.80	34.348		
1,560.00	1,549.90	1,532.37	1,525.82	4.09	3.94	2.48	114.12	60.93	240.98	234.03	6.95	34.673		
1,590.00	1,579.50	1,561.43	1,554.70	4.20	4.02	2.37	116.95	62.62	248.40	241.30	7.10	34.981		
1,620.00	1,609.09	1,590.50	1,583.58	4.31	4.11	2.27	119.78	64.30	255.82	248.57	7.25	35.277		
1,650.00	1,638.68	1,619.56	1,612.45	4.42	4.20	2.17	122.61	65.99	263.23	255.83	7.40	35.561		
1,680.00	1,668.28	1,648.63	1,641.33	4.53	4.29	2.08	125.44	67.68	270.65	263.10	7.55	35.832		
1,710.00	1,697.87	1,677.69	1,670.21	4.64	4.37	1.99	128.27	69.37	278.07	270.37	7.70	36.092		
1,740.00	1,727.47	1,706.76	1,699.09	4.76	4.46	1.91	131.10	71.05	285.49	277.63	7.86	36.342		
1,770.00	1,757.06	1,735.82	1,727.97	4.87	4.55	1.83	133.93	72.74	292.91	284.90	8.01	36.581		
1,800.00	1,786.65	1,764.89	1,756.84	4.98	4.63	1.76	136.76	74.43	300.33	292.17	8.16	36.811		
1,830.00	1,816.25	1,793.95	1,785.72	5.09	4.72	1.68	139.59	76.11	307.75	299.44	8.31	37.032		
1,860.00	1,845.84	1,823.02	1,814.60	5.21	4.81	1.62	142.42	77.80	315.17	306.71	8.46	37.245		
1,890.00	1,875.43	1,852.08	1,843.48	5.32	4.90	1.55	145.25	79.49	322.59	313.98	8.61	37.449		
1,920.00	1,905.03	1,881.15	1,872.35	5.43	4.98	1.49	148.08	81.17	330.02	321.25	8.77	37.647		
1,950.00	1,934.62	1,910.21	1,901.23	5.55	5.07	1.43	150.91	82.86	337.44	328.52	8.92	37.836		
1,980.00	1,964.22	1,939.28	1,930.11	5.66	5.16	1.38	153.74	84.55	344.86	335.79	9.07	38.019		
2,010.00	1,993.81	1,968.34	1,958.99	5.77	5.25	1.32	156.57	86.23	352.29	343.06	9.22	38.196		
2,040.00	2,023.40	1,997.41	1,987.87	5.89	5.33	1.27	159.40	87.92	359.71	350.33	9.38	38.367		
2,070.00	2,053.00	2,026.47	2,016.74	6.00	5.42	1.22	162.23	89.61	367.13	357.60	9.53	38.532		

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



Archer

Anticollision Report



Company:	Piceance Energy, LLC	Local Co-ordinate Reference:	Well Gunderson 29-13E
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 29-13E	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDMDBBW
Reference Design:	Design #1	Offset TVD Reference:	Reference Datum

Offset Design Gunderson - Gunderson 29-08E - Wellbore #1 - Design #1													Offset Site Error:	0.00 usft
Survey Program: 0-MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
2,100.00	2,082.59	2,055.54	2,045.62	6.11	5.51	1.17	165.06	91.30	374.56	364.88	9.68	38.691		
2,130.00	2,112.18	2,084.61	2,074.50	6.23	5.60	1.13	167.89	92.98	381.98	372.15	9.83	38.845		
2,160.00	2,141.78	2,113.67	2,103.38	6.34	5.69	1.08	170.72	94.67	389.41	379.42	9.99	38.994		
2,190.00	2,171.37	2,142.74	2,132.26	6.45	5.77	1.04	173.55	96.36	396.83	386.69	10.14	39.138		
2,220.00	2,200.96	2,171.80	2,161.13	6.57	5.86	1.00	176.38	98.04	404.25	393.96	10.29	39.278		
2,250.00	2,230.56	2,200.87	2,190.01	6.68	5.95	0.96	179.21	99.73	411.68	401.23	10.45	39.414		
2,280.00	2,260.15	2,229.93	2,218.89	6.80	6.04	0.92	182.04	101.42	419.11	408.51	10.60	39.545		
2,310.00	2,289.75	2,259.00	2,247.77	6.91	6.12	0.89	184.87	103.10	426.53	415.78	10.75	39.672		
2,340.00	2,319.34	2,288.06	2,276.65	7.02	6.21	0.85	187.70	104.79	433.96	423.05	10.90	39.796		
2,370.00	2,348.93	2,317.13	2,305.52	7.14	6.30	0.82	190.53	106.48	441.38	430.32	11.06	39.916		
2,400.00	2,378.53	2,346.19	2,334.40	7.25	6.39	0.78	193.36	108.16	448.81	437.60	11.21	40.032		
2,430.00	2,408.12	2,375.26	2,363.28	7.37	6.47	0.75	196.19	109.85	456.23	444.87	11.36	40.145		
2,460.00	2,437.71	2,404.32	2,392.16	7.48	6.56	0.72	199.02	111.54	463.66	452.14	11.52	40.255		
2,490.00	2,467.31	2,433.39	2,421.04	7.60	6.65	0.69	201.85	113.23	471.09	459.42	11.67	40.362		
2,520.00	2,496.90	2,462.45	2,449.91	7.71	6.74	0.66	204.68	114.91	478.51	466.69	11.83	40.466		
2,550.00	2,526.50	2,491.52	2,478.79	7.83	6.83	0.63	207.51	116.60	485.94	473.96	11.98	40.567		
2,580.00	2,556.09	2,520.58	2,507.67	7.94	6.91	0.61	210.34	118.29	493.37	481.23	12.13	40.666		
2,610.00	2,585.68	2,549.65	2,536.55	8.06	7.00	0.58	213.17	119.97	500.79	488.51	12.29	40.761		
2,640.00	2,615.28	2,578.72	2,565.42	8.17	7.09	0.55	216.00	121.66	508.22	495.78	12.44	40.855		
2,670.00	2,644.87	2,607.78	2,594.30	8.29	7.18	0.53	218.83	123.35	515.65	503.05	12.59	40.946		
2,700.00	2,674.46	2,636.85	2,623.18	8.40	7.27	0.50	221.66	125.03	523.07	510.33	12.75	41.034		
2,730.00	2,704.06	2,665.91	2,652.06	8.51	7.35	0.48	224.49	126.72	530.50	517.60	12.90	41.121		
2,760.00	2,733.65	2,694.98	2,680.94	8.63	7.44	0.46	227.33	128.41	537.93	524.87	13.05	41.205		
2,790.00	2,763.24	2,724.04	2,709.81	8.74	7.53	0.44	230.16	130.09	545.36	532.15	13.21	41.287		
2,820.00	2,792.84	2,753.11	2,738.69	8.86	7.62	0.41	232.99	131.78	552.78	539.42	13.36	41.367		
2,850.00	2,822.43	2,782.17	2,767.57	8.97	7.71	0.39	235.82	133.47	560.21	546.69	13.52	41.446		
2,880.00	2,852.03	2,811.24	2,796.45	9.09	7.79	0.37	238.65	135.16	567.64	553.97	13.67	41.522		
2,910.00	2,881.62	2,840.30	2,825.33	9.20	7.88	0.35	241.48	136.84	575.07	561.24	13.82	41.597		
2,940.00	2,911.21	2,869.37	2,854.20	9.32	7.97	0.33	244.31	138.53	582.49	568.52	13.98	41.670		
2,970.00	2,940.81	2,898.43	2,883.08	9.44	8.06	0.31	247.14	140.22	589.92	575.79	14.13	41.741		
3,000.00	2,970.40	2,927.50	2,911.96	9.55	8.14	0.29	249.97	141.90	597.35	583.06	14.29	41.811		
3,030.00	2,999.99	2,956.56	2,940.84	9.67	8.23	0.28	252.80	143.59	604.78	590.34	14.44	41.879		
3,060.00	3,029.59	2,985.63	2,969.72	9.78	8.32	0.26	255.63	145.28	612.21	597.61	14.60	41.945		
3,090.00	3,059.18	3,014.69	2,998.59	9.90	8.41	0.24	258.46	146.96	619.63	604.88	14.75	42.010		
3,120.00	3,088.78	3,043.76	3,027.47	10.01	8.50	0.22	261.29	148.65	627.06	612.16	14.90	42.074		
3,150.00	3,118.37	3,072.82	3,056.35	10.13	8.58	0.21	264.12	150.34	634.49	619.43	15.06	42.136		
3,180.00	3,147.96	3,101.89	3,085.23	10.24	8.67	0.19	266.95	152.03	641.92	626.71	15.21	42.197		
3,210.00	3,177.56	3,130.96	3,114.11	10.36	8.76	0.18	269.78	153.71	649.35	633.98	15.37	42.257		
3,240.00	3,207.15	3,160.02	3,142.98	10.47	8.85	0.16	272.61	155.40	656.78	641.25	15.52	42.315		
3,270.00	3,236.74	3,189.09	3,171.86	10.59	8.94	0.15	275.44	157.09	664.20	648.53	15.68	42.372		
3,300.00	3,266.34	3,218.15	3,200.74	10.70	9.02	0.13	278.27	158.77	671.63	655.80	15.83	42.429		
3,330.00	3,295.93	3,247.22	3,229.62	10.82	9.11	0.12	281.10	160.46	679.06	663.08	15.98	42.483		
3,360.00	3,325.52	3,276.28	3,258.49	10.93	9.20	0.10	283.93	162.15	686.49	670.35	16.14	42.537		
3,390.00	3,355.12	3,305.35	3,287.37	11.05	9.29	0.09	286.76	163.83	693.92	677.62	16.29	42.590		
3,420.00	3,384.71	3,334.41	3,316.25	11.16	9.38	0.08	289.59	165.52	701.35	684.90	16.45	42.642		
3,450.00	3,414.31	3,363.48	3,345.13	11.28	9.46	0.06	292.42	167.21	708.77	692.17	16.60	42.692		
3,480.00	3,443.90	3,392.54	3,374.01	11.40	9.55	0.05	295.25	168.89	716.20	699.45	16.76	42.742		
3,510.00	3,473.49	3,421.61	3,402.88	11.51	9.64	0.04	298.08	170.58	723.63	706.72	16.91	42.791		
3,540.00	3,503.09	3,450.67	3,431.76	11.63	9.73	0.02	300.91	172.27	731.06	713.99	17.07	42.839		
3,570.00	3,532.68	3,479.74	3,460.64	11.74	9.82	0.01	303.74	173.96	738.49	721.27	17.22	42.886		
3,600.00	3,562.27	3,508.80	3,489.52	11.86	9.90	0.00	306.57	175.64	745.92	728.54	17.37	42.932		
3,630.00	3,591.87	3,537.87	3,518.40	11.97	9.99	-0.01	309.40	177.33	753.35	735.82	17.53	42.977		

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



Archer

Anticollision Report



Company:	Piceance Energy, LLC	Local Co-ordinate Reference:	Well Gunderson 29-13E
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 29-13E	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDMDBBW
Reference Design:	Design #1	Offset TVD Reference:	Reference Datum

Offset Design Gunderson - Gunderson 29-08E - Wellbore #1 - Design #1													Offset Site Error:	0.00 usft
Survey Program: 0-MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
3,660.00	3,621.46	3,566.93	3,547.27	12.09	10.08	-0.02	312.23	179.02	760.78	743.09	17.68	43.021		
3,690.00	3,651.06	3,596.00	3,576.15	12.20	10.17	-0.03	315.06	180.70	768.20	750.37	17.84	43.065		
3,720.00	3,680.65	3,625.06	3,605.03	12.32	10.26	-0.05	317.89	182.39	775.63	757.64	17.99	43.107		
3,750.00	3,710.24	3,654.13	3,633.91	12.44	10.34	-0.06	320.72	184.08	783.06	764.91	18.15	43.149		
3,780.00	3,739.84	3,683.20	3,662.79	12.55	10.43	-0.07	323.55	185.76	790.49	772.19	18.30	43.191		
3,810.00	3,769.43	3,712.26	3,691.66	12.67	10.52	-0.08	326.38	187.45	797.92	779.46	18.46	43.231		
3,840.00	3,799.02	3,741.33	3,720.54	12.78	10.61	-0.09	329.21	189.14	805.35	786.74	18.61	43.271		
3,870.00	3,828.62	3,770.39	3,749.42	12.90	10.70	-0.10	332.04	190.82	812.78	794.01	18.77	43.310		
3,900.00	3,858.21	3,799.46	3,778.30	13.01	10.79	-0.11	334.87	192.51	820.21	801.29	18.92	43.349		
3,930.00	3,887.80	3,828.52	3,807.17	13.13	10.87	-0.12	337.70	194.20	827.64	808.56	19.08	43.386		
3,960.00	3,917.40	3,857.59	3,836.05	13.24	10.96	-0.13	340.53	195.89	835.07	815.83	19.23	43.424		
3,990.00	3,946.99	3,886.65	3,864.93	13.36	11.05	-0.14	343.36	197.57	842.49	823.11	19.39	43.460		
4,020.00	3,976.59	3,915.72	3,893.81	13.48	11.14	-0.14	346.19	199.26	849.92	830.38	19.54	43.496		
4,050.00	4,006.18	3,944.78	3,922.69	13.59	11.23	-0.15	349.02	200.95	857.35	837.66	19.70	43.531		
4,080.00	4,035.77	3,973.85	3,951.56	13.71	11.31	-0.16	351.86	202.63	864.78	844.93	19.85	43.566		
4,110.00	4,065.37	4,002.91	3,980.44	13.82	11.40	-0.17	354.69	204.32	872.21	852.21	20.00	43.600		
4,140.00	4,094.96	4,031.98	4,009.32	13.94	11.49	-0.18	357.52	206.01	879.64	859.48	20.16	43.634		
4,170.00	4,124.55	4,061.04	4,038.20	14.05	11.58	-0.19	360.35	207.69	887.07	866.76	20.31	43.667		
4,200.00	4,154.15	4,090.11	4,067.08	14.17	11.67	-0.20	363.18	209.38	894.50	874.03	20.47	43.700		
4,230.00	4,183.74	4,119.17	4,095.95	14.29	11.75	-0.20	366.01	211.07	901.93	881.30	20.62	43.732		
4,260.00	4,213.34	4,148.24	4,124.83	14.40	11.84	-0.21	368.84	212.75	909.36	888.58	20.78	43.763		
4,290.00	4,242.93	4,177.30	4,153.71	14.52	11.93	-0.22	371.67	214.44	916.79	895.85	20.93	43.794		
4,320.00	4,272.52	4,206.37	4,182.59	14.63	12.02	-0.23	374.50	216.13	924.22	903.13	21.09	43.825		
4,350.00	4,302.12	4,235.44	4,211.47	14.75	12.11	-0.24	377.33	217.82	931.65	910.40	21.24	43.855		
4,380.00	4,331.71	4,264.50	4,240.34	14.86	12.19	-0.24	380.16	219.50	939.07	917.68	21.40	43.884		
4,410.00	4,361.30	4,293.57	4,269.22	14.98	12.28	-0.25	382.99	221.19	946.50	924.95	21.55	43.914		
4,440.00	4,390.90	4,322.63	4,298.10	15.10	12.37	-0.26	385.82	222.88	953.93	932.22	21.71	43.942		
4,470.00	4,420.49	4,351.70	4,326.98	15.21	12.46	-0.26	388.65	224.56	961.36	939.50	21.86	43.971		
4,500.00	4,450.08	4,380.76	4,355.86	15.33	12.55	-0.27	391.48	226.25	968.79	946.77	22.02	43.999		
4,530.00	4,479.68	4,409.83	4,384.73	15.44	12.64	-0.28	394.31	227.94	976.22	954.05	22.17	44.026		
4,560.00	4,509.27	4,438.89	4,413.61	15.56	12.72	-0.29	397.14	229.62	983.65	961.32	22.33	44.053		
4,590.00	4,538.87	4,467.96	4,442.49	15.67	12.81	-0.29	399.97	231.31	991.08	968.60	22.48	44.080		
4,620.00	4,568.46	4,497.02	4,471.37	15.79	12.90	-0.30	402.80	233.00	998.51	975.87	22.64	44.106		
4,650.00	4,598.05	4,526.09	4,500.24	15.91	12.99	-0.31	405.63	234.69	1,005.94	983.15	22.79	44.132		
4,680.00	4,627.65	4,555.15	4,529.12	16.02	13.08	-0.31	408.46	236.37	1,013.37	990.42	22.95	44.158		
4,710.00	4,657.24	4,584.22	4,558.00	16.14	13.16	-0.32	411.29	238.06	1,020.80	997.69	23.10	44.183		
4,740.00	4,686.83	4,613.28	4,586.88	16.25	13.25	-0.32	414.12	239.75	1,028.23	1,004.97	23.26	44.208		
4,770.00	4,716.43	4,642.35	4,615.76	16.37	13.34	-0.33	416.95	241.43	1,035.66	1,012.24	23.41	44.232		
4,800.00	4,746.02	4,671.41	4,644.63	16.49	13.43	-0.34	419.78	243.12	1,043.09	1,019.52	23.57	44.256		
4,830.00	4,775.62	4,700.48	4,673.51	16.60	13.52	-0.34	422.61	244.81	1,050.52	1,026.79	23.72	44.280		
4,860.00	4,805.21	4,729.54	4,702.39	16.72	13.60	-0.35	425.44	246.49	1,057.95	1,034.07	23.88	44.304		
4,890.00	4,834.80	4,758.61	4,731.27	16.83	13.69	-0.35	428.27	248.18	1,065.38	1,041.34	24.03	44.327		
4,920.00	4,864.40	4,787.68	4,760.15	16.95	13.78	-0.36	431.10	249.87	1,072.81	1,048.62	24.19	44.350		
4,950.00	4,893.99	4,816.74	4,789.02	17.06	13.87	-0.37	433.93	251.55	1,080.24	1,055.89	24.34	44.372		
4,980.00	4,923.58	4,845.81	4,817.90	17.18	13.96	-0.37	436.76	253.24	1,087.67	1,063.16	24.50	44.394		
5,010.00	4,953.18	4,874.87	4,846.78	17.30	14.05	-0.38	439.59	254.93	1,095.09	1,070.44	24.66	44.416		
5,040.00	4,982.77	4,903.94	4,875.66	17.41	14.13	-0.38	442.42	256.62	1,102.52	1,077.71	24.81	44.438		
5,070.00	5,012.36	4,933.00	4,904.54	17.53	14.22	-0.39	445.25	258.30	1,109.95	1,084.99	24.97	44.459		
5,100.00	5,041.96	4,962.07	4,933.41	17.64	14.31	-0.39	448.08	259.99	1,117.38	1,092.26	25.12	44.480		
5,130.00	5,071.55	4,991.13	4,962.29	17.76	14.40	-0.40	450.91	261.68	1,124.81	1,099.54	25.28	44.501		
5,160.00	5,101.15	5,020.20	4,991.17	17.88	14.49	-0.40	453.74	263.36	1,132.24	1,106.81	25.43	44.522		
5,190.00	5,130.74	5,049.26	5,020.05	17.99	14.57	-0.41	456.57	265.05	1,139.67	1,114.09	25.59	44.542		

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



Archer

Anticollision Report



Company:	Piceance Energy, LLC	Local Co-ordinate Reference:	Well Gunderson 29-13E
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 29-13E	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDMDBBW
Reference Design:	Design #1	Offset TVD Reference:	Reference Datum

Offset Design Gunderson - Gunderson 29-08E - Wellbore #1 - Design #1													Offset Site Error:	0.00 usft
Survey Program: 0-MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
5,220.00	5,160.33	5,078.33	5,048.93	18.11	14.66	-0.41	459.40	266.74	1,147.10	1,121.36	25.74	44.562		
5,250.00	5,189.93	5,107.39	5,077.80	18.22	14.75	-0.42	462.23	268.42	1,154.53	1,128.63	25.90	44.582		
5,280.00	5,219.52	5,136.46	5,106.68	18.34	14.84	-0.42	465.06	270.11	1,161.96	1,135.91	26.05	44.601		
5,310.00	5,249.11	5,165.52	5,135.56	18.46	14.93	-0.43	467.89	271.80	1,169.39	1,143.18	26.21	44.620		
5,340.00	5,278.72	5,194.60	5,164.45	18.56	15.01	-0.43	470.73	273.49	1,176.77	1,150.39	26.37	44.620		
5,370.00	5,308.37	5,223.75	5,193.41	18.65	15.10	-0.43	473.56	275.18	1,183.88	1,157.33	26.54	44.602		
5,400.00	5,338.06	5,252.96	5,222.43	18.75	15.19	-0.42	476.41	276.87	1,190.70	1,163.99	26.71	44.577		
5,430.00	5,367.80	5,282.24	5,251.52	18.82	15.28	-0.41	479.26	278.57	1,197.25	1,170.38	26.87	44.562		
5,460.00	5,397.58	5,311.57	5,280.67	18.89	15.37	-0.39	482.12	280.27	1,203.51	1,176.49	27.02	44.539		
5,490.00	5,427.40	5,340.97	5,309.87	18.96	15.46	-0.37	484.98	281.98	1,209.48	1,182.31	27.17	44.508		
5,520.00	5,457.24	5,370.42	5,339.13	19.02	15.55	-0.34	487.85	283.69	1,215.17	1,187.85	27.32	44.475		
5,550.00	5,487.12	5,399.92	5,368.44	19.08	15.64	-0.30	490.72	285.40	1,220.57	1,193.10	27.47	44.436		
5,580.00	5,517.03	5,429.47	5,397.80	19.14	15.73	-0.26	493.60	287.12	1,225.69	1,198.08	27.61	44.390		
5,610.00	5,546.96	5,471.96	5,440.05	19.19	15.84	-0.19	497.55	289.47	1,230.40	1,202.63	27.77	44.301		
5,640.00	5,576.90	5,519.09	5,486.97	19.24	15.95	-0.11	501.32	291.72	1,234.42	1,206.49	27.93	44.197		
5,670.00	5,606.87	5,566.46	5,534.19	19.29	16.05	-0.05	504.43	293.58	1,237.73	1,209.66	28.07	44.089		
5,700.00	5,636.85	5,614.01	5,581.66	19.34	16.14	0.00	506.89	295.04	1,240.33	1,212.12	28.21	43.963		
5,730.00	5,666.84	5,661.71	5,629.32	19.38	16.23	0.03	508.67	296.10	1,242.21	1,213.86	28.35	43.822		
5,760.00	5,696.83	5,709.51	5,677.10	19.42	16.31	0.05	509.77	296.76	1,243.37	1,214.89	28.48	43.662		
5,790.00	5,726.83	5,757.36	5,724.94	19.47	16.38	0.06	510.18	297.00	1,243.80	1,215.20	28.60	43.487		
5,820.00	5,756.83	5,789.24	5,756.83	19.50	16.42	0.06	510.19	297.01	1,243.81	1,215.10	28.70	43.332		
5,850.00	5,786.83	5,819.24	5,786.83	19.53	16.47	0.06	510.19	297.01	1,243.81	1,215.00	28.81	43.176		
5,880.00	5,816.83	5,849.24	5,816.83	19.57	16.52	0.06	510.19	297.01	1,243.81	1,214.89	28.91	43.017		
5,910.00	5,846.83	5,879.24	5,846.83	19.60	16.57	0.06	510.19	297.01	1,243.81	1,214.79	29.02	42.860		
5,940.00	5,876.83	5,909.24	5,876.83	19.64	16.62	0.06	510.19	297.01	1,243.81	1,214.68	29.13	42.703		
5,970.00	5,906.83	5,939.24	5,906.83	19.67	16.67	0.06	510.19	297.01	1,243.81	1,214.58	29.23	42.547		
6,000.00	5,936.83	5,969.24	5,936.83	19.71	16.73	0.06	510.19	297.01	1,243.81	1,214.47	29.34	42.392		
6,030.00	5,966.83	5,999.24	5,966.83	19.74	16.78	0.06	510.19	297.01	1,243.81	1,214.36	29.45	42.238		
6,060.00	5,996.83	6,029.24	5,996.83	19.78	16.83	0.06	510.19	297.01	1,243.81	1,214.25	29.56	42.084		
6,090.00	6,026.83	6,059.24	6,026.83	19.81	16.88	0.06	510.19	297.01	1,243.81	1,214.15	29.66	41.931		
6,120.00	6,056.83	6,089.24	6,056.83	19.85	16.93	0.06	510.19	297.01	1,243.81	1,214.04	29.77	41.779		
6,150.00	6,086.83	6,119.24	6,086.83	19.88	16.98	0.06	510.19	297.01	1,243.81	1,213.93	29.88	41.628		
6,180.00	6,116.83	6,149.24	6,116.83	19.92	17.03	0.06	510.19	297.01	1,243.81	1,213.82	29.99	41.478		
6,210.00	6,146.83	6,179.24	6,146.83	19.95	17.08	0.06	510.19	297.01	1,243.81	1,213.71	30.10	41.328		
6,240.00	6,176.83	6,209.24	6,176.83	19.99	17.14	0.06	510.19	297.01	1,243.81	1,213.60	30.20	41.179		
6,270.00	6,206.83	6,239.24	6,206.83	20.03	17.19	0.06	510.19	297.01	1,243.81	1,213.50	30.31	41.031		
6,300.00	6,236.83	6,269.24	6,236.83	20.06	17.24	0.06	510.19	297.01	1,243.81	1,213.39	30.42	40.884		
6,330.00	6,266.83	6,299.24	6,266.83	20.10	17.29	0.06	510.19	297.01	1,243.81	1,213.28	30.53	40.738		
6,360.00	6,296.83	6,329.24	6,296.83	20.14	17.34	0.06	510.19	297.01	1,243.81	1,213.17	30.64	40.592		
6,390.00	6,326.83	6,359.24	6,326.83	20.17	17.40	0.06	510.19	297.01	1,243.81	1,213.06	30.75	40.447		
6,420.00	6,356.83	6,389.24	6,356.83	20.21	17.45	0.06	510.19	297.01	1,243.81	1,212.95	30.86	40.303		
6,450.00	6,386.83	6,419.24	6,386.83	20.25	17.50	0.06	510.19	297.01	1,243.81	1,212.84	30.97	40.160		
6,480.00	6,416.83	6,449.24	6,416.83	20.28	17.55	0.06	510.19	297.01	1,243.81	1,212.73	31.08	40.017		
6,510.00	6,446.83	6,479.24	6,446.83	20.32	17.60	0.06	510.19	297.01	1,243.81	1,212.62	31.19	39.876		
6,540.00	6,476.83	6,509.24	6,476.83	20.36	17.66	0.06	510.19	297.01	1,243.81	1,212.51	31.30	39.735		
6,570.00	6,506.83	6,539.24	6,506.83	20.40	17.71	0.06	510.19	297.01	1,243.81	1,212.39	31.41	39.594		
6,600.00	6,536.83	6,569.24	6,536.83	20.44	17.76	0.06	510.19	297.01	1,243.81	1,212.28	31.52	39.455		
6,630.00	6,566.83	6,599.24	6,566.83	20.47	17.82	0.06	510.19	297.01	1,243.81	1,212.17	31.64	39.316		
6,660.00	6,596.83	6,629.24	6,596.83	20.51	17.87	0.06	510.19	297.01	1,243.81	1,212.06	31.75	39.178		
6,690.00	6,626.83	6,659.24	6,626.83	20.55	17.92	0.06	510.19	297.01	1,243.81	1,211.95	31.86	39.041		
6,720.00	6,656.83	6,689.24	6,656.83	20.59	17.98	0.06	510.19	297.01	1,243.81	1,211.84	31.97	38.904		
6,750.00	6,686.83	6,719.24	6,686.83	20.63	18.03	0.06	510.19	297.01	1,243.81	1,211.73	32.08	38.769		

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 29-13E
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 29-13E	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDMDBBW
Reference Design:	Design #1	Offset TVD Reference:	Reference Datum

Offset Design Gunderson - Gunderson 29-08E - Wellbore #1 - Design #1													Offset Site Error:	0.00 usft
Survey Program: 0-MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
6,780.00	6,716.83	6,749.24	6,716.83	20.67	18.08	0.06	510.19	297.01	1,243.81	1,211.61	32.20	38.634		
6,810.00	6,746.83	6,779.24	6,746.83	20.71	18.14	0.06	510.19	297.01	1,243.81	1,211.50	32.31	38.499		
6,840.00	6,776.83	6,809.24	6,776.83	20.74	18.19	0.06	510.19	297.01	1,243.81	1,211.39	32.42	38.366		
6,870.00	6,806.83	6,839.24	6,806.83	20.78	18.24	0.06	510.19	297.01	1,243.81	1,211.28	32.53	38.233		
6,900.00	6,836.83	6,869.24	6,836.83	20.82	18.30	0.06	510.19	297.01	1,243.81	1,211.16	32.65	38.101		
6,930.00	6,866.83	6,899.24	6,866.83	20.86	18.35	0.06	510.19	297.01	1,243.81	1,211.05	32.76	37.969		
6,960.00	6,896.83	6,929.24	6,896.83	20.90	18.41	0.06	510.19	297.01	1,243.81	1,210.94	32.87	37.839		
6,990.00	6,926.83	6,959.24	6,926.83	20.94	18.46	0.06	510.19	297.01	1,243.81	1,210.82	32.98	37.709		
7,020.00	6,956.83	6,989.24	6,956.83	20.98	18.51	0.06	510.19	297.01	1,243.81	1,210.71	33.10	37.579		
7,050.00	6,986.83	7,019.24	6,986.83	21.02	18.57	0.06	510.19	297.01	1,243.81	1,210.60	33.21	37.451		
7,080.00	7,016.83	7,049.24	7,016.83	21.06	18.62	0.06	510.19	297.01	1,243.81	1,210.48	33.33	37.323		
7,110.00	7,046.83	7,079.24	7,046.83	21.10	18.68	0.06	510.19	297.01	1,243.81	1,210.37	33.44	37.196		
7,140.00	7,076.83	7,109.24	7,076.83	21.14	18.73	0.06	510.19	297.01	1,243.81	1,210.26	33.55	37.069		
7,170.00	7,106.83	7,139.24	7,106.83	21.18	18.79	0.06	510.19	297.01	1,243.81	1,210.14	33.67	36.944		
7,200.00	7,136.83	7,169.24	7,136.83	21.23	18.84	0.06	510.19	297.01	1,243.81	1,210.03	33.78	36.819		
7,230.00	7,166.83	7,199.24	7,166.83	21.27	18.90	0.06	510.19	297.01	1,243.81	1,209.91	33.90	36.694		
7,260.00	7,196.83	7,229.24	7,196.83	21.31	18.95	0.06	510.19	297.01	1,243.81	1,209.80	34.01	36.570		
7,290.00	7,226.83	7,259.24	7,226.83	21.35	19.01	0.06	510.19	297.01	1,243.81	1,209.68	34.13	36.447		
7,320.00	7,256.83	7,289.24	7,256.83	21.39	19.06	0.06	510.19	297.01	1,243.81	1,209.57	34.24	36.325		
7,350.00	7,286.83	7,319.24	7,286.83	21.43	19.12	0.06	510.19	297.01	1,243.81	1,209.45	34.36	36.203		
7,380.00	7,316.83	7,349.24	7,316.83	21.47	19.17	0.06	510.19	297.01	1,243.81	1,209.34	34.47	36.082		
7,410.00	7,346.83	7,379.24	7,346.83	21.51	19.23	0.06	510.19	297.01	1,243.81	1,209.22	34.59	35.962		
7,440.00	7,376.83	7,409.24	7,376.83	21.56	19.28	0.06	510.19	297.01	1,243.81	1,209.11	34.70	35.842		
7,470.00	7,406.83	7,439.24	7,406.83	21.60	19.34	0.06	510.19	297.01	1,243.81	1,208.99	34.82	35.723		
7,500.00	7,436.83	7,469.24	7,436.83	21.64	19.39	0.06	510.19	297.01	1,243.81	1,208.88	34.93	35.605		
7,530.00	7,466.83	7,499.24	7,466.83	21.68	19.45	0.06	510.19	297.01	1,243.81	1,208.76	35.05	35.487		
7,560.00	7,496.83	7,529.24	7,496.83	21.73	19.50	0.06	510.19	297.01	1,243.81	1,208.64	35.17	35.370		
7,590.00	7,526.83	7,559.24	7,526.83	21.77	19.56	0.06	510.19	297.01	1,243.81	1,208.53	35.28	35.253		
7,620.00	7,556.83	7,589.24	7,556.83	21.81	19.62	0.06	510.19	297.01	1,243.81	1,208.41	35.40	35.138		
7,650.00	7,586.83	7,619.24	7,586.83	21.85	19.67	0.06	510.19	297.01	1,243.81	1,208.29	35.51	35.022		
7,680.00	7,616.83	7,649.24	7,616.83	21.90	19.73	0.06	510.19	297.01	1,243.81	1,208.18	35.63	34.908		
7,710.00	7,646.83	7,679.24	7,646.83	21.94	19.78	0.06	510.19	297.01	1,243.81	1,208.06	35.75	34.794		
7,740.00	7,676.83	7,709.24	7,676.83	21.98	19.84	0.06	510.19	297.01	1,243.81	1,207.94	35.86	34.681		
7,743.17	7,680.00	7,712.41	7,680.00	21.99	19.85	0.06	510.19	297.01	1,243.81	1,207.93	35.88	34.669		



Archer

Anticollision Report



Company:	Piceance Energy, LLC	Local Co-ordinate Reference:	Well Gunderson 29-13E
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 29-13E	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDMDBBW
Reference Design:	Design #1	Offset TVD Reference:	Reference Datum

Offset Design Gunderson - Gunderson 29-12E - Wellbore #1 - Design #1													Offset Site Error:	0.00 usft
Survey Program: 0-MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.00	83.29	1.17	9.91	9.98					
30.00	30.00	30.00	30.00	0.01	0.03	83.29	1.17	9.91	9.98	9.95	0.03	308.345		
60.00	60.00	60.00	60.00	0.04	0.05	83.29	1.17	9.91	9.98	9.89	0.09	108.828		
90.00	90.00	90.00	90.00	0.07	0.08	83.29	1.17	9.91	9.98	9.83	0.15	66.074		
120.00	120.00	120.00	120.00	0.13	0.13	83.29	1.17	9.91	9.98	9.72	0.26	38.277		
150.00	150.00	150.00	150.00	0.20	0.20	83.29	1.17	9.91	9.98	9.58	0.40	25.228		
180.00	180.00	180.00	180.00	0.27	0.27	83.29	1.17	9.91	9.98	9.45	0.53	18.814		
210.00	210.00	210.00	210.00	0.33	0.33	83.29	1.17	9.91	9.98	9.31	0.67	15.001		
240.00	240.00	240.00	240.00	0.40	0.40	83.29	1.17	9.91	9.98	9.18	0.80	12.472		
270.00	270.00	270.00	270.00	0.47	0.47	83.29	1.17	9.91	9.98	9.04	0.94	10.673		
300.00	300.00	300.00	300.00	0.53	0.53	83.29	1.17	9.91	9.98	8.91	1.07	9.328 CC		
330.00	330.00	329.96	329.96	0.60	0.60	84.11	1.03	9.99	10.04	8.85	1.20	8.386 ES		
360.00	360.00	359.91	359.90	0.67	0.66	86.50	0.63	10.23	10.25	8.92	1.33	7.731		
390.00	390.00	389.84	389.83	0.74	0.72	90.26	-0.05	10.63	10.63	9.17	1.45	7.311		
420.00	420.00	419.76	419.73	0.80	0.78	95.07	-0.99	11.18	11.23	9.65	1.58	7.099		
450.00	450.00	449.65	449.59	0.87	0.84	100.49	-2.20	11.89	12.10	10.39	1.71	7.078		
480.00	480.00	479.51	479.39	0.94	0.90	106.08	-3.68	12.76	13.30	11.46	1.84	7.234		
510.00	510.00	509.33	509.15	1.00	0.96	111.42	-5.42	13.79	14.83	12.87	1.96	7.552		
540.00	540.00	539.13	538.85	1.06	1.03	115.75	-7.43	14.97	16.55	14.46	2.09	7.918		
570.00	569.99	568.90	568.51	1.12	1.10	119.13	-9.70	16.31	18.36	16.15	2.21	8.296		
600.00	599.98	598.65	598.11	1.18	1.17	121.77	-12.24	17.80	20.26	17.92	2.33	8.677		
630.00	629.96	628.48	627.76	1.24	1.25	123.82	-15.02	19.44	22.18	19.72	2.46	9.012		
660.00	659.92	658.42	657.53	1.30	1.33	125.19	-17.85	21.10	23.90	21.31	2.58	9.255		
690.00	689.86	688.39	687.31	1.36	1.41	126.01	-20.68	22.77	25.36	22.66	2.70	9.388		
720.00	719.78	718.36	717.10	1.42	1.49	126.38	-23.51	24.43	26.56	23.73	2.83	9.396		
750.00	749.68	748.35	746.91	1.48	1.57	126.38	-26.34	26.10	27.50	24.54	2.96	9.299		
780.00	779.55	778.34	776.72	1.54	1.66	126.05	-29.17	27.77	28.16	25.08	3.09	9.128		
810.00	809.40	808.33	806.54	1.61	1.74	125.40	-32.00	29.43	28.57	25.35	3.22	8.879		
840.00	839.20	838.33	836.35	1.69	1.83	124.42	-34.84	31.10	28.71	25.35	3.36	8.551		
870.00	868.97	868.32	866.16	1.76	1.91	123.09	-37.67	32.77	28.60	25.10	3.50	8.176		
900.00	898.70	898.31	895.97	1.84	2.00	121.38	-40.50	34.43	28.26	24.62	3.64	7.760		
930.00	928.39	928.28	925.76	1.92	2.09	119.22	-43.33	36.10	27.69	23.89	3.80	7.291		
960.00	958.03	958.25	955.55	2.01	2.18	116.54	-46.16	37.76	26.93	22.97	3.96	6.800		
990.00	987.62	988.20	985.32	2.10	2.27	113.32	-48.99	39.43	26.05	21.91	4.13	6.302		
1,020.00	1,017.22	1,018.15	1,015.08	2.20	2.35	109.84	-51.82	41.09	25.23	20.91	4.32	5.842		
1,050.00	1,046.81	1,048.10	1,044.85	2.29	2.44	106.15	-54.65	42.76	24.52	20.00	4.51	5.432		
1,080.00	1,076.40	1,078.04	1,074.62	2.39	2.53	102.26	-57.48	44.42	23.91	19.19	4.72	5.071		
1,110.00	1,106.00	1,107.99	1,104.39	2.49	2.62	98.19	-60.30	46.09	23.42	18.49	4.93	4.755		
1,140.00	1,135.59	1,137.94	1,134.16	2.59	2.71	93.97	-63.13	47.75	23.05	17.90	5.14	4.480		
1,170.00	1,165.19	1,167.89	1,163.93	2.69	2.80	89.64	-65.96	49.42	22.81	17.44	5.37	4.250		
1,200.00	1,194.78	1,197.84	1,193.69	2.79	2.89	85.25	-68.79	51.08	22.70	17.11	5.59	4.061		
1,208.59	1,203.26	1,206.42	1,202.22	2.83	2.92	83.99	-69.60	51.56	22.70	17.04	5.66	4.014		
1,230.00	1,224.37	1,227.79	1,223.46	2.90	2.98	80.84	-71.62	52.75	22.73	16.92	5.82	3.908		
1,260.00	1,253.97	1,257.74	1,253.23	3.01	3.07	76.48	-74.45	54.41	22.90	16.86	6.04	3.792		
1,290.00	1,283.56	1,287.69	1,283.00	3.11	3.16	72.21	-77.28	56.08	23.19	16.94	6.25	3.709		
1,320.00	1,313.15	1,317.63	1,312.77	3.22	3.25	68.06	-80.10	57.74	23.61	17.15	6.46	3.654		
1,350.00	1,342.75	1,347.58	1,342.54	3.32	3.34	64.08	-82.93	59.40	24.16	17.49	6.66	3.625		
1,380.00	1,372.34	1,377.53	1,372.30	3.43	3.43	60.30	-85.76	61.07	24.81	17.95	6.86	3.618 SF		
1,410.00	1,401.94	1,407.48	1,402.07	3.54	3.53	56.73	-88.59	62.73	25.57	18.53	7.04	3.631		
1,440.00	1,431.53	1,437.43	1,431.84	3.65	3.62	53.37	-91.42	64.40	26.42	19.20	7.22	3.660		
1,470.00	1,461.12	1,467.38	1,461.61	3.76	3.71	50.23	-94.25	66.06	27.36	19.97	7.39	3.703		
1,500.00	1,490.72	1,497.33	1,491.38	3.87	3.80	47.31	-97.08	67.73	28.38	20.82	7.55	3.758		

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



Archer

Anticollision Report



Company:	Piceance Energy, LLC	Local Co-ordinate Reference:	Well Gunderson 29-13E
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 29-13E	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDMDBBW
Reference Design:	Design #1	Offset TVD Reference:	Reference Datum

Offset Design Gunderson - Gunderson 29-12E - Wellbore #1 - Design #1													Offset Site Error:	0.00 usft
Survey Program: 0-MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
1,530.00	1,520.31	1,527.27	1,521.15	3.98	3.89	44.60	-99.90	69.39	29.46	21.75	7.71	3.821		
1,560.00	1,549.90	1,557.22	1,550.91	4.09	3.98	42.08	-102.73	71.06	30.61	22.74	7.86	3.892		
1,590.00	1,579.50	1,587.17	1,580.68	4.20	4.07	39.75	-105.56	72.72	31.81	23.80	8.01	3.969		
1,620.00	1,609.09	1,617.12	1,610.45	4.31	4.16	37.59	-108.39	74.39	33.06	24.90	8.16	4.051		
1,650.00	1,638.68	1,647.07	1,640.22	4.42	4.26	35.59	-111.22	76.05	34.36	26.05	8.31	4.135		
1,680.00	1,668.28	1,677.02	1,669.99	4.53	4.35	33.74	-114.05	77.72	35.69	27.24	8.45	4.223		
1,710.00	1,697.87	1,706.97	1,699.76	4.64	4.44	32.02	-116.87	79.38	37.06	28.47	8.60	4.312		
1,740.00	1,727.47	1,736.92	1,729.52	4.76	4.53	30.43	-119.70	81.04	38.46	29.73	8.74	4.402		
1,770.00	1,757.06	1,766.86	1,759.29	4.87	4.62	28.95	-122.53	82.71	39.89	31.01	8.88	4.493		
1,800.00	1,786.65	1,796.81	1,789.06	4.98	4.71	27.57	-125.36	84.37	41.35	32.33	9.02	4.583		
1,830.00	1,816.25	1,826.76	1,818.83	5.09	4.80	26.28	-128.19	86.04	42.82	33.66	9.16	4.674		
1,860.00	1,845.84	1,856.71	1,848.60	5.21	4.90	25.08	-131.02	87.70	44.32	35.02	9.30	4.764		
1,890.00	1,875.43	1,886.66	1,878.37	5.32	4.99	23.96	-133.85	89.37	45.83	36.39	9.44	4.853		
1,920.00	1,905.03	1,916.61	1,908.14	5.43	5.08	22.92	-136.67	91.03	47.36	37.78	9.59	4.941		
1,950.00	1,934.62	1,946.56	1,937.90	5.55	5.17	21.93	-139.50	92.70	48.91	39.18	9.73	5.028		
1,980.00	1,964.22	1,976.51	1,967.67	5.66	5.26	21.01	-142.33	94.36	50.47	40.60	9.87	5.114		
2,010.00	1,993.81	2,006.45	1,997.44	5.77	5.36	20.14	-145.16	96.03	52.04	42.03	10.01	5.198		
2,040.00	2,023.40	2,036.40	2,027.21	5.89	5.45	19.33	-147.99	97.69	53.62	43.47	10.15	5.281		
2,070.00	2,053.00	2,066.35	2,056.98	6.00	5.54	18.56	-150.82	99.36	55.22	44.92	10.30	5.363		
2,100.00	2,082.59	2,096.30	2,086.75	6.11	5.63	17.83	-153.64	101.02	56.82	46.38	10.44	5.443		
2,130.00	2,112.18	2,126.25	2,116.51	6.23	5.72	17.15	-156.47	102.68	58.43	47.85	10.58	5.521		
2,160.00	2,141.78	2,156.20	2,146.28	6.34	5.81	16.50	-159.30	104.35	60.05	49.32	10.73	5.598		
2,190.00	2,171.37	2,186.15	2,176.05	6.45	5.91	15.88	-162.13	106.01	61.68	50.81	10.87	5.674		
2,220.00	2,200.96	2,216.10	2,205.82	6.57	6.00	15.30	-164.96	107.68	63.31	52.29	11.02	5.747		
2,250.00	2,230.56	2,246.04	2,235.59	6.68	6.09	14.74	-167.79	109.34	64.95	53.79	11.16	5.820		
2,280.00	2,260.15	2,275.99	2,265.36	6.80	6.18	14.22	-170.62	111.01	66.59	55.29	11.31	5.891		
2,310.00	2,289.75	2,305.94	2,295.12	6.91	6.27	13.71	-173.44	112.67	68.25	56.79	11.45	5.960		
2,340.00	2,319.34	2,335.89	2,324.89	7.02	6.37	13.24	-176.27	114.34	69.90	58.30	11.60	6.028		
2,370.00	2,348.93	2,365.84	2,354.66	7.14	6.46	12.78	-179.10	116.00	71.56	59.82	11.74	6.094		
2,400.00	2,378.53	2,395.79	2,384.43	7.25	6.55	12.35	-181.93	117.67	73.23	61.34	11.89	6.160		
2,430.00	2,408.12	2,425.74	2,414.20	7.37	6.64	11.93	-184.76	119.33	74.89	62.86	12.03	6.223		
2,460.00	2,437.71	2,455.69	2,443.97	7.48	6.73	11.53	-187.59	121.00	76.57	64.39	12.18	6.286		
2,490.00	2,467.31	2,485.63	2,473.73	7.60	6.83	11.15	-190.42	122.66	78.24	65.91	12.33	6.347		
2,520.00	2,496.90	2,515.58	2,503.50	7.71	6.92	10.79	-193.24	124.32	79.92	67.45	12.48	6.406		
2,550.00	2,526.50	2,545.53	2,533.27	7.83	7.01	10.44	-196.07	125.99	81.60	68.98	12.62	6.465		
2,580.00	2,556.09	2,575.48	2,563.04	7.94	7.10	10.10	-198.90	127.65	83.29	70.52	12.77	6.522		
2,610.00	2,585.68	2,605.43	2,592.81	8.06	7.20	9.78	-201.73	129.32	84.98	72.06	12.92	6.578		
2,640.00	2,615.28	2,635.38	2,622.58	8.17	7.29	9.47	-204.56	130.98	86.67	73.60	13.07	6.633		
2,670.00	2,644.87	2,665.33	2,652.34	8.29	7.38	9.17	-207.39	132.65	88.36	75.15	13.21	6.687		
2,700.00	2,674.46	2,695.28	2,682.11	8.40	7.47	8.88	-210.21	134.31	90.06	76.69	13.36	6.739		
2,730.00	2,704.06	2,725.22	2,711.88	8.51	7.56	8.61	-213.04	135.98	91.75	78.24	13.51	6.791		
2,760.00	2,733.65	2,755.17	2,741.65	8.63	7.66	8.34	-215.87	137.64	93.45	79.79	13.66	6.841		
2,790.00	2,763.24	2,785.12	2,771.42	8.74	7.75	8.08	-218.70	139.31	95.16	81.35	13.81	6.891		
2,820.00	2,792.84	2,815.07	2,801.19	8.86	7.84	7.84	-221.53	140.97	96.86	82.90	13.96	6.939		
2,850.00	2,822.43	2,845.02	2,830.95	8.97	7.93	7.60	-224.36	142.64	98.56	84.46	14.11	6.987		
2,880.00	2,852.03	2,874.97	2,860.72	9.09	8.03	7.37	-227.19	144.30	100.27	86.01	14.26	7.033		
2,910.00	2,881.62	2,904.92	2,890.49	9.20	8.12	7.14	-230.01	145.96	101.98	87.57	14.41	7.079		
2,940.00	2,911.21	2,934.87	2,920.26	9.32	8.21	6.93	-232.84	147.63	103.69	89.13	14.56	7.124		
2,970.00	2,940.81	2,964.81	2,950.03	9.44	8.30	6.72	-235.67	149.29	105.40	90.69	14.71	7.167		
3,000.00	2,970.40	2,994.76	2,979.80	9.55	8.39	6.52	-238.50	150.96	107.11	92.26	14.86	7.210		
3,030.00	2,999.99	3,024.71	3,009.56	9.67	8.49	6.32	-241.33	152.62	108.83	93.82	15.01	7.253		
3,060.00	3,029.59	3,054.66	3,039.33	9.78	8.58	6.13	-244.16	154.29	110.54	95.39	15.16	7.294		

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



Archer

Anticollision Report



Company:	Piceance Energy, LLC	Local Co-ordinate Reference:	Well Gunderson 29-13E
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 29-13E	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDMDBBW
Reference Design:	Design #1	Offset TVD Reference:	Reference Datum

Offset Design Gunderson - Gunderson 29-12E - Wellbore #1 - Design #1													Offset Site Error:	0.00 usft
Survey Program: 0-MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
3,090.00	3,059.18	3,084.61	3,069.10	9.90	8.67	5.95	-246.98	155.95	112.26	96.95	15.31	7.334		
3,120.00	3,088.78	3,114.56	3,098.87	10.01	8.76	5.77	-249.81	157.62	113.97	98.52	15.46	7.374		
3,150.00	3,118.37	3,144.51	3,128.64	10.13	8.86	5.59	-252.64	159.28	115.69	100.09	15.61	7.413		
3,180.00	3,147.96	3,174.46	3,158.41	10.24	8.95	5.43	-255.47	160.95	117.41	101.66	15.76	7.452		
3,210.00	3,177.56	3,204.40	3,188.17	10.36	9.04	5.26	-258.30	162.61	119.13	103.23	15.91	7.489		
3,240.00	3,207.15	3,234.35	3,217.94	10.47	9.13	5.10	-261.13	164.28	120.85	104.80	16.06	7.526		
3,270.00	3,236.74	3,264.30	3,247.71	10.59	9.23	4.95	-263.96	165.94	122.58	106.37	16.21	7.562		
3,300.00	3,266.34	3,294.25	3,277.48	10.70	9.32	4.80	-266.78	167.60	124.30	107.94	16.36	7.598		
3,330.00	3,295.93	3,324.20	3,307.25	10.82	9.41	4.65	-269.61	169.27	126.02	109.51	16.51	7.633		
3,360.00	3,325.52	3,354.15	3,337.02	10.93	9.50	4.51	-272.44	170.93	127.75	111.09	16.66	7.667		
3,390.00	3,355.12	3,384.10	3,366.79	11.05	9.59	4.37	-275.27	172.60	129.47	112.66	16.81	7.701		
3,420.00	3,384.71	3,414.05	3,396.55	11.16	9.69	4.24	-278.10	174.26	131.20	114.24	16.96	7.734		
3,450.00	3,414.31	3,443.99	3,426.32	11.28	9.78	4.11	-280.93	175.93	132.93	115.81	17.11	7.767		
3,480.00	3,443.90	3,473.94	3,456.09	11.40	9.87	3.98	-283.76	177.59	134.66	117.39	17.27	7.799		
3,510.00	3,473.49	3,503.89	3,485.86	11.51	9.96	3.86	-286.58	179.26	136.38	118.97	17.42	7.830		
3,540.00	3,503.09	3,533.84	3,515.63	11.63	10.06	3.74	-289.41	180.92	138.11	120.54	17.57	7.861		
3,570.00	3,532.68	3,563.79	3,545.40	11.74	10.15	3.62	-292.24	182.59	139.84	122.12	17.72	7.892		
3,600.00	3,562.27	3,593.74	3,575.16	11.86	10.24	3.50	-295.07	184.25	141.57	123.70	17.87	7.922		
3,630.00	3,591.87	3,623.69	3,604.93	11.97	10.33	3.39	-297.90	185.92	143.30	125.28	18.02	7.951		
3,660.00	3,621.46	3,653.64	3,634.70	12.09	10.43	3.28	-300.73	187.58	145.03	126.86	18.17	7.980		
3,690.00	3,651.06	3,683.58	3,664.47	12.20	10.52	3.17	-303.55	189.24	146.77	128.44	18.33	8.008		
3,720.00	3,680.65	3,713.53	3,694.24	12.32	10.61	3.07	-306.38	190.91	148.50	130.02	18.48	8.036		
3,750.00	3,710.24	3,743.48	3,724.01	12.44	10.70	2.96	-309.21	192.57	150.23	131.60	18.63	8.064		
3,780.00	3,739.84	3,773.43	3,753.77	12.55	10.79	2.86	-312.04	194.24	151.96	133.18	18.78	8.091		
3,810.00	3,769.43	3,803.38	3,783.54	12.67	10.89	2.77	-314.87	195.90	153.70	134.76	18.93	8.118		
3,840.00	3,799.02	3,833.33	3,813.31	12.78	10.98	2.67	-317.70	197.57	155.43	136.34	19.09	8.144		
3,870.00	3,828.62	3,863.28	3,843.08	12.90	11.07	2.58	-320.53	199.23	157.17	137.93	19.24	8.170		
3,900.00	3,858.21	3,893.23	3,872.85	13.01	11.16	2.49	-323.35	200.90	158.90	139.51	19.39	8.195		
3,930.00	3,887.80	3,923.17	3,902.62	13.13	11.26	2.40	-326.18	202.56	160.64	141.09	19.54	8.220		
3,960.00	3,917.40	3,953.12	3,932.38	13.24	11.35	2.31	-329.01	204.23	162.37	142.68	19.69	8.245		
3,990.00	3,946.99	3,983.07	3,962.15	13.36	11.44	2.22	-331.84	205.89	164.11	144.26	19.85	8.269		
4,020.00	3,976.59	4,013.02	3,991.92	13.48	11.53	2.14	-334.67	207.56	165.84	145.85	20.00	8.293		
4,050.00	4,006.18	4,042.97	4,021.69	13.59	11.63	2.06	-337.50	209.22	167.58	147.43	20.15	8.316		
4,080.00	4,035.77	4,072.92	4,051.46	13.71	11.72	1.98	-340.32	210.88	169.32	149.01	20.30	8.340		
4,110.00	4,065.37	4,102.87	4,081.23	13.82	11.81	1.90	-343.15	212.55	171.05	150.60	20.46	8.362		
4,140.00	4,094.96	4,132.82	4,110.99	13.94	11.90	1.82	-345.98	214.21	172.79	152.18	20.61	8.385		
4,170.00	4,124.55	4,162.76	4,140.76	14.05	12.00	1.74	-348.81	215.88	174.53	153.77	20.76	8.407		
4,200.00	4,154.15	4,192.71	4,170.53	14.17	12.09	1.67	-351.64	217.54	176.27	155.36	20.91	8.429		
4,230.00	4,183.74	4,222.66	4,200.30	14.29	12.18	1.60	-354.47	219.21	178.01	156.94	21.06	8.450		
4,260.00	4,213.34	4,252.61	4,230.07	14.40	12.27	1.53	-357.30	220.87	179.75	158.53	21.22	8.472		
4,290.00	4,242.93	4,282.56	4,259.84	14.52	12.37	1.46	-360.12	222.54	181.49	160.12	21.37	8.493		
4,320.00	4,272.52	4,312.51	4,289.60	14.63	12.46	1.39	-362.95	224.20	183.22	161.70	21.52	8.513		
4,350.00	4,302.12	4,342.46	4,319.37	14.75	12.55	1.32	-365.78	225.87	184.96	163.29	21.67	8.534		
4,380.00	4,331.71	4,372.41	4,349.14	14.86	12.64	1.25	-368.61	227.53	186.70	164.88	21.83	8.554		
4,410.00	4,361.30	4,402.35	4,378.91	14.98	12.74	1.19	-371.44	229.20	188.44	166.46	21.98	8.573		
4,440.00	4,390.90	4,432.30	4,408.68	15.10	12.83	1.12	-374.27	230.86	190.18	168.05	22.13	8.593		
4,470.00	4,420.49	4,462.25	4,438.45	15.21	12.92	1.06	-377.10	232.52	191.93	169.64	22.29	8.612		
4,500.00	4,450.08	4,492.20	4,468.21	15.33	13.01	1.00	-379.92	234.19	193.67	171.23	22.44	8.631		
4,530.00	4,479.68	4,522.15	4,497.98	15.44	13.11	0.94	-382.75	235.85	195.41	172.82	22.59	8.650		
4,560.00	4,509.27	4,552.10	4,527.75	15.56	13.20	0.88	-385.58	237.52	197.15	174.41	22.74	8.668		
4,590.00	4,538.87	4,582.05	4,557.52	15.67	13.29	0.82	-388.41	239.18	198.89	175.99	22.90	8.687		
4,620.00	4,568.46	4,611.99	4,587.29	15.79	13.38	0.76	-391.24	240.85	200.63	177.58	23.05	8.705		

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



Archer

Anticollision Report



Company:	Piceance Energy, LLC	Local Co-ordinate Reference:	Well Gunderson 29-13E
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 29-13E	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDMDBBW
Reference Design:	Design #1	Offset TVD Reference:	Reference Datum

Offset Design Gunderson - Gunderson 29-12E - Wellbore #1 - Design #1													Offset Site Error:	0.00 usft
Survey Program: 0-MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
4,650.00	4,598.05	4,641.94	4,617.06	15.91	13.47	0.71	-394.07	242.51	202.37	179.17	23.20	8.722		
4,680.00	4,627.65	4,671.89	4,646.82	16.02	13.57	0.65	-396.89	244.18	204.12	180.76	23.35	8.740		
4,710.00	4,657.24	4,701.84	4,676.59	16.14	13.66	0.60	-399.72	245.84	205.86	182.35	23.51	8.757		
4,740.00	4,686.83	4,731.79	4,706.36	16.25	13.75	0.55	-402.55	247.51	207.60	183.94	23.66	8.774		
4,770.00	4,716.43	4,761.74	4,736.13	16.37	13.84	0.49	-405.38	249.17	209.34	185.53	23.81	8.791		
4,800.00	4,746.02	4,791.69	4,765.90	16.49	13.94	0.44	-408.21	250.84	211.09	187.12	23.97	8.808		
4,830.00	4,775.62	4,821.64	4,795.67	16.60	14.03	0.39	-411.04	252.50	212.83	188.71	24.12	8.824		
4,860.00	4,805.21	4,851.58	4,825.44	16.72	14.12	0.34	-413.87	254.16	214.57	190.30	24.27	8.840		
4,890.00	4,834.80	4,881.53	4,855.20	16.83	14.21	0.29	-416.69	255.83	216.31	191.89	24.42	8.856		
4,920.00	4,864.40	4,911.48	4,884.97	16.95	14.31	0.24	-419.52	257.49	218.06	193.48	24.58	8.872		
4,950.00	4,893.99	4,941.43	4,914.74	17.06	14.40	0.19	-422.35	259.16	219.80	195.07	24.73	8.888		
4,980.00	4,923.58	4,971.38	4,944.51	17.18	14.49	0.15	-425.18	260.82	221.55	196.66	24.88	8.903		
5,010.00	4,953.18	5,001.33	4,974.28	17.30	14.58	0.10	-428.01	262.49	223.29	198.25	25.04	8.918		
5,040.00	4,982.77	5,031.28	5,004.05	17.41	14.68	0.06	-430.84	264.15	225.03	199.84	25.19	8.933		
5,070.00	5,012.36	5,061.23	5,033.81	17.53	14.77	0.01	-433.66	265.82	226.78	201.43	25.34	8.948		
5,100.00	5,041.96	5,091.17	5,063.58	17.64	14.86	-0.03	-436.49	267.48	228.52	203.03	25.50	8.963		
5,130.00	5,071.55	5,121.12	5,093.35	17.76	14.95	-0.08	-439.32	269.15	230.27	204.62	25.65	8.977		
5,160.00	5,101.15	5,151.07	5,123.12	17.88	15.05	-0.12	-442.15	270.81	232.01	206.21	25.80	8.992		
5,190.00	5,130.74	5,181.02	5,152.89	17.99	15.14	-0.16	-444.98	272.48	233.76	207.80	25.96	9.006		
5,220.00	5,160.33	5,210.97	5,182.66	18.11	15.23	-0.20	-447.81	274.14	235.50	209.39	26.11	9.020		
5,250.00	5,189.93	5,240.92	5,212.42	18.22	15.32	-0.24	-450.64	275.80	237.25	210.98	26.26	9.034		
5,280.00	5,219.52	5,270.87	5,242.19	18.34	15.42	-0.28	-453.46	277.47	238.99	212.58	26.42	9.047		
5,310.00	5,249.11	5,300.82	5,271.96	18.46	15.51	-0.32	-456.29	279.13	240.74	214.17	26.57	9.061		
5,340.00	5,278.72	5,330.77	5,301.73	18.56	15.60	-0.36	-459.12	280.80	242.42	215.70	26.72	9.073		
5,370.00	5,308.37	5,360.73	5,331.52	18.65	15.69	-0.37	-461.95	282.46	243.84	216.97	26.87	9.074		
5,400.00	5,338.06	5,390.71	5,361.32	18.75	15.79	-0.35	-464.78	284.13	244.96	217.94	27.03	9.063		
5,430.00	5,367.80	5,420.70	5,391.12	18.82	15.88	-0.30	-467.62	285.80	245.79	218.62	27.17	9.046		
5,460.00	5,397.58	5,450.35	5,420.60	18.89	15.97	-0.23	-470.41	287.44	246.34	219.02	27.32	9.018		
5,490.00	5,427.40	5,478.27	5,448.37	18.96	16.04	-0.18	-472.89	288.90	246.75	219.31	27.45	8.990		
5,520.00	5,457.24	5,506.19	5,476.16	19.02	16.11	-0.14	-475.14	290.23	247.13	219.56	27.57	8.963		
5,550.00	5,487.12	5,534.10	5,503.98	19.08	16.16	-0.09	-477.16	291.41	247.47	219.79	27.68	8.940		
5,580.00	5,517.03	5,562.02	5,531.82	19.14	16.21	-0.06	-478.94	292.46	247.77	219.98	27.79	8.916		
5,610.00	5,546.96	5,589.93	5,559.67	19.19	16.27	-0.03	-480.49	293.37	248.03	220.14	27.89	8.892		
5,640.00	5,576.90	5,617.85	5,587.55	19.24	16.31	0.00	-481.80	294.14	248.25	220.26	27.99	8.870		
5,670.00	5,606.87	5,645.76	5,615.43	19.29	16.36	0.02	-482.88	294.78	248.43	220.35	28.08	8.848		
5,700.00	5,636.85	5,673.67	5,643.33	19.34	16.40	0.04	-483.72	295.28	248.58	220.41	28.17	8.825		
5,730.00	5,666.84	5,700.00	5,669.64	19.38	16.44	0.05	-484.31	295.62	248.68	220.43	28.25	8.803		
5,760.00	5,696.83	5,729.50	5,699.14	19.42	16.49	0.06	-484.71	295.86	248.74	220.40	28.34	8.778		
5,790.00	5,726.83	5,757.41	5,727.05	19.47	16.53	0.06	-484.85	295.94	248.77	220.35	28.42	8.753		
5,820.00	5,756.83	5,787.19	5,756.83	19.50	16.58	0.06	-484.85	295.94	248.77	220.25	28.52	8.723		
5,850.00	5,786.83	5,817.19	5,786.83	19.53	16.62	0.06	-484.85	295.94	248.77	220.15	28.62	8.693		
5,880.00	5,816.83	5,847.19	5,816.83	19.57	16.66	0.06	-484.85	295.94	248.77	220.05	28.71	8.664		
5,910.00	5,846.83	5,877.19	5,846.83	19.60	16.70	0.06	-484.85	295.94	248.77	219.96	28.81	8.636		
5,940.00	5,876.83	5,907.19	5,876.83	19.64	16.74	0.06	-484.85	295.94	248.77	219.86	28.90	8.607		
5,970.00	5,906.83	5,937.19	5,906.83	19.67	16.78	0.06	-484.85	295.94	248.77	219.77	29.00	8.578		
6,000.00	5,936.83	5,967.19	5,936.83	19.71	16.83	0.06	-484.85	295.94	248.77	219.67	29.10	8.550		
6,030.00	5,966.83	5,997.19	5,966.83	19.74	16.87	0.06	-484.85	295.94	248.77	219.57	29.19	8.521		
6,060.00	5,996.83	6,027.19	5,996.83	19.78	16.91	0.06	-484.85	295.94	248.77	219.48	29.29	8.493		
6,090.00	6,026.83	6,057.19	6,026.83	19.81	16.95	0.06	-484.85	295.94	248.77	219.38	29.39	8.465		
6,120.00	6,056.83	6,087.19	6,056.83	19.85	16.99	0.06	-484.85	295.94	248.77	219.28	29.49	8.437		
6,150.00	6,086.83	6,117.19	6,086.83	19.88	17.03	0.06	-484.85	295.94	248.77	219.18	29.58	8.409		
6,180.00	6,116.83	6,147.19	6,116.83	19.92	17.07	0.06	-484.85	295.94	248.77	219.08	29.68	8.381		

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 29-13E
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 29-13E	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDMDBBW
Reference Design:	Design #1	Offset TVD Reference:	Reference Datum

Offset Design		Gunderson - Gunderson 29-12E - Wellbore #1 - Design #1											Offset Site Error:	0.00 usft
Survey Program:		0-MWD											Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre		Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
							+N/-S (usft)	+E/-W (usft)						
6,210.00	6,146.83	6,177.19	6,146.83	19.95	17.12	0.06	-484.85	295.94	248.77	218.98	29.78	8.353		
6,240.00	6,176.83	6,207.19	6,176.83	19.99	17.16	0.06	-484.85	295.94	248.77	218.89	29.88	8.325		
6,270.00	6,206.83	6,237.19	6,206.83	20.03	17.20	0.06	-484.85	295.94	248.77	218.79	29.98	8.298		
6,300.00	6,236.83	6,267.19	6,236.83	20.06	17.24	0.06	-484.85	295.94	248.77	218.69	30.08	8.270		
6,330.00	6,266.83	6,297.19	6,266.83	20.10	17.29	0.06	-484.85	295.94	248.77	218.59	30.18	8.243		
6,360.00	6,296.83	6,327.19	6,296.83	20.14	17.33	0.06	-484.85	295.94	248.77	218.49	30.28	8.216		
6,390.00	6,326.83	6,357.19	6,326.83	20.17	17.37	0.06	-484.85	295.94	248.77	218.39	30.38	8.189		
6,420.00	6,356.83	6,387.19	6,356.83	20.21	17.42	0.06	-484.85	295.94	248.77	218.29	30.48	8.161		
6,450.00	6,386.83	6,417.19	6,386.83	20.25	17.46	0.06	-484.85	295.94	248.77	218.18	30.58	8.135		
6,480.00	6,416.83	6,447.19	6,416.83	20.28	17.50	0.06	-484.85	295.94	248.77	218.08	30.68	8.108		
6,510.00	6,446.83	6,477.19	6,446.83	20.32	17.55	0.06	-484.85	295.94	248.77	217.98	30.78	8.081		
6,540.00	6,476.83	6,507.19	6,476.83	20.36	17.59	0.06	-484.85	295.94	248.77	217.88	30.89	8.054		
6,570.00	6,506.83	6,537.19	6,506.83	20.40	17.63	0.06	-484.85	295.94	248.77	217.78	30.99	8.028		
6,600.00	6,536.83	6,567.19	6,536.83	20.44	17.68	0.06	-484.85	295.94	248.77	217.68	31.09	8.001		
6,630.00	6,566.83	6,597.19	6,566.83	20.47	17.72	0.06	-484.85	295.94	248.77	217.57	31.19	7.975		
6,660.00	6,596.83	6,627.19	6,596.83	20.51	17.77	0.06	-484.85	295.94	248.77	217.47	31.30	7.949		
6,690.00	6,626.83	6,657.19	6,626.83	20.55	17.81	0.06	-484.85	295.94	248.77	217.37	31.40	7.923		
6,720.00	6,656.83	6,687.19	6,656.83	20.59	17.86	0.06	-484.85	295.94	248.77	217.26	31.50	7.897		
6,750.00	6,686.83	6,717.19	6,686.83	20.63	17.90	0.06	-484.85	295.94	248.77	217.16	31.60	7.871		
6,780.00	6,716.83	6,747.19	6,716.83	20.67	17.95	0.06	-484.85	295.94	248.77	217.06	31.71	7.845		
6,810.00	6,746.83	6,777.19	6,746.83	20.71	17.99	0.06	-484.85	295.94	248.77	216.95	31.81	7.820		
6,840.00	6,776.83	6,807.19	6,776.83	20.74	18.04	0.06	-484.85	295.94	248.77	216.85	31.92	7.794		
6,870.00	6,806.83	6,837.19	6,806.83	20.78	18.08	0.06	-484.85	295.94	248.77	216.74	32.02	7.769		
6,900.00	6,836.83	6,867.19	6,836.83	20.82	18.13	0.06	-484.85	295.94	248.77	216.64	32.13	7.744		
6,930.00	6,866.83	6,897.19	6,866.83	20.86	18.17	0.06	-484.85	295.94	248.77	216.54	32.23	7.718		
6,960.00	6,896.83	6,927.19	6,896.83	20.90	18.22	0.06	-484.85	295.94	248.77	216.43	32.34	7.693		
6,990.00	6,926.83	6,957.19	6,926.83	20.94	18.26	0.06	-484.85	295.94	248.77	216.33	32.44	7.668		
7,020.00	6,956.83	6,987.19	6,956.83	20.98	18.31	0.06	-484.85	295.94	248.77	216.22	32.55	7.644		
7,050.00	6,986.83	7,017.19	6,986.83	21.02	18.36	0.06	-484.85	295.94	248.77	216.11	32.65	7.619		
7,080.00	7,016.83	7,047.19	7,016.83	21.06	18.40	0.06	-484.85	295.94	248.77	216.01	32.76	7.594		
7,110.00	7,046.83	7,077.19	7,046.83	21.10	18.45	0.06	-484.85	295.94	248.77	215.90	32.86	7.570		
7,140.00	7,076.83	7,107.19	7,076.83	21.14	18.50	0.06	-484.85	295.94	248.77	215.80	32.97	7.545		
7,170.00	7,106.83	7,137.19	7,106.83	21.18	18.54	0.06	-484.85	295.94	248.77	215.69	33.08	7.521		
7,200.00	7,136.83	7,167.19	7,136.83	21.23	18.59	0.06	-484.85	295.94	248.77	215.58	33.18	7.497		
7,230.00	7,166.83	7,197.19	7,166.83	21.27	18.64	0.06	-484.85	295.94	248.77	215.48	33.29	7.473		
7,260.00	7,196.83	7,227.19	7,196.83	21.31	18.68	0.06	-484.85	295.94	248.77	215.37	33.40	7.449		
7,290.00	7,226.83	7,257.19	7,226.83	21.35	18.73	0.06	-484.85	295.94	248.77	215.26	33.50	7.425		
7,320.00	7,256.83	7,287.19	7,256.83	21.39	18.78	0.06	-484.85	295.94	248.77	215.15	33.61	7.401		
7,350.00	7,286.83	7,317.19	7,286.83	21.43	18.83	0.06	-484.85	295.94	248.77	215.05	33.72	7.377		
7,380.00	7,316.83	7,347.19	7,316.83	21.47	18.87	0.06	-484.85	295.94	248.77	214.94	33.83	7.354		
7,410.00	7,346.83	7,377.19	7,346.83	21.51	18.92	0.06	-484.85	295.94	248.77	214.83	33.94	7.330		
7,440.00	7,376.83	7,407.19	7,376.83	21.56	18.97	0.06	-484.85	295.94	248.77	214.72	34.04	7.307		
7,470.00	7,406.83	7,437.19	7,406.83	21.60	19.02	0.06	-484.85	295.94	248.77	214.61	34.15	7.284		
7,500.00	7,436.83	7,467.19	7,436.83	21.64	19.06	0.06	-484.85	295.94	248.77	214.50	34.26	7.261		
7,530.00	7,466.83	7,497.19	7,466.83	21.68	19.11	0.06	-484.85	295.94	248.77	214.40	34.37	7.238		
7,560.00	7,496.83	7,527.19	7,496.83	21.73	19.16	0.06	-484.85	295.94	248.77	214.29	34.48	7.215		
7,590.00	7,526.83	7,557.19	7,526.83	21.77	19.21	0.06	-484.85	295.94	248.77	214.18	34.59	7.192		
7,620.00	7,556.83	7,587.19	7,556.83	21.81	19.26	0.06	-484.85	295.94	248.77	214.07	34.70	7.169		
7,650.00	7,586.83	7,617.19	7,586.83	21.85	19.31	0.06	-484.85	295.94	248.77	213.96	34.81	7.147		
7,680.00	7,616.83	7,647.19	7,616.83	21.90	19.36	0.06	-484.85	295.94	248.77	213.85	34.92	7.124		
7,710.00	7,646.83	7,677.19	7,646.83	21.94	19.40	0.06	-484.85	295.94	248.77	213.74	35.03	7.102		
7,740.00	7,676.83	7,707.19	7,676.83	21.98	19.45	0.06	-484.85	295.94	248.77	213.63	35.14	7.080		

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 29-13E
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 29-13E	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDMDBBW
Reference Design:	Design #1	Offset TVD Reference:	Reference Datum

Offset Design		Gunderson - Gunderson 29-12E - Wellbore #1 - Design #1										Offset Site Error:	0.00 usft
Survey Program:		0-MWD										Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	
7,743.17	7,680.00	7,710.36	7,680.00	21.99	19.46	0.06	-484.85	295.94	248.77	213.62	35.15	7.077	



Archer

Anticollision Report

Archer

Company:	Piceance Energy, LLC	Local Co-ordinate Reference:	Well Gunderson 29-13E
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 29-13E	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDMDBBW
Reference Design:	Design #1	Offset TVD Reference:	Reference Datum

Offset Design Gunderson - Gunderson 29-14E - Wellbore #1 - Design #1													Offset Site Error:	0.00 usft
Survey Program: 0-MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.00	-99.67	-3.39	-19.88	20.17					
30.00	30.00	30.00	30.00	0.01	0.03	-99.67	-3.39	-19.88	20.17	20.13	0.03	623.071		
60.00	60.00	60.00	60.00	0.04	0.05	-99.67	-3.39	-19.88	20.17	20.07	0.09	219.908		
90.00	90.00	90.00	90.00	0.07	0.08	-99.67	-3.39	-19.88	20.17	20.02	0.15	133.515		
120.00	120.00	120.00	120.00	0.13	0.13	-99.67	-3.39	-19.88	20.17	19.91	0.26	77.347		
150.00	150.00	150.00	150.00	0.20	0.20	-99.67	-3.39	-19.88	20.17	19.77	0.40	50.979		
180.00	180.00	180.00	180.00	0.27	0.27	-99.67	-3.39	-19.88	20.17	19.64	0.53	38.018		
210.00	210.00	210.01	210.01	0.33	0.33	-99.72	-3.40	-19.87	20.16	19.50	0.66	30.410		
240.00	240.00	240.04	240.04	0.40	0.39	-100.46	-3.65	-19.79	20.13	19.34	0.79	25.439		
270.00	270.00	270.06	270.05	0.47	0.45	-102.09	-4.20	-19.62	20.06	19.14	0.92	21.821		
300.00	300.00	300.06	300.04	0.53	0.51	-104.63	-5.05	-19.34	19.99	18.95	1.05	19.086		
328.20	328.20	328.25	328.20	0.60	0.57	-107.85	-6.12	-19.00	19.96	18.79	1.17	17.063 CC		
330.00	330.00	330.04	330.00	0.60	0.58	-108.08	-6.20	-18.98	19.96	18.78	1.18	16.950		
360.00	360.00	359.99	359.91	0.67	0.64	-112.42	-7.64	-18.51	20.03	18.72	1.31	15.313 ES		
390.00	390.00	389.91	389.77	0.74	0.71	-117.58	-9.38	-17.95	20.25	18.82	1.44	14.088		
420.00	420.00	419.79	419.57	0.80	0.77	-123.41	-11.41	-17.30	20.72	19.15	1.57	13.160		
450.00	450.00	449.62	449.30	0.87	0.84	-129.69	-13.73	-16.55	21.52	19.80	1.72	12.545		
480.00	480.00	479.39	478.95	0.94	0.92	-136.14	-16.34	-15.71	22.69	20.84	1.86	12.229		
510.00	510.00	509.11	508.51	1.00	0.99	-142.45	-19.25	-14.77	24.30	22.31	1.99	12.199		
540.00	540.00	538.78	538.00	1.06	1.08	-148.01	-22.43	-13.75	26.22	24.09	2.13	12.328		
570.00	569.99	568.43	567.41	1.12	1.16	-152.73	-25.91	-12.63	28.37	26.11	2.26	12.557		
600.00	599.98	598.04	596.76	1.18	1.25	-156.72	-29.67	-11.42	30.70	28.31	2.39	12.847		
630.00	629.96	627.62	626.04	1.24	1.35	-160.09	-33.71	-10.11	33.18	30.65	2.52	13.156		
660.00	659.92	657.17	655.24	1.30	1.45	-162.96	-38.04	-8.72	35.76	33.11	2.65	13.486		
690.00	689.86	686.69	684.36	1.36	1.55	-165.39	-42.64	-7.24	38.43	35.65	2.78	13.826		
720.00	719.78	716.18	713.39	1.42	1.65	-167.48	-47.53	-5.66	41.17	38.25	2.91	14.134		
750.00	749.68	745.64	742.34	1.48	1.77	-169.26	-52.70	-4.00	43.96	40.91	3.05	14.420		
780.00	779.55	775.06	771.21	1.54	1.88	-170.81	-58.14	-2.25	46.80	43.62	3.18	14.702		
810.00	809.40	804.71	800.24	1.61	2.00	-172.15	-63.87	-0.40	49.63	46.31	3.32	14.935		
840.00	839.20	834.59	829.49	1.69	2.12	-173.21	-69.66	1.46	52.24	48.78	3.46	15.082		
870.00	868.97	864.48	858.76	1.76	2.25	-174.02	-75.46	3.33	54.59	50.98	3.60	15.145		
900.00	898.70	894.41	888.05	1.84	2.37	-174.62	-81.27	5.20	56.67	52.92	3.75	15.130		
930.00	928.39	924.35	917.37	1.92	2.50	-175.04	-87.08	7.07	58.47	54.57	3.89	15.019		
960.00	958.03	954.31	946.70	2.01	2.63	-175.30	-92.89	8.95	59.99	55.95	4.04	14.844		
990.00	987.62	984.28	976.04	2.10	2.76	-175.44	-98.71	10.82	61.28	57.09	4.19	14.612		
1,020.00	1,017.22	1,014.25	1,005.38	2.20	2.89	-175.56	-104.52	12.69	62.55	58.20	4.35	14.377		
1,050.00	1,046.81	1,044.23	1,034.73	2.29	3.02	-175.68	-110.34	14.56	63.82	59.31	4.51	14.155		
1,080.00	1,076.40	1,074.20	1,064.07	2.39	3.15	-175.79	-116.15	16.44	65.09	60.43	4.67	13.951		
1,110.00	1,106.00	1,104.17	1,093.42	2.49	3.28	-175.90	-121.97	18.31	66.36	61.54	4.82	13.757		
1,140.00	1,135.59	1,134.15	1,122.76	2.59	3.41	-176.01	-127.78	20.18	67.63	62.65	4.98	13.568		
1,170.00	1,165.19	1,164.12	1,152.10	2.69	3.54	-176.11	-133.60	22.06	68.90	63.76	5.14	13.394		
1,200.00	1,194.78	1,194.09	1,181.45	2.79	3.67	-176.21	-139.41	23.93	70.17	64.87	5.30	13.232		
1,230.00	1,224.37	1,224.06	1,210.79	2.90	3.80	-176.30	-145.23	25.80	71.45	65.98	5.47	13.068		
1,260.00	1,253.97	1,254.04	1,240.13	3.01	3.94	-176.40	-151.05	27.67	72.72	67.09	5.63	12.921		
1,290.00	1,283.56	1,284.01	1,269.48	3.11	4.07	-176.48	-156.86	29.55	73.99	68.20	5.79	12.784		
1,320.00	1,313.15	1,313.98	1,298.82	3.22	4.20	-176.57	-162.68	31.42	75.26	69.31	5.95	12.648		
1,350.00	1,342.75	1,343.96	1,328.16	3.32	4.33	-176.65	-168.49	33.29	76.53	70.42	6.11	12.519		
1,380.00	1,372.34	1,373.93	1,357.51	3.43	4.47	-176.73	-174.31	35.17	77.80	71.53	6.28	12.397		
1,410.00	1,401.94	1,403.90	1,386.85	3.54	4.60	-176.81	-180.12	37.04	79.08	72.64	6.44	12.279		
1,440.00	1,431.53	1,433.87	1,416.19	3.65	4.73	-176.88	-185.94	38.91	80.35	73.74	6.61	12.165		
1,470.00	1,461.12	1,463.85	1,445.54	3.76	4.87	-176.96	-191.75	40.78	81.62	74.85	6.77	12.061		
1,500.00	1,490.72	1,493.82	1,474.88	3.87	5.00	-177.03	-197.57	42.66	82.89	75.96	6.93	11.962		

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



Archer

Anticollision Report



Company:	Piceance Energy, LLC	Local Co-ordinate Reference:	Well Gunderson 29-13E
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 29-13E	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDMDBBW
Reference Design:	Design #1	Offset TVD Reference:	Reference Datum

Offset Design Gunderson - Gunderson 29-14E - Wellbore #1 - Design #1													Offset Site Error:	0.00 usft
Survey Program: 0-MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
1,530.00	1,520.31	1,523.79	1,504.23	3.98	5.13	-177.10	-203.38	44.53	84.17	77.07	7.09	11.866		
1,560.00	1,549.90	1,553.77	1,533.57	4.09	5.27	-177.16	-209.20	46.40	85.44	78.18	7.26	11.773		
1,590.00	1,579.50	1,583.74	1,562.91	4.20	5.40	-177.23	-215.01	48.28	86.71	79.29	7.42	11.683		
1,620.00	1,609.09	1,613.71	1,592.26	4.31	5.53	-177.29	-220.83	50.15	87.99	80.40	7.59	11.597		
1,650.00	1,638.68	1,643.68	1,621.60	4.42	5.67	-177.35	-226.64	52.02	89.26	81.51	7.75	11.515		
1,680.00	1,668.28	1,673.66	1,650.94	4.53	5.80	-177.41	-232.46	53.89	90.53	82.62	7.92	11.436		
1,710.00	1,697.87	1,703.63	1,680.29	4.64	5.93	-177.46	-238.28	55.77	91.81	83.72	8.08	11.360		
1,740.00	1,727.47	1,733.60	1,709.63	4.76	6.07	-177.52	-244.09	57.64	93.08	84.83	8.25	11.288		
1,770.00	1,757.06	1,763.58	1,738.97	4.87	6.20	-177.57	-249.91	59.51	94.35	85.94	8.41	11.217		
1,800.00	1,786.65	1,793.55	1,768.32	4.98	6.34	-177.63	-255.72	61.39	95.63	87.05	8.58	11.150		
1,830.00	1,816.25	1,823.52	1,797.66	5.09	6.47	-177.68	-261.54	63.26	96.90	88.16	8.74	11.085		
1,860.00	1,845.84	1,853.49	1,827.00	5.21	6.60	-177.73	-267.35	65.13	98.17	89.27	8.91	11.022		
1,890.00	1,875.43	1,883.47	1,856.35	5.32	6.74	-177.78	-273.17	67.00	99.45	90.38	9.07	10.962		
1,920.00	1,905.03	1,913.44	1,885.69	5.43	6.87	-177.82	-278.98	68.88	100.72	91.48	9.24	10.903		
1,950.00	1,934.62	1,943.41	1,915.04	5.55	7.01	-177.87	-284.80	70.75	102.00	92.59	9.40	10.847		
1,980.00	1,964.22	1,973.39	1,944.38	5.66	7.14	-177.92	-290.61	72.62	103.27	93.70	9.57	10.792		
2,010.00	1,993.81	2,003.36	1,973.72	5.77	7.27	-177.96	-296.43	74.50	104.54	94.81	9.73	10.740		
2,040.00	2,023.40	2,033.33	2,003.07	5.89	7.41	-178.00	-302.24	76.37	105.82	95.92	9.90	10.689		
2,070.00	2,053.00	2,063.30	2,032.41	6.00	7.54	-178.05	-308.06	78.24	107.09	97.03	10.07	10.639		
2,100.00	2,082.59	2,093.28	2,061.75	6.11	7.68	-178.09	-313.87	80.11	108.37	98.14	10.23	10.592		
2,130.00	2,112.18	2,123.25	2,091.10	6.23	7.81	-178.13	-319.69	81.99	109.64	99.24	10.40	10.545		
2,160.00	2,141.78	2,153.22	2,120.44	6.34	7.95	-178.17	-325.51	83.86	110.92	100.35	10.56	10.501		
2,190.00	2,171.37	2,183.20	2,149.78	6.45	8.08	-178.20	-331.32	85.73	112.19	101.46	10.73	10.457		
2,220.00	2,200.96	2,213.17	2,179.13	6.57	8.21	-178.24	-337.14	87.61	113.46	102.57	10.89	10.415		
2,250.00	2,230.56	2,243.14	2,208.47	6.68	8.35	-178.28	-342.95	89.48	114.74	103.68	11.06	10.374		
2,280.00	2,260.15	2,273.11	2,237.81	6.80	8.48	-178.31	-348.77	91.35	116.01	104.79	11.23	10.334		
2,310.00	2,289.75	2,303.09	2,267.16	6.91	8.62	-178.35	-354.58	93.22	117.29	105.90	11.39	10.295		
2,340.00	2,319.34	2,333.06	2,296.50	7.02	8.75	-178.38	-360.40	95.10	118.56	107.00	11.56	10.258		
2,370.00	2,348.93	2,363.03	2,325.85	7.14	8.89	-178.42	-366.21	96.97	119.84	108.11	11.72	10.221		
2,400.00	2,378.53	2,393.00	2,355.19	7.25	9.02	-178.45	-372.03	98.84	121.11	109.22	11.89	10.186		
2,430.00	2,408.12	2,422.98	2,384.53	7.37	9.16	-178.48	-377.84	100.72	122.39	110.33	12.06	10.151		
2,460.00	2,437.71	2,452.95	2,413.88	7.48	9.29	-178.51	-383.66	102.59	123.66	111.44	12.22	10.118		
2,490.00	2,467.31	2,482.92	2,443.22	7.60	9.42	-178.54	-389.47	104.46	124.94	112.55	12.39	10.085		
2,520.00	2,496.90	2,512.90	2,472.56	7.71	9.56	-178.57	-395.29	106.33	126.21	113.66	12.55	10.053		
2,550.00	2,526.50	2,542.87	2,501.91	7.83	9.69	-178.60	-401.10	108.21	127.49	114.77	12.72	10.022		
2,580.00	2,556.09	2,572.84	2,531.25	7.94	9.83	-178.63	-406.92	110.08	128.76	115.87	12.89	9.992		
2,610.00	2,585.68	2,602.81	2,560.59	8.06	9.96	-178.66	-412.74	111.95	130.04	116.98	13.05	9.962		
2,640.00	2,615.28	2,632.79	2,589.94	8.17	10.10	-178.69	-418.55	113.83	131.31	118.09	13.22	9.934		
2,670.00	2,644.87	2,662.76	2,619.28	8.29	10.23	-178.72	-424.37	115.70	132.59	119.20	13.39	9.906		
2,700.00	2,674.46	2,692.73	2,648.62	8.40	10.37	-178.74	-430.18	117.57	133.86	120.31	13.55	9.878		
2,730.00	2,704.06	2,722.71	2,677.97	8.51	10.50	-178.77	-436.00	119.44	135.14	121.42	13.72	9.851		
2,760.00	2,733.65	2,752.68	2,707.31	8.63	10.64	-178.79	-441.81	121.32	136.41	122.53	13.88	9.825		
2,790.00	2,763.24	2,782.65	2,736.65	8.74	10.77	-178.82	-447.63	123.19	137.69	123.64	14.05	9.800		
2,820.00	2,792.84	2,812.62	2,766.00	8.86	10.91	-178.84	-453.44	125.06	138.96	124.75	14.22	9.775		
2,850.00	2,822.43	2,842.60	2,795.34	8.97	11.04	-178.87	-459.26	126.94	140.24	125.85	14.38	9.751		
2,880.00	2,852.03	2,872.57	2,824.69	9.09	11.18	-178.89	-465.07	128.81	141.51	126.96	14.55	9.727		
2,910.00	2,881.62	2,902.54	2,854.03	9.20	11.31	-178.92	-470.89	130.68	142.79	128.07	14.71	9.704		
2,940.00	2,911.21	2,932.52	2,883.37	9.32	11.44	-178.94	-476.70	132.56	144.06	129.18	14.88	9.681		
2,970.00	2,940.81	2,962.49	2,912.72	9.44	11.58	-178.96	-482.52	134.43	145.34	130.29	15.05	9.659		
3,000.00	2,970.40	2,992.46	2,942.06	9.55	11.71	-178.98	-488.34	136.30	146.61	131.40	15.21	9.637		
3,030.00	2,999.99	3,022.43	2,971.40	9.67	11.85	-179.01	-494.15	138.17	147.89	132.51	15.38	9.616		
3,060.00	3,029.59	3,052.41	3,000.75	9.78	11.98	-179.03	-499.97	140.05	149.16	133.62	15.55	9.595		

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



Archer

Anticollision Report



Company:	Piceance Energy, LLC	Local Co-ordinate Reference:	Well Gunderson 29-13E
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 29-13E	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDMDBBW
Reference Design:	Design #1	Offset TVD Reference:	Reference Datum

Offset Design Gunderson - Gunderson 29-14E - Wellbore #1 - Design #1													Offset Site Error:	0.00 usft
Survey Program: 0-MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
3,090.00	3,059.18	3,082.38	3,030.09	9.90	12.12	-179.05	-505.78	141.92	150.44	134.73	15.71	9.575		
3,120.00	3,088.78	3,112.35	3,059.43	10.01	12.25	-179.07	-511.60	143.79	151.71	135.84	15.88	9.555		
3,150.00	3,118.37	3,142.33	3,088.78	10.13	12.39	-179.09	-517.41	145.67	152.99	136.95	16.04	9.535		
3,180.00	3,147.96	3,172.30	3,118.12	10.24	12.52	-179.11	-523.23	147.54	154.27	138.05	16.21	9.516		
3,210.00	3,177.56	3,202.27	3,147.46	10.36	12.66	-179.13	-529.04	149.41	155.54	139.16	16.38	9.497		
3,240.00	3,207.15	3,232.24	3,176.81	10.47	12.79	-179.15	-534.86	151.28	156.82	140.27	16.54	9.479		
3,270.00	3,236.74	3,262.22	3,206.15	10.59	12.93	-179.17	-540.67	153.16	158.09	141.38	16.71	9.461		
3,300.00	3,266.34	3,292.19	3,235.50	10.70	13.06	-179.19	-546.49	155.03	159.37	142.49	16.88	9.443		
3,330.00	3,295.93	3,322.16	3,264.84	10.82	13.20	-179.21	-552.30	156.90	160.64	143.60	17.04	9.426		
3,360.00	3,325.52	3,352.14	3,294.18	10.93	13.33	-179.23	-558.12	158.78	161.92	144.71	17.21	9.409		
3,390.00	3,355.12	3,382.11	3,323.53	11.05	13.47	-179.24	-563.93	160.65	163.19	145.82	17.38	9.392		
3,420.00	3,384.71	3,412.08	3,352.87	11.16	13.60	-179.26	-569.75	162.52	164.47	146.93	17.54	9.376		
3,450.00	3,414.31	3,442.05	3,382.21	11.28	13.74	-179.28	-575.57	164.39	165.75	148.04	17.71	9.360		
3,480.00	3,443.90	3,472.03	3,411.56	11.40	13.87	-179.30	-581.38	166.27	167.02	149.15	17.87	9.344		
3,510.00	3,473.49	3,502.00	3,440.90	11.51	14.01	-179.31	-587.20	168.14	168.30	150.26	18.04	9.329		
3,540.00	3,503.09	3,531.97	3,470.24	11.63	14.14	-179.33	-593.01	170.01	169.57	151.37	18.21	9.314		
3,570.00	3,532.68	3,561.95	3,499.59	11.74	14.28	-179.35	-598.83	171.89	170.85	152.47	18.37	9.299		
3,600.00	3,562.27	3,591.92	3,528.93	11.86	14.41	-179.36	-604.64	173.76	172.12	153.58	18.54	9.284		
3,630.00	3,591.87	3,621.89	3,558.27	11.97	14.55	-179.38	-610.46	175.63	173.40	154.69	18.71	9.270		
3,660.00	3,621.46	3,651.86	3,587.62	12.09	14.68	-179.39	-616.27	177.50	174.67	155.80	18.87	9.256		
3,690.00	3,651.06	3,681.84	3,616.96	12.20	14.81	-179.41	-622.09	179.38	175.95	156.91	19.04	9.242		
3,720.00	3,680.65	3,711.81	3,646.31	12.32	14.95	-179.42	-627.90	181.25	177.23	158.02	19.20	9.228		
3,750.00	3,710.24	3,741.78	3,675.65	12.44	15.08	-179.44	-633.72	183.12	178.50	159.13	19.37	9.215		
3,780.00	3,739.84	3,771.76	3,704.99	12.55	15.22	-179.45	-639.53	185.00	179.78	160.24	19.54	9.202		
3,810.00	3,769.43	3,801.73	3,734.34	12.67	15.35	-179.47	-645.35	186.87	181.05	161.35	19.70	9.189		
3,840.00	3,799.02	3,831.70	3,763.68	12.78	15.49	-179.48	-651.16	188.74	182.33	162.46	19.87	9.176		
3,870.00	3,828.62	3,861.67	3,793.02	12.90	15.62	-179.50	-656.98	190.61	183.60	163.57	20.04	9.163		
3,900.00	3,858.21	3,891.65	3,822.37	13.01	15.76	-179.51	-662.80	192.49	184.88	164.68	20.20	9.151		
3,930.00	3,887.80	3,921.62	3,851.71	13.13	15.89	-179.53	-668.61	194.36	186.16	165.79	20.37	9.139		
3,960.00	3,917.40	3,951.59	3,881.05	13.24	16.03	-179.54	-674.43	196.23	187.43	166.90	20.54	9.127		
3,990.00	3,946.99	3,981.56	3,910.40	13.36	16.16	-179.55	-680.24	198.11	188.71	168.01	20.70	9.115		
4,020.00	3,976.59	4,011.54	3,939.74	13.48	16.30	-179.57	-686.06	199.98	189.98	169.12	20.87	9.104		
4,050.00	4,006.18	4,041.51	3,969.08	13.59	16.43	-179.58	-691.87	201.85	191.26	170.22	21.03	9.093		
4,080.00	4,035.77	4,071.48	3,998.43	13.71	16.57	-179.59	-697.69	203.72	192.54	171.33	21.20	9.081		
4,110.00	4,065.37	4,101.46	4,027.77	13.82	16.70	-179.60	-703.50	205.60	193.81	172.44	21.37	9.070		
4,140.00	4,094.96	4,131.43	4,057.12	13.94	16.84	-179.62	-709.32	207.47	195.09	173.55	21.53	9.060		
4,170.00	4,124.55	4,161.40	4,086.46	14.05	16.97	-179.63	-715.13	209.34	196.36	174.66	21.70	9.049		
4,200.00	4,154.15	4,191.37	4,115.80	14.17	17.11	-179.64	-720.95	211.22	197.64	175.77	21.87	9.038		
4,230.00	4,183.74	4,221.35	4,145.15	14.29	17.24	-179.65	-726.76	213.09	198.91	176.88	22.03	9.028		
4,260.00	4,213.34	4,251.32	4,174.49	14.40	17.38	-179.67	-732.58	214.96	200.19	177.99	22.20	9.018		
4,290.00	4,242.93	4,281.29	4,203.83	14.52	17.51	-179.68	-738.39	216.83	201.47	179.10	22.37	9.008		
4,320.00	4,272.52	4,311.27	4,233.18	14.63	17.65	-179.69	-744.21	218.71	202.74	180.21	22.53	8.998		
4,350.00	4,302.12	4,341.24	4,262.52	14.75	17.78	-179.70	-750.03	220.58	204.02	181.32	22.70	8.988		
4,380.00	4,331.71	4,371.21	4,291.86	14.86	17.92	-179.71	-755.84	222.45	205.29	182.43	22.86	8.979		
4,410.00	4,361.30	4,401.18	4,321.21	14.98	18.05	-179.72	-761.66	224.33	206.57	183.54	23.03	8.969		
4,440.00	4,390.90	4,431.16	4,350.55	15.10	18.19	-179.73	-767.47	226.20	207.85	184.65	23.20	8.960		
4,470.00	4,420.49	4,461.13	4,379.89	15.21	18.32	-179.75	-773.29	228.07	209.12	185.76	23.36	8.951		
4,500.00	4,450.08	4,491.10	4,409.24	15.33	18.46	-179.76	-779.10	229.94	210.40	186.87	23.53	8.942		
4,530.00	4,479.68	4,521.08	4,438.58	15.44	18.59	-179.77	-784.92	231.82	211.67	187.98	23.70	8.933		
4,560.00	4,509.27	4,551.05	4,467.93	15.56	18.73	-179.78	-790.73	233.69	212.95	189.09	23.86	8.924		
4,590.00	4,538.87	4,581.02	4,497.27	15.67	18.86	-179.79	-796.55	235.56	214.23	190.20	24.03	8.915		
4,620.00	4,568.46	4,610.99	4,526.61	15.79	19.00	-179.80	-802.36	237.44	215.50	191.31	24.20	8.907		

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 29-13E
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 29-13E	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDMDBBW
Reference Design:	Design #1	Offset TVD Reference:	Reference Datum

Offset Design Gunderson - Gunderson 29-14E - Wellbore #1 - Design #1													Offset Site Error:	0.00 usft
Survey Program: 0-MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
4,650.00	4,598.05	4,640.97	4,555.96	15.91	19.13	-179.81	-808.18	239.31	216.78	192.41	24.36	8.898		
4,680.00	4,627.65	4,670.94	4,585.30	16.02	19.27	-179.82	-813.99	241.18	218.05	193.52	24.53	8.890		
4,710.00	4,657.24	4,700.91	4,614.64	16.14	19.40	-179.83	-819.81	243.05	219.33	194.63	24.69	8.882		
4,740.00	4,686.83	4,730.89	4,643.99	16.25	19.54	-179.84	-825.63	244.93	220.61	195.74	24.86	8.873		
4,770.00	4,716.43	4,760.86	4,673.33	16.37	19.67	-179.85	-831.44	246.80	221.88	196.85	25.03	8.865		
4,800.00	4,746.02	4,790.83	4,702.67	16.49	19.81	-179.86	-837.26	248.67	223.16	197.96	25.19	8.858		
4,830.00	4,775.62	4,820.80	4,732.02	16.60	19.94	-179.87	-843.07	250.55	224.43	199.07	25.36	8.850		
4,860.00	4,805.21	4,850.78	4,761.36	16.72	20.08	-179.88	-848.89	252.42	225.71	200.18	25.53	8.842		
4,890.00	4,834.80	4,880.75	4,790.70	16.83	20.21	-179.89	-854.70	254.29	226.99	201.29	25.69	8.834		
4,920.00	4,864.40	4,910.72	4,820.05	16.95	20.35	-179.89	-860.52	256.16	228.26	202.40	25.86	8.827		
4,950.00	4,893.99	4,940.70	4,849.39	17.06	20.48	-179.90	-866.33	258.04	229.54	203.51	26.03	8.820		
4,980.00	4,923.58	4,970.67	4,878.73	17.18	20.62	-179.91	-872.15	259.91	230.81	204.62	26.19	8.812		
5,010.00	4,953.18	5,000.64	4,908.08	17.30	20.75	-179.92	-877.96	261.78	232.09	205.73	26.36	8.805		
5,040.00	4,982.77	5,030.61	4,937.42	17.41	20.89	-179.93	-883.78	263.66	233.37	206.84	26.53	8.798		
5,070.00	5,012.36	5,060.59	4,966.77	17.53	21.02	-179.94	-889.59	265.53	234.64	207.95	26.69	8.791		
5,100.00	5,041.96	5,090.56	4,996.11	17.64	21.16	-179.95	-895.41	267.40	235.92	209.06	26.86	8.784		
5,130.00	5,071.55	5,120.53	5,025.45	17.76	21.29	-179.96	-901.22	269.27	237.19	210.17	27.02	8.777		
5,160.00	5,101.15	5,150.51	5,054.80	17.88	21.43	-179.96	-907.04	271.15	238.47	211.28	27.19	8.770		
5,190.00	5,130.74	5,180.48	5,084.14	17.99	21.56	-179.97	-912.86	273.02	239.75	212.39	27.36	8.764		
5,220.00	5,160.33	5,210.45	5,113.48	18.11	21.70	-179.98	-918.67	274.89	241.02	213.50	27.52	8.757		
5,250.00	5,189.93	5,240.42	5,142.83	18.22	21.83	-179.99	-924.49	276.77	242.30	214.61	27.69	8.750		
5,280.00	5,219.52	5,272.75	5,174.50	18.34	21.95	179.98	-930.62	278.74	243.45	215.59	27.86	8.739		
5,310.00	5,249.11	5,305.39	5,206.56	18.46	22.07	179.97	-936.47	280.63	244.27	216.24	28.02	8.716		
5,340.00	5,278.72	5,338.04	5,238.69	18.56	22.16	179.98	-941.98	282.40	244.82	216.65	28.18	8.688		
5,370.00	5,308.37	5,370.70	5,270.90	18.65	22.25	179.99	-947.13	284.06	245.33	217.00	28.33	8.661		
5,400.00	5,338.06	5,403.36	5,303.17	18.75	22.34	180.00	-951.94	285.61	245.79	217.32	28.47	8.633		
5,430.00	5,367.80	5,436.03	5,335.50	18.82	22.42	-179.99	-956.40	287.04	246.23	217.63	28.60	8.610		
5,460.00	5,397.58	5,468.70	5,367.89	18.89	22.50	-179.98	-960.50	288.37	246.63	217.90	28.72	8.586		
5,490.00	5,427.40	5,501.38	5,400.33	18.96	22.58	-179.97	-964.26	289.58	246.99	218.15	28.84	8.563		
5,520.00	5,457.24	5,534.07	5,432.82	19.02	22.64	-179.97	-967.66	290.67	247.32	218.37	28.95	8.542		
5,550.00	5,487.12	5,566.75	5,465.34	19.08	22.71	-179.96	-970.71	291.65	247.62	218.56	29.06	8.521		
5,580.00	5,517.03	5,599.44	5,497.91	19.14	22.77	-179.96	-973.41	292.52	247.88	218.72	29.17	8.499		
5,610.00	5,546.96	5,632.14	5,530.51	19.19	22.83	-179.95	-975.76	293.28	248.11	218.85	29.26	8.479		
5,640.00	5,576.90	5,664.83	5,563.14	19.24	22.88	-179.95	-977.75	293.92	248.30	218.95	29.35	8.460		
5,670.00	5,606.87	5,697.53	5,595.79	19.29	22.93	-179.94	-979.38	294.45	248.46	219.03	29.44	8.441		
5,700.00	5,636.85	5,730.23	5,628.46	19.34	22.97	-179.94	-980.66	294.86	248.59	219.07	29.52	8.422		
5,730.00	5,666.84	5,762.93	5,661.15	19.38	23.01	-179.94	-981.59	295.16	248.68	219.09	29.59	8.403		
5,760.00	5,696.83	5,795.63	5,693.84	19.42	23.05	-179.94	-982.16	295.34	248.73	219.07	29.67	8.384		
5,790.00	5,726.83	5,828.33	5,726.55	19.47	23.09	-179.94	-982.37	295.41	248.76	219.02	29.74	8.364		
5,820.00	5,756.83	5,858.62	5,756.83	19.50	23.12	-179.94	-982.38	295.41	248.76	218.92	29.83	8.338		
5,850.00	5,786.83	5,888.62	5,786.83	19.53	23.16	-179.94	-982.38	295.41	248.76	218.83	29.93	8.312		
5,880.00	5,816.83	5,918.62	5,816.83	19.57	23.19	-179.94	-982.38	295.41	248.76	218.73	30.02	8.286		
5,910.00	5,846.83	5,948.62	5,846.83	19.60	23.21	-179.94	-982.38	295.41	248.76	218.64	30.11	8.261		
5,940.00	5,876.83	5,978.62	5,876.83	19.64	23.24	-179.94	-982.38	295.41	248.76	218.55	30.20	8.236		
5,970.00	5,906.83	6,008.62	5,906.83	19.67	23.27	-179.94	-982.38	295.41	248.76	218.46	30.29	8.211		
6,000.00	5,936.83	6,038.62	5,936.83	19.71	23.30	-179.94	-982.38	295.41	248.76	218.37	30.39	8.186		
6,030.00	5,966.83	6,068.62	5,966.83	19.74	23.33	-179.94	-982.38	295.41	248.76	218.28	30.48	8.162		
6,060.00	5,996.83	6,098.62	5,996.83	19.78	23.36	-179.94	-982.38	295.41	248.76	218.18	30.57	8.137		
6,090.00	6,026.83	6,128.62	6,026.83	19.81	23.39	-179.94	-982.38	295.41	248.76	218.09	30.66	8.112		
6,120.00	6,056.83	6,158.62	6,056.83	19.85	23.42	-179.94	-982.38	295.41	248.76	218.00	30.76	8.088		
6,150.00	6,086.83	6,188.62	6,086.83	19.88	23.45	-179.94	-982.38	295.41	248.76	217.91	30.85	8.063		
6,180.00	6,116.83	6,218.62	6,116.83	19.92	23.47	-179.94	-982.38	295.41	248.76	217.81	30.94	8.039		

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



Archer

Anticollision Report



Company:	Piceance Energy, LLC	Local Co-ordinate Reference:	Well Gunderson 29-13E
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 29-13E	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDMDBBW
Reference Design:	Design #1	Offset TVD Reference:	Reference Datum

Offset Design Gunderson - Gunderson 29-14E - Wellbore #1 - Design #1													Offset Site Error:	0.00 usft
Survey Program: 0-MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
6,210.00	6,146.83	6,248.62	6,146.83	19.95	23.50	-179.94	-982.38	295.41	248.76	217.72	31.04	8.014		
6,240.00	6,176.83	6,278.62	6,176.83	19.99	23.53	-179.94	-982.38	295.41	248.76	217.62	31.13	7.990		
6,270.00	6,206.83	6,308.62	6,206.83	20.03	23.56	-179.94	-982.38	295.41	248.76	217.53	31.23	7.966		
6,300.00	6,236.83	6,338.62	6,236.83	20.06	23.59	-179.94	-982.38	295.41	248.76	217.43	31.32	7.942		
6,330.00	6,266.83	6,368.62	6,266.83	20.10	23.62	-179.94	-982.38	295.41	248.76	217.34	31.42	7.918		
6,360.00	6,296.83	6,398.62	6,296.83	20.14	23.66	-179.94	-982.38	295.41	248.76	217.24	31.51	7.894		
6,390.00	6,326.83	6,428.62	6,326.83	20.17	23.69	-179.94	-982.38	295.41	248.76	217.15	31.61	7.870		
6,420.00	6,356.83	6,458.62	6,356.83	20.21	23.72	-179.94	-982.38	295.41	248.76	217.05	31.70	7.846		
6,450.00	6,386.83	6,488.62	6,386.83	20.25	23.75	-179.94	-982.38	295.41	248.76	216.95	31.80	7.822		
6,480.00	6,416.83	6,518.62	6,416.83	20.28	23.78	-179.94	-982.38	295.41	248.76	216.86	31.90	7.799		
6,510.00	6,446.83	6,548.62	6,446.83	20.32	23.81	-179.94	-982.38	295.41	248.76	216.76	31.99	7.775		
6,540.00	6,476.83	6,578.62	6,476.83	20.36	23.84	-179.94	-982.38	295.41	248.76	216.66	32.09	7.751		
6,570.00	6,506.83	6,608.62	6,506.83	20.40	23.87	-179.94	-982.38	295.41	248.76	216.57	32.19	7.728		
6,600.00	6,536.83	6,638.62	6,536.83	20.44	23.90	-179.94	-982.38	295.41	248.76	216.47	32.29	7.705		
6,630.00	6,566.83	6,668.62	6,566.83	20.47	23.94	-179.94	-982.38	295.41	248.76	216.37	32.39	7.681		
6,660.00	6,596.83	6,698.62	6,596.83	20.51	23.97	-179.94	-982.38	295.41	248.76	216.27	32.48	7.658		
6,690.00	6,626.83	6,728.62	6,626.83	20.55	24.00	-179.94	-982.38	295.41	248.76	216.17	32.58	7.635		
6,720.00	6,656.83	6,758.62	6,656.83	20.59	24.03	-179.94	-982.38	295.41	248.76	216.08	32.68	7.612		
6,750.00	6,686.83	6,788.62	6,686.83	20.63	24.06	-179.94	-982.38	295.41	248.76	215.98	32.78	7.589		
6,780.00	6,716.83	6,818.62	6,716.83	20.67	24.10	-179.94	-982.38	295.41	248.76	215.88	32.88	7.566		
6,810.00	6,746.83	6,848.62	6,746.83	20.71	24.13	-179.94	-982.38	295.41	248.76	215.78	32.98	7.543		
6,840.00	6,776.83	6,878.62	6,776.83	20.74	24.16	-179.94	-982.38	295.41	248.76	215.68	33.08	7.520		
6,870.00	6,806.83	6,908.62	6,806.83	20.78	24.20	-179.94	-982.38	295.41	248.76	215.58	33.18	7.498		
6,900.00	6,836.83	6,938.62	6,836.83	20.82	24.23	-179.94	-982.38	295.41	248.76	215.48	33.28	7.475		
6,930.00	6,866.83	6,968.62	6,866.83	20.86	24.26	-179.94	-982.38	295.41	248.76	215.38	33.38	7.452		
6,960.00	6,896.83	6,998.62	6,896.83	20.90	24.30	-179.94	-982.38	295.41	248.76	215.28	33.48	7.430		
6,990.00	6,926.83	7,028.62	6,926.83	20.94	24.33	-179.94	-982.38	295.41	248.76	215.17	33.58	7.408		
7,020.00	6,956.83	7,058.62	6,956.83	20.98	24.36	-179.94	-982.38	295.41	248.76	215.07	33.68	7.385		
7,050.00	6,986.83	7,088.62	6,986.83	21.02	24.40	-179.94	-982.38	295.41	248.76	214.97	33.78	7.363		
7,080.00	7,016.83	7,118.62	7,016.83	21.06	24.43	-179.94	-982.38	295.41	248.76	214.87	33.89	7.341		
7,110.00	7,046.83	7,148.62	7,046.83	21.10	24.46	-179.94	-982.38	295.41	248.76	214.77	33.99	7.319		
7,140.00	7,076.83	7,178.62	7,076.83	21.14	24.50	-179.94	-982.38	295.41	248.76	214.67	34.09	7.297		
7,170.00	7,106.83	7,208.62	7,106.83	21.18	24.53	-179.94	-982.38	295.41	248.76	214.56	34.19	7.275		
7,200.00	7,136.83	7,238.62	7,136.83	21.23	24.57	-179.94	-982.38	295.41	248.76	214.46	34.29	7.254		
7,230.00	7,166.83	7,268.62	7,166.83	21.27	24.60	-179.94	-982.38	295.41	248.76	214.36	34.40	7.232		
7,260.00	7,196.83	7,298.62	7,196.83	21.31	24.64	-179.94	-982.38	295.41	248.76	214.26	34.50	7.210		
7,290.00	7,226.83	7,328.62	7,226.83	21.35	24.67	-179.94	-982.38	295.41	248.76	214.15	34.60	7.189		
7,320.00	7,256.83	7,358.62	7,256.83	21.39	24.71	-179.94	-982.38	295.41	248.76	214.05	34.71	7.167		
7,350.00	7,286.83	7,388.62	7,286.83	21.43	24.74	-179.94	-982.38	295.41	248.76	213.94	34.81	7.146		
7,380.00	7,316.83	7,418.62	7,316.83	21.47	24.78	-179.94	-982.38	295.41	248.76	213.84	34.91	7.125		
7,410.00	7,346.83	7,448.62	7,346.83	21.51	24.81	-179.94	-982.38	295.41	248.76	213.74	35.02	7.103		
7,440.00	7,376.83	7,478.62	7,376.83	21.56	24.85	-179.94	-982.38	295.41	248.76	213.63	35.12	7.082		
7,470.00	7,406.83	7,508.62	7,406.83	21.60	24.88	-179.94	-982.38	295.41	248.76	213.53	35.23	7.061		
7,500.00	7,436.83	7,538.62	7,436.83	21.64	24.92	-179.94	-982.38	295.41	248.76	213.42	35.33	7.040		
7,530.00	7,466.83	7,568.62	7,466.83	21.68	24.96	-179.94	-982.38	295.41	248.76	213.32	35.44	7.020		
7,560.00	7,496.83	7,598.62	7,496.83	21.73	24.99	-179.94	-982.38	295.41	248.76	213.21	35.54	6.999		
7,590.00	7,526.83	7,628.62	7,526.83	21.77	25.03	-179.94	-982.38	295.41	248.76	213.11	35.65	6.978		
7,620.00	7,556.83	7,658.62	7,556.83	21.81	25.06	-179.94	-982.38	295.41	248.76	213.00	35.75	6.958		
7,650.00	7,586.83	7,688.62	7,586.83	21.85	25.10	-179.94	-982.38	295.41	248.76	212.90	35.86	6.937		
7,680.00	7,616.83	7,718.62	7,616.83	21.90	25.14	-179.94	-982.38	295.41	248.76	212.79	35.97	6.917		
7,710.00	7,646.83	7,748.62	7,646.83	21.94	25.17	-179.94	-982.38	295.41	248.76	212.68	36.07	6.896		
7,740.00	7,676.83	7,778.62	7,676.83	21.98	25.21	-179.94	-982.38	295.41	248.76	212.58	36.18	6.876		

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 29-13E
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 29-13E	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDMDBBW
Reference Design:	Design #1	Offset TVD Reference:	Reference Datum

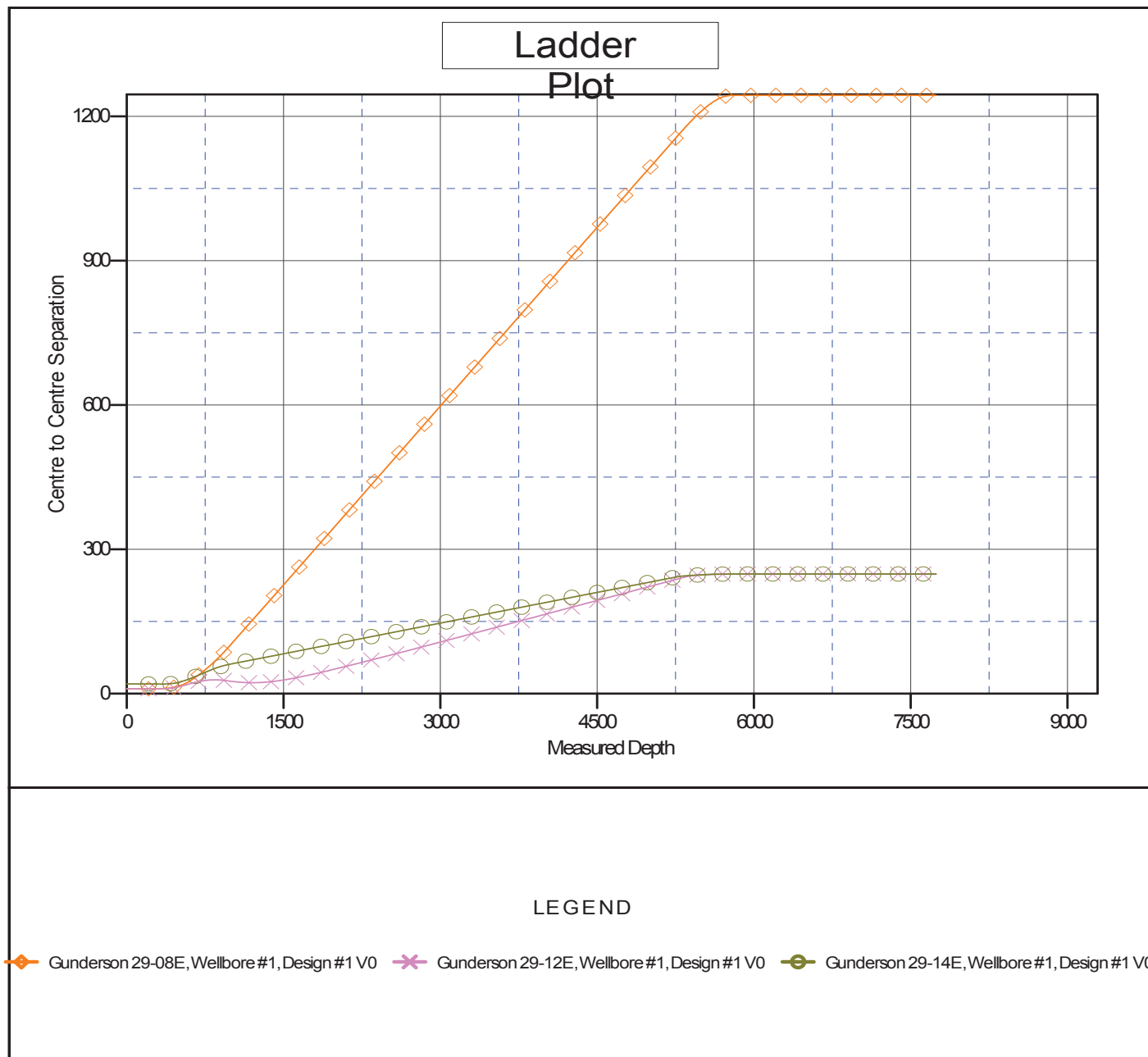
Offset Design Gunderson - Gunderson 29-14E - Wellbore #1 - Design #1												Offset Site Error:	0.00 usft
Survey Program: 0-MWD												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	
7,743.17	7,680.00	7,781.79	7,680.00	21.99	25.22	-179.94	-982.38	295.41	248.76	212.57	36.19	6.874 SF	



Company:	Piceance Energy, LLC	Local Co-ordinate Reference:	Well Gunderson 29-13E
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 29-13E	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 29-13E
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 29-13E
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 29-13E	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 29-13E

Coordinate System is US State Plane 1983, Colorado Central Zone

Grid Convergence at Surface is: -1.44°

