Piceance Energy, LLC

Mesa County, CO
Gunderson 20-09
Gunderson 20-18E

Slot A-4

Plan: Design #1

Standard Planning Report

22 September, 2015

Project: Mesa County, CO
Site: Gunderson 20-09
Well: Gunderson 20-18E
Wellbore: Slot A-4
Design: Design #1
Latitude: 39° 15' 38.750 N
Longitude: 107° 47' 4.441 W
Ground Level: 7475.0
Well @ 7497.0usft

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 20-18E, True North
Vertical (TVD) Reference: Well @ 7497.0usft
Section (VS) Reference: Slot - (0.0N, 0.0E)
Measured Depth Reference: Well @ 7497.0usft
Calculation Method: Minimum Curvature

WELL DETAILS: Gunderson 20-18E

Ground Level: 7475.0

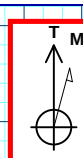
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1528000.32	2353207.66	39° 15' 38.750 N	107° 47' 4.441 W	

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

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
Gunderson 20-18E tgt	7742.0	-1295.1	-636.3	1526721.59	2352539.04	39° 15' 25.949 N	107° 47' 12.530 W	Circle (Radius: 50.0)

SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Annotation
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
300.0	0.00	0.00	300.0	0.0	0.0	0.00	0.00	0.0	Start Build 2.00
1176.9	17.54	206.16	1163.2	-119.5	-58.7	2.00	206.16	133.2	Start 3905.0 hold at 1176.9 MD
5081.9	17.54	206.16	4886.8	-1175.6	-577.5	0.00	0.00	1309.8	Start Drop -2.00
5958.8	0.00	0.00	5750.0	-1295.1	-636.3	2.00	180.00	1443.0	Start 1992.0 hold at 5958.8 MD
7950.8	0.00	0.00	7742.0	-1295.1	-636.3	0.00	0.00	1443.0	TD at 7950.8

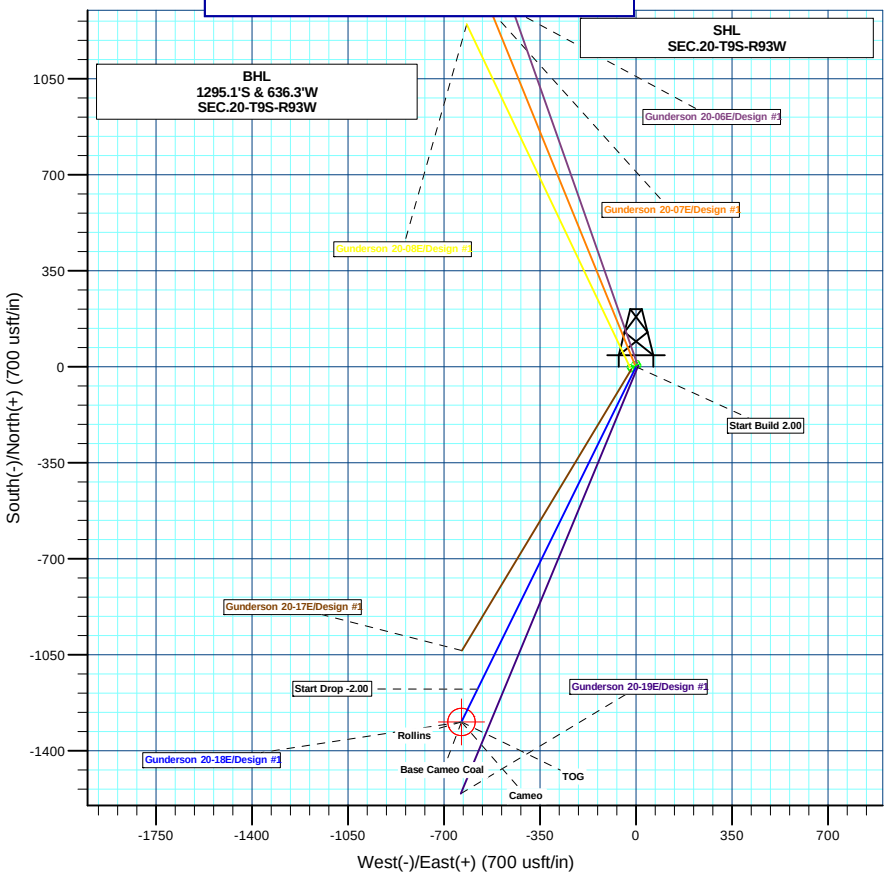


Azimuths to True North
Magnetic North: 9.68°

Magnetic Field
Strength: 51706.6snT
Dip Angle: 65.47°
Date: 09/21/2015
Model: IGRF2010

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
2792.0	2885.0	G Sand
4592.0	4772.8	Williams Fork
5792.0	6000.8	TOG
6892.0	7100.8	Cameo
7550.0	7758.8	Base Cameo Coal
7592.0	7800.8	Rollins



Plan: Design #1 (Gunderson 20-18E/Slot A-4)

Created By: Ricky Osburn Date: 13:36, September 22 2015

Database:	EDMDBBW	**Local Co-ordinate Reference:**	Well Gunderson 20-18E
Company:	Piceance Energy, LLC	**TVD Reference:**	Well @ 7497.0usft
Project:	Mesa County, CO	**MD Reference:**	Well @ 7497.0usft
Site:	Gunderson 20-09	**North Reference:**	True
Well:	Gunderson 20-18E	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Slot A-4		
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 20-09

Site Position:		**Northing:**	1,527,948.13 usft	**Latitude:**	39° 15' 38.210 N
From:	Lat/Long	**Easting:**	2,353,110.33 usft	**Longitude:**	107° 47' 5.662 W
Position Uncertainty:	0.0 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	-1.44 °

Well Gunderson 20-18E

Well Position	**+N/-S**	54.6 usft	**Northing:**	1,528,000.32 usft	**Latitude:**	39° 15' 38.750 N
	+E/-W	96.0 usft	**Easting:**	2,353,207.66 usft	**Longitude:**	107° 47' 4.441 W
Position Uncertainty		0.0 usft	**Wellhead Elevation:**	0.0 usft	**Ground Level:**	7,475.0 usft

Wellbore Slot A-4

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	2015/09/21	9.68	65.47	51,707

Design Design #1

Audit Notes:

Version:		**Phase:**	PLAN	**Tie On Depth:**	0.0

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	206.16

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
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
300.0	0.00	0.00	300.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,176.9	17.54	206.16	1,163.2	-119.5	-58.7	2.00	2.00	0.00	206.16	
5,081.9	17.54	206.16	4,886.8	-1,175.6	-577.5	0.00	0.00	0.00	0.00	
5,958.8	0.00	0.00	5,750.0	-1,295.1	-636.3	2.00	-2.00	0.00	180.00	
7,950.8	0.00	0.00	7,742.0	-1,295.1	-636.3	0.00	0.00	0.00	0.00	Gunderson 20-18E tg

Database:	EDMDBBW	**Local Co-ordinate Reference:**	Well Gunderson 20-18E
Company:	Piceance Energy, LLC	**TVD Reference:**	Well @ 7497.0usft
Project:	Mesa County, CO	**MD Reference:**	Well @ 7497.0usft
Site:	Gunderson 20-09	**North Reference:**	True
Well:	Gunderson 20-18E	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Slot A-4		
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)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
Start Build 2.00									
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	2.00	206.16	400.0	-1.6	-0.8	1.7	2.00	2.00	0.00
500.0	4.00	206.16	499.8	-6.3	-3.1	7.0	2.00	2.00	0.00
600.0	6.00	206.16	599.5	-14.1	-6.9	15.7	2.00	2.00	0.00
700.0	8.00	206.16	698.7	-25.0	-12.3	27.9	2.00	2.00	0.00
800.0	10.00	206.16	797.5	-39.1	-19.2	43.5	2.00	2.00	0.00
900.0	12.00	206.16	895.6	-56.2	-27.6	62.6	2.00	2.00	0.00
1,000.0	14.00	206.16	993.1	-76.4	-37.5	85.1	2.00	2.00	0.00
1,100.0	16.00	206.16	1,089.6	-99.6	-48.9	111.0	2.00	2.00	0.00
Start 3905.0 hold at 1176.9 MD									
1,176.9	17.54	206.16	1,163.2	-119.5	-58.7	133.2	2.00	2.00	0.00
1,200.0	17.54	206.16	1,185.3	-125.8	-61.8	140.1	0.00	0.00	0.00
1,300.0	17.54	206.16	1,280.6	-152.8	-75.1	170.3	0.00	0.00	0.00
1,400.0	17.54	206.16	1,376.0	-179.9	-88.4	200.4	0.00	0.00	0.00
1,500.0	17.54	206.16	1,471.4	-206.9	-101.6	230.5	0.00	0.00	0.00
8-5/8									
1,553.1	17.54	206.16	1,522.0	-221.3	-108.7	246.5	0.00	0.00	0.00
1,600.0	17.54	206.16	1,566.7	-233.9	-114.9	260.7	0.00	0.00	0.00
1,700.0	17.54	206.16	1,662.1	-261.0	-128.2	290.8	0.00	0.00	0.00
1,800.0	17.54	206.16	1,757.4	-288.0	-141.5	320.9	0.00	0.00	0.00
1,900.0	17.54	206.16	1,852.8	-315.1	-154.8	351.1	0.00	0.00	0.00
2,000.0	17.54	206.16	1,948.1	-342.1	-168.1	381.2	0.00	0.00	0.00
2,100.0	17.54	206.16	2,043.5	-369.2	-181.4	411.3	0.00	0.00	0.00
2,200.0	17.54	206.16	2,138.8	-396.2	-194.6	441.4	0.00	0.00	0.00
2,300.0	17.54	206.16	2,234.2	-423.3	-207.9	471.6	0.00	0.00	0.00
2,400.0	17.54	206.16	2,329.5	-450.3	-221.2	501.7	0.00	0.00	0.00
2,500.0	17.54	206.16	2,424.9	-477.4	-234.5	531.8	0.00	0.00	0.00
2,600.0	17.54	206.16	2,520.2	-504.4	-247.8	562.0	0.00	0.00	0.00
2,700.0	17.54	206.16	2,615.6	-531.4	-261.1	592.1	0.00	0.00	0.00
2,800.0	17.54	206.16	2,710.9	-558.5	-274.4	622.2	0.00	0.00	0.00
G Sand									
2,885.0	17.54	206.16	2,792.0	-581.5	-285.7	647.9	0.00	0.00	0.00
2,900.0	17.54	206.16	2,806.3	-585.5	-287.7	652.4	0.00	0.00	0.00
3,000.0	17.54	206.16	2,901.6	-612.6	-300.9	682.5	0.00	0.00	0.00
3,100.0	17.54	206.16	2,997.0	-639.6	-314.2	712.6	0.00	0.00	0.00
3,200.0	17.54	206.16	3,092.3	-666.7	-327.5	742.8	0.00	0.00	0.00
3,300.0	17.54	206.16	3,187.7	-693.7	-340.8	772.9	0.00	0.00	0.00
3,400.0	17.54	206.16	3,283.0	-720.8	-354.1	803.0	0.00	0.00	0.00
3,500.0	17.54	206.16	3,378.4	-747.8	-367.4	833.2	0.00	0.00	0.00
3,600.0	17.54	206.16	3,473.7	-774.9	-380.7	863.3	0.00	0.00	0.00
3,700.0	17.54	206.16	3,569.1	-801.9	-393.9	893.4	0.00	0.00	0.00
3,800.0	17.54	206.16	3,664.5	-828.9	-407.2	923.6	0.00	0.00	0.00
3,900.0	17.54	206.16	3,759.8	-856.0	-420.5	953.7	0.00	0.00	0.00
4,000.0	17.54	206.16	3,855.2	-883.0	-433.8	983.8	0.00	0.00	0.00
4,100.0	17.54	206.16	3,950.5	-910.1	-447.1	1,014.0	0.00	0.00	0.00
4,200.0	17.54	206.16	4,045.9	-937.1	-460.4	1,044.1	0.00	0.00	0.00
4,300.0	17.54	206.16	4,141.2	-964.2	-473.7	1,074.2	0.00	0.00	0.00
4,400.0	17.54	206.16	4,236.6	-991.2	-486.9	1,104.4	0.00	0.00	0.00
4,500.0	17.54	206.16	4,331.9	-1,018.3	-500.2	1,134.5	0.00	0.00	0.00
4,600.0	17.54	206.16	4,427.3	-1,045.3	-513.5	1,164.6	0.00	0.00	0.00

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Company:	Piceance Energy, LLC	**TVD Reference:**	Well @ 7497.0usft
Project:	Mesa County, CO	**MD Reference:**	Well @ 7497.0usft
Site:	Gunderson 20-09	**North Reference:**	True
Well:	Gunderson 20-18E	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Slot A-4		
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)
4,700.0	17.54	206.16	4,522.6	-1,072.3	-526.8	1,194.8	0.00	0.00	0.00
Williams Fork									
4,772.8	17.54	206.16	4,592.0	-1,092.0	-536.5	1,216.7	0.00	0.00	0.00
4,800.0	17.54	206.16	4,618.0	-1,099.4	-540.1	1,224.9	0.00	0.00	0.00
4,900.0	17.54	206.16	4,713.3	-1,126.4	-553.4	1,255.0	0.00	0.00	0.00
5,000.0	17.54	206.16	4,808.7	-1,153.5	-566.7	1,285.2	0.00	0.00	0.00
Start Drop -2.00									
5,081.9	17.54	206.16	4,886.8	-1,175.6	-577.5	1,309.8	0.00	0.00	0.00
5,100.0	17.18	206.16	4,904.0	-1,180.5	-579.9	1,315.2	2.00	-2.00	0.00
5,200.0	15.18	206.16	5,000.1	-1,205.5	-592.2	1,343.1	2.00	-2.00	0.00
5,300.0	13.18	206.16	5,097.0	-1,227.5	-603.0	1,367.6	2.00	-2.00	0.00
5,400.0	11.18	206.16	5,194.8	-1,246.4	-612.3	1,388.7	2.00	-2.00	0.00
5,500.0	9.18	206.16	5,293.2	-1,262.2	-620.1	1,406.3	2.00	-2.00	0.00
5,600.0	7.18	206.16	5,392.2	-1,275.0	-626.4	1,420.6	2.00	-2.00	0.00
5,700.0	5.18	206.16	5,491.6	-1,284.7	-631.1	1,431.3	2.00	-2.00	0.00
5,800.0	3.18	206.16	5,591.3	-1,291.2	-634.3	1,438.6	2.00	-2.00	0.00
5,900.0	1.18	206.16	5,691.2	-1,294.6	-636.0	1,442.4	2.00	-2.00	0.00
Start 1992.0 hold at 5958.8 MD									
5,958.8	0.00	0.00	5,750.0	-1,295.1	-636.3	1,443.0	2.00	-2.00	0.00
6,000.0	0.00	0.00	5,791.2	-1,295.1	-636.3	1,443.0	0.00	0.00	0.00
TOG									
6,000.8	0.00	0.00	5,792.0	-1,295.1	-636.3	1,443.0	0.00	0.00	0.00
6,100.0	0.00	0.00	5,891.2	-1,295.1	-636.3	1,443.0	0.00	0.00	0.00
6,200.0	0.00	0.00	5,991.2	-1,295.1	-636.3	1,443.0	0.00	0.00	0.00
6,300.0	0.00	0.00	6,091.2	-1,295.1	-636.3	1,443.0	0.00	0.00	0.00
6,400.0	0.00	0.00	6,191.2	-1,295.1	-636.3	1,443.0	0.00	0.00	0.00
6,500.0	0.00	0.00	6,291.2	-1,295.1	-636.3	1,443.0	0.00	0.00	0.00
6,600.0	0.00	0.00	6,391.2	-1,295.1	-636.3	1,443.0	0.00	0.00	0.00
6,700.0	0.00	0.00	6,491.2	-1,295.1	-636.3	1,443.0	0.00	0.00	0.00
6,800.0	0.00	0.00	6,591.2	-1,295.1	-636.3	1,443.0	0.00	0.00	0.00
6,900.0	0.00	0.00	6,691.2	-1,295.1	-636.3	1,443.0	0.00	0.00	0.00
7,000.0	0.00	0.00	6,791.2	-1,295.1	-636.3	1,443.0	0.00	0.00	0.00
7,100.0	0.00	0.00	6,891.2	-1,295.1	-636.3	1,443.0	0.00	0.00	0.00
Cameo									
7,100.8	0.00	0.00	6,892.0	-1,295.1	-636.3	1,443.0	0.00	0.00	0.00
7,200.0	0.00	0.00	6,991.2	-1,295.1	-636.3	1,443.0	0.00	0.00	0.00
7,300.0	0.00	0.00	7,091.2	-1,295.1	-636.3	1,443.0	0.00	0.00	0.00
7,400.0	0.00	0.00	7,191.2	-1,295.1	-636.3	1,443.0	0.00	0.00	0.00
7,500.0	0.00	0.00	7,291.2	-1,295.1	-636.3	1,443.0	0.00	0.00	0.00
7,600.0	0.00	0.00	7,391.2	-1,295.1	-636.3	1,443.0	0.00	0.00	0.00
7,700.0	0.00	0.00	7,491.2	-1,295.1	-636.3	1,443.0	0.00	0.00	0.00
Base Cameo Coal									
7,758.8	0.00	0.00	7,550.0	-1,295.1	-636.3	1,443.0	0.00	0.00	0.00
7,800.0	0.00	0.00	7,591.2	-1,295.1	-636.3	1,443.0	0.00	0.00	0.00
Rollins									
7,800.8	0.00	0.00	7,592.0	-1,295.1	-636.3	1,443.0	0.00	0.00	0.00
7,900.0	0.00	0.00	7,691.2	-1,295.1	-636.3	1,443.0	0.00	0.00	0.00
TD at 7950.8									
7,950.8	0.00	0.00	7,742.0	-1,295.1	-636.3	1,443.0	0.00	0.00	0.00

Database:	EDMDBBW	**Local Co-ordinate Reference:**	Well Gunderson 20-18E
Company:	Piceance Energy, LLC	**TVD Reference:**	Well @ 7497.0usft
Project:	Mesa County, CO	**MD Reference:**	Well @ 7497.0usft
Site:	Gunderson 20-09	**North Reference:**	True
Well:	Gunderson 20-18E	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Slot A-4		
Design:	Design #1		

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
Gunderson 20-18E tgt - plan hits target center - Circle (radius 50.0)	0.00	0.00	7,742.0	-1,295.1	-636.3	1,526,721.59	2,352,539.04	39° 15' 25.949 N	107° 47' 12.530 W

Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
1,553.1	1,522.0	8-5/8	8-5/8	12-1/4

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
2,885.0	2,792.0	G Sand		0.00	
4,772.8	4,592.0	Williams Fork		0.00	
6,000.8	5,792.0	TOG		0.00	
7,100.8	6,892.0	Cameo		0.00	
7,758.8	7,550.0	Base Cameo Coal		0.00	
7,800.8	7,592.0	Rollins		0.00	

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
300.0	300.0	0.0	0.0	Start Build 2.00
1,176.9	1,163.2	-119.5	-58.7	Start 3905.0 hold at 1176.9 MD
5,081.9	4,886.8	-1,175.6	-577.5	Start Drop -2.00
5,958.8	5,750.0	-1,295.1	-636.3	Start 1992.0 hold at 5958.8 MD
7,950.8	7,742.0	-1,295.1	-636.3	TD at 7950.8

Piceance Energy, LLC

Mesa County, CO
Gunderson 20-09
Gunderson 20-18E

Slot A-4
Design #1

Anticollision Report

22 September, 2015

Archer

Anticollision Report

Company:	Piceance Energy, LLC	**Local Co-ordinate Reference:**	Well Gunderson 20-18E
Project:	Mesa County, CO	**TVD Reference:**	Well @ 7497.0usft
Reference Site:	Gunderson 20-09	**MD Reference:**	Well @ 7497.0usft
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	Gunderson 20-18E	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Slot A-4	**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 100.0usft	**Error Model:**	ISCWSA
Depth Range:	Unlimited	**Scan Method:**	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 1,000.0 usft	**Error Surface:**	Elliptical Conic
Warning Levels Evaluated at:	2.00 **Sigma**	**Casing Method:**	Not applied

Survey Tool Program **Date** 2015/09/22

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.0	7,950.8	Design #1 (Slot A-4)	MWD	MWD - Standard

Summary

Site Name / Offset Well - Wellbore - Design	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Gunderson 20-09						
Gunderson 20-06E - Slot B-3 - Design #1	100.0	100.0	13.7	13.5	78.132	CC, ES
Gunderson 20-06E - Slot B-3 - Design #1	300.0	298.9	19.7	18.5	16.640	SF
Gunderson 20-07E - Slot B-4 - Design #1	100.0	100.0	9.2	9.0	52.504	CC, ES
Gunderson 20-07E - Slot B-4 - Design #1	300.0	299.0	16.1	14.9	13.391	SF
Gunderson 20-08E - Slot B-5 - Design #1	386.4	386.1	21.8	20.3	15.096	CC
Gunderson 20-08E - Slot B-5 - Design #1	400.0	399.6	21.8	20.3	14.514	ES
Gunderson 20-08E - Slot B-5 - Design #1	500.0	498.7	24.0	22.1	12.249	SF
Gunderson 20-17E - Slot A-5 - Design #1	200.0	200.0	20.1	19.4	32.100	CC, ES
Gunderson 20-17E - Slot A-5 - Design #1	1,800.0	1,791.2	37.1	23.2	2.674	SF
Gunderson 20-19E - Slot A-3 - Design #1	301.0	301.2	6.6	5.5	6.173	CC, ES
Gunderson 20-19E - Slot A-3 - Design #1	7,950.8	8,017.3	260.8	216.5	5.887	SF

Offset Design Gunderson 20-09 - Gunderson 20-06E - Slot B-3 - Design #1

Survey Program: 0-MWD

Offset Site Error: 0.0 usft

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	16.82	13.1	4.0	13.7				
100.0	100.0	100.0	100.0	0.1	0.1	16.82	13.1	4.0	13.7	13.5	0.18	78.132	CC, ES
200.0	200.0	199.6	199.6	0.3	0.3	12.95	14.7	3.4	15.1	14.5	0.67	22.674	
300.0	300.0	298.9	298.8	0.5	0.6	4.88	19.6	1.7	19.7	18.5	1.19	16.640	SF
400.0	400.0	397.6	397.1	0.7	0.8	152.97	27.7	-1.2	29.4	27.7	1.70	17.311	
500.0	499.8	495.1	493.8	0.9	1.1	151.00	38.8	-5.1	45.5	43.3	2.21	20.548	
600.0	599.5	590.8	588.4	1.2	1.4	150.62	52.7	-9.9	67.7	65.0	2.74	24.732	
700.0	698.7	684.1	680.1	1.4	1.8	150.74	69.1	-15.7	96.0	92.7	3.27	29.334	
800.0	797.5	774.7	768.5	1.8	2.2	150.97	87.7	-22.3	130.1	126.3	3.81	34.108	
900.0	895.6	862.2	853.2	2.1	2.6	151.17	108.2	-29.5	169.8	165.4	4.36	38.924	
1,000.0	993.1	946.1	933.8	2.6	3.0	151.29	130.1	-37.2	214.8	209.9	4.91	43.713	
1,100.0	1,089.6	1,026.2	1,010.2	3.1	3.5	151.32	153.1	-45.3	265.0	259.5	5.47	48.440	
1,200.0	1,185.3	1,100.0	1,079.8	3.6	3.9	151.39	176.1	-53.3	319.9	313.8	6.03	53.017	
1,300.0	1,280.6	1,175.7	1,150.6	4.2	4.5	151.76	201.4	-62.2	377.6	371.0	6.56	57.527	
1,400.0	1,376.0	1,250.5	1,219.9	4.8	5.0	151.94	228.0	-71.6	437.0	429.9	7.09	61.599	
1,500.0	1,471.4	1,330.6	1,294.0	5.4	5.6	152.07	256.8	-81.7	496.8	489.2	7.66	64.883	

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

Company:	Piceance Energy, LLC	**Local Co-ordinate Reference:**	Well Gunderson 20-18E
Project:	Mesa County, CO	**TVD Reference:**	Well @ 7497.0usft
Reference Site:	Gunderson 20-09	**MD Reference:**	Well @ 7497.0usft
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	Gunderson 20-18E	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Slot A-4	**Database:**	EDMDBBW
Reference Design:	Design #1	**Offset TVD Reference:**	Reference Datum

Offset Design Gunderson 20-09 - Gunderson 20-06E - Slot B-3 - Design #1

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
1,600.0	1,566.7	1,410.7	1,368.1	6.0	6.2	152.16	285.6	-91.8	556.7	548.4	8.23	67.606	
1,700.0	1,662.1	1,490.9	1,442.2	6.6	6.7	152.24	314.3	-101.9	616.5	607.7	8.82	69.887	
1,800.0	1,757.4	1,571.0	1,516.3	7.2	7.3	152.31	343.1	-112.0	676.3	666.9	9.42	71.812	
1,900.0	1,852.8	1,651.1	1,590.4	7.8	7.9	152.37	371.9	-122.1	736.1	726.1	10.02	73.450	
2,000.0	1,948.1	1,731.3	1,664.5	8.4	8.5	152.41	400.7	-132.3	795.9	785.3	10.63	74.858	
2,100.0	2,043.5	1,811.4	1,738.6	9.0	9.1	152.45	429.5	-142.4	855.8	844.5	11.25	76.077	
2,200.0	2,138.8	1,891.5	1,812.7	9.6	9.7	152.49	458.3	-152.5	915.6	903.7	11.87	77.141	
2,300.0	2,234.2	1,971.7	1,886.8	10.2	10.3	152.52	487.0	-162.6	975.4	962.9	12.49	78.075	

Company:	Piceance Energy, LLC	**Local Co-ordinate Reference:**	Well Gunderson 20-18E
Project:	Mesa County, CO	**TVD Reference:**	Well @ 7497.0usft
Reference Site:	Gunderson 20-09	**MD Reference:**	Well @ 7497.0usft
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	Gunderson 20-18E	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Slot A-4	**Database:**	EDMDBBW
Reference Design:	Design #1	**Offset TVD Reference:**	Reference Datum

Offset Design Gunderson 20-09 - Gunderson 20-07E - Slot B-4 - Design #1

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-29.48	8.0	-4.5	9.2				
100.0	100.0	100.0	100.0	0.1	0.1	-29.48	8.0	-4.5	9.2	9.0	0.18	52.504	CC, ES
200.0	200.0	199.6	199.6	0.3	0.3	-28.32	9.6	-5.2	10.9	10.2	0.68	16.007	
300.0	300.0	299.0	298.9	0.5	0.6	-26.34	14.4	-7.1	16.1	14.9	1.20	13.391	SF
400.0	400.0	397.8	397.3	0.7	0.8	131.80	22.3	-10.4	25.9	24.2	1.71	15.144	
500.0	499.8	495.4	494.1	0.9	1.1	136.86	33.2	-14.8	41.6	39.4	2.22	18.742	
600.0	599.5	591.2	588.8	1.2	1.4	140.60	46.9	-20.4	63.4	60.6	2.74	23.103	
700.0	698.7	684.7	680.7	1.4	1.8	143.15	63.1	-27.0	91.1	87.8	3.28	27.809	
800.0	797.5	775.5	769.3	1.8	2.2	144.89	81.4	-34.4	124.7	120.9	3.82	32.637	
900.0	895.6	863.2	854.2	2.1	2.6	146.06	101.6	-42.6	163.8	159.5	4.37	37.465	
1,000.0	993.1	947.4	935.1	2.6	3.0	146.85	123.3	-51.4	208.3	203.4	4.93	42.229	
1,100.0	1,089.6	1,027.9	1,011.8	3.1	3.5	147.34	146.0	-60.7	257.9	252.4	5.50	46.920	
1,200.0	1,185.3	1,109.9	1,089.3	3.6	4.0	147.88	170.7	-70.8	311.7	305.7	6.07	51.373	
1,300.0	1,280.6	1,193.5	1,168.3	4.2	4.5	148.74	196.0	-81.0	366.5	359.8	6.62	55.393	
1,400.0	1,376.0	1,277.1	1,247.3	4.8	5.1	149.38	221.2	-91.3	421.2	414.0	7.19	58.604	
1,500.0	1,471.4	1,360.7	1,326.4	5.4	5.6	149.87	246.5	-101.6	476.0	468.2	7.77	61.225	
1,600.0	1,566.7	1,444.3	1,405.4	6.0	6.1	150.26	271.8	-111.9	530.8	522.5	8.37	63.398	
1,700.0	1,662.1	1,527.9	1,484.4	6.6	6.7	150.57	297.0	-122.2	585.7	576.7	8.98	65.219	
1,800.0	1,757.4	1,611.5	1,563.4	7.2	7.2	150.83	322.3	-132.5	640.5	630.9	9.59	66.760	
1,900.0	1,852.8	1,695.0	1,642.4	7.8	7.7	151.06	347.6	-142.8	695.3	685.1	10.21	68.078	
2,000.0	1,948.1	1,778.6	1,721.4	8.4	8.3	151.24	372.8	-153.0	750.2	739.4	10.84	69.214	
2,100.0	2,043.5	1,862.2	1,800.4	9.0	8.8	151.41	398.1	-163.3	805.1	793.6	11.47	70.201	
2,200.0	2,138.8	1,945.8	1,879.4	9.6	9.4	151.55	423.4	-173.6	859.9	847.8	12.10	71.066	
2,300.0	2,234.2	2,029.4	1,958.4	10.2	9.9	151.67	448.6	-183.9	914.8	902.0	12.74	71.830	
2,400.0	2,329.5	2,113.0	2,037.5	10.8	10.5	151.79	473.9	-194.2	969.6	956.3	13.37	72.508	

Company:	Piceance Energy, LLC	**Local Co-ordinate Reference:**	Well Gunderson 20-18E
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Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	Gunderson 20-18E	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Slot A-4	**Database:**	EDMDBBW
Reference Design:	Design #1	**Offset TVD Reference:**	Reference Datum

Offset Design Gunderson 20-09 - Gunderson 20-08E - Slot B-5 - Design #1

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-95.72	-2.2	-21.8	21.9				
100.0	100.0	100.0	100.0	0.1	0.1	-95.72	-2.2	-21.8	21.9	21.7	0.18	124.981	
200.0	200.0	200.0	200.0	0.3	0.3	-95.72	-2.2	-21.8	21.9	21.3	0.62	35.067	
300.0	300.0	300.0	300.0	0.5	0.5	-95.72	-2.2	-21.8	21.9	20.8	1.07	20.394	
386.4	386.4	386.1	386.1	0.7	0.7	64.23	-1.0	-22.4	21.8	20.3	1.44	15.096	CC
400.0	400.0	399.6	399.6	0.7	0.8	66.31	-0.6	-22.5	21.8	20.3	1.50	14.514	ES
500.0	499.8	498.7	498.5	0.9	1.0	89.02	4.0	-24.8	24.0	22.1	1.96	12.249	SF
600.0	599.5	596.6	596.1	1.2	1.2	113.34	11.7	-28.4	33.7	31.2	2.50	13.480	
700.0	698.7	692.8	691.6	1.4	1.5	128.61	22.1	-33.4	52.1	49.1	3.04	17.112	
800.0	797.5	786.8	784.5	1.8	1.8	136.89	35.1	-39.5	78.0	74.4	3.58	21.753	
900.0	895.6	878.2	874.3	2.1	2.1	141.53	50.3	-46.8	110.3	106.2	4.13	26.721	
1,000.0	993.1	966.5	960.5	2.6	2.5	144.27	67.5	-55.0	148.5	143.9	4.68	31.733	
1,100.0	1,089.6	1,051.4	1,042.8	3.1	2.8	145.94	86.3	-63.9	192.3	187.0	5.24	36.670	
1,200.0	1,185.3	1,132.8	1,121.1	3.6	3.3	147.10	106.3	-73.5	241.1	235.3	5.82	41.452	
1,300.0	1,280.6	1,218.4	1,203.1	4.2	3.7	148.27	128.6	-84.1	292.0	285.7	6.37	45.827	
1,400.0	1,376.0	1,304.3	1,285.4	4.8	4.2	149.09	150.9	-94.7	343.0	336.1	6.94	49.458	
1,500.0	1,471.4	1,390.3	1,367.7	5.4	4.7	149.70	173.3	-105.3	394.1	386.6	7.52	52.394	
1,600.0	1,566.7	1,476.2	1,450.0	6.0	5.1	150.18	195.6	-116.0	445.1	437.0	8.12	54.815	
1,700.0	1,662.1	1,562.1	1,532.2	6.6	5.6	150.55	217.9	-126.6	496.2	487.5	8.73	56.846	
1,800.0	1,757.4	1,648.0	1,614.5	7.2	6.1	150.86	240.3	-137.2	547.3	538.0	9.35	58.566	
1,900.0	1,852.8	1,734.0	1,696.8	7.8	6.6	151.11	262.6	-147.9	598.4	588.5	9.97	60.037	
2,000.0	1,948.1	1,819.9	1,779.1	8.4	7.1	151.32	285.0	-158.5	649.5	638.9	10.60	61.306	
2,100.0	2,043.5	1,905.8	1,861.4	9.0	7.6	151.50	307.3	-169.1	700.7	689.4	11.23	62.410	
2,200.0	2,138.8	1,991.7	1,943.7	9.6	8.1	151.66	329.6	-179.8	751.8	739.9	11.86	63.377	
2,300.0	2,234.2	2,077.7	2,026.0	10.2	8.6	151.80	352.0	-190.4	802.9	790.4	12.50	64.231	
2,400.0	2,329.5	2,163.6	2,108.3	10.8	9.1	151.92	374.3	-201.0	854.0	840.9	13.14	64.989	
2,500.0	2,424.9	2,249.5	2,190.6	11.4	9.6	152.03	396.7	-211.7	905.2	891.4	13.78	65.666	
2,600.0	2,520.2	2,335.5	2,272.8	12.0	10.1	152.12	419.0	-222.3	956.3	941.9	14.43	66.275	

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

Company:	Piceance Energy, LLC	**Local Co-ordinate Reference:**	Well Gunderson 20-18E
Project:	Mesa County, CO	**TVD Reference:**	Well @ 7497.0usft
Reference Site:	Gunderson 20-09	**MD Reference:**	Well @ 7497.0usft
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	Gunderson 20-18E	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Slot A-4	**Database:**	EDMDBBW
Reference Design:	Design #1	**Offset TVD Reference:**	Reference Datum

Offset Design Gunderson 20-09 - Gunderson 20-17E - Slot A-5 - Design #1

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-120.56	-10.2	-17.3	20.1				
100.0	100.0	100.0	100.0	0.1	0.1	-120.56	-10.2	-17.3	20.1	19.9	0.18	114.408	
200.0	200.0	200.0	200.0	0.3	0.3	-120.56	-10.2	-17.3	20.1	19.4	0.62	32.100	CC, ES
300.0	300.0	299.3	299.3	0.5	0.5	-122.73	-11.7	-18.2	21.6	20.5	1.08	20.008	
400.0	400.0	398.6	398.4	0.7	0.7	27.87	-16.1	-20.8	24.8	23.3	1.53	16.226	
500.0	499.8	497.6	497.1	0.9	1.0	25.96	-23.4	-25.2	28.2	26.2	1.99	14.160	
600.0	599.5	596.6	595.4	1.2	1.3	24.97	-33.7	-31.4	31.6	29.2	2.48	12.770	
700.0	698.7	695.5	693.0	1.4	1.6	24.63	-46.8	-39.3	35.2	32.2	2.99	11.768	
800.0	797.5	794.2	790.0	1.8	2.0	24.77	-62.8	-49.0	38.8	35.3	3.53	10.994	
900.0	895.6	892.8	886.1	2.1	2.4	25.26	-81.6	-60.3	42.5	38.4	4.10	10.362	
1,000.0	993.1	992.8	983.2	2.6	2.9	26.86	-102.1	-72.6	44.6	40.0	4.67	9.560	
1,100.0	1,089.6	1,092.7	1,080.2	3.1	3.4	30.49	-122.6	-85.0	43.8	38.4	5.34	8.193	
1,200.0	1,185.3	1,192.6	1,177.1	3.6	3.8	36.99	-143.1	-97.3	40.3	34.1	6.21	6.492	
1,300.0	1,280.6	1,292.3	1,274.0	4.2	4.3	45.66	-163.5	-109.6	36.8	29.4	7.32	5.020	
1,400.0	1,376.0	1,392.1	1,370.9	4.8	4.8	55.90	-184.0	-121.9	34.2	25.5	8.67	3.946	
1,500.0	1,471.4	1,491.9	1,467.7	5.4	5.3	67.35	-204.4	-134.2	32.9	22.7	10.16	3.238	
1,544.3	1,513.6	1,536.0	1,510.6	5.6	5.6	72.61	-213.5	-139.7	32.8	21.9	10.82	3.028	
1,600.0	1,566.7	1,591.6	1,564.6	6.0	5.8	79.23	-224.9	-146.6	33.0	21.4	11.61	2.839	
1,700.0	1,662.1	1,691.4	1,661.5	6.6	6.3	90.57	-245.3	-158.9	34.4	21.6	12.88	2.675	
1,800.0	1,757.4	1,791.2	1,758.3	7.2	6.8	100.64	-265.8	-171.2	37.1	23.2	13.88	2.674	SF
1,900.0	1,852.8	1,890.9	1,855.2	7.8	7.3	109.13	-286.2	-183.5	40.8	26.1	14.67	2.780	
2,000.0	1,948.1	1,990.7	1,952.1	8.4	7.8	116.10	-306.7	-195.8	45.2	29.9	15.32	2.950	
2,100.0	2,043.5	2,090.5	2,048.9	9.0	8.3	121.77	-327.1	-208.2	50.2	34.3	15.89	3.157	
2,200.0	2,138.8	2,190.2	2,145.8	9.6	8.9	126.38	-347.6	-220.5	55.5	39.1	16.42	3.380	
2,300.0	2,234.2	2,290.0	2,242.7	10.2	9.4	130.17	-368.0	-232.8	61.2	44.2	16.94	3.610	
2,400.0	2,329.5	2,389.8	2,339.5	10.8	9.9	133.30	-388.5	-245.1	67.0	49.6	17.47	3.838	
2,500.0	2,424.9	2,489.5	2,436.4	11.4	10.4	135.92	-408.9	-257.4	73.1	55.1	18.00	4.060	
2,600.0	2,520.2	2,589.3	2,533.3	12.0	10.9	138.14	-429.4	-269.7	79.2	60.7	18.54	4.275	
2,700.0	2,615.6	2,689.1	2,630.1	12.6	11.4	140.04	-449.8	-282.1	85.5	66.4	19.09	4.480	
2,800.0	2,710.9	2,788.8	2,727.0	13.2	11.9	141.67	-470.3	-294.4	91.9	72.2	19.65	4.675	
2,900.0	2,806.3	2,888.6	2,823.9	13.8	12.4	143.10	-490.7	-306.7	98.3	78.1	20.22	4.860	
3,000.0	2,901.6	2,988.4	2,920.7	14.5	12.9	144.35	-511.2	-319.0	104.7	83.9	20.80	5.035	
3,100.0	2,997.0	3,088.1	3,017.6	15.1	13.4	145.45	-531.6	-331.3	111.3	89.9	21.39	5.201	
3,200.0	3,092.3	3,187.9	3,114.5	15.7	13.9	146.43	-552.1	-343.6	117.8	95.8	21.99	5.358	
3,300.0	3,187.7	3,287.7	3,211.3	16.3	14.4	147.31	-572.5	-356.0	124.4	101.8	22.59	5.507	
3,400.0	3,283.0	3,387.4	3,308.2	16.9	14.9	148.09	-593.0	-368.3	131.0	107.8	23.19	5.648	
3,500.0	3,378.4	3,487.2	3,405.1	17.5	15.4	148.81	-613.4	-380.6	137.6	113.8	23.81	5.781	
3,600.0	3,473.7	3,587.0	3,501.9	18.1	15.9	149.46	-633.9	-392.9	144.3	119.8	24.42	5.907	
3,700.0	3,569.1	3,686.7	3,598.8	18.7	16.4	150.05	-654.3	-405.2	150.9	125.9	25.04	6.027	
3,800.0	3,664.5	3,786.5	3,695.7	19.4	16.9	150.59	-674.8	-417.6	157.6	131.9	25.67	6.141	
3,900.0	3,759.8	3,886.3	3,792.6	20.0	17.5	151.08	-695.3	-429.9	164.3	138.0	26.29	6.249	
4,000.0	3,855.2	3,986.0	3,889.4	20.6	18.0	151.54	-715.7	-442.2	171.0	144.1	26.92	6.351	
4,100.0	3,950.5	4,085.8	3,986.3	21.2	18.5	151.96	-736.2	-454.5	177.7	150.2	27.56	6.449	
4,200.0	4,045.9	4,185.6	4,083.2	21.8	19.0	152.36	-756.6	-466.8	184.4	156.2	28.19	6.542	
4,300.0	4,141.2	4,285.3	4,180.0	22.4	19.5	152.72	-777.1	-479.1	191.2	162.3	28.83	6.631	
4,400.0	4,236.6	4,385.1	4,276.9	23.0	20.0	153.06	-797.5	-491.5	197.9	168.4	29.47	6.716	
4,500.0	4,331.9	4,484.9	4,373.8	23.7	20.5	153.38	-818.0	-503.8	204.6	174.5	30.11	6.797	
4,600.0	4,427.3	4,584.6	4,470.6	24.3	21.0	153.67	-838.4	-516.1	211.4	180.6	30.75	6.875	
4,700.0	4,522.6	4,684.4	4,567.5	24.9	21.5	153.95	-858.9	-528.4	218.2	186.8	31.39	6.949	
4,800.0	4,618.0	4,784.2	4,664.4	25.5	22.0	154.22	-879.3	-540.7	224.9	192.9	32.04	7.020	
4,900.0	4,713.3	4,883.9	4,761.2	26.1	22.5	154.46	-899.8	-553.0	231.7	199.0	32.69	7.088	
5,000.0	4,808.7	4,983.7	4,858.1	26.7	23.0	154.69	-920.2	-565.4	238.4	205.1	33.33	7.153	

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

Company:	Piceance Energy, LLC	**Local Co-ordinate Reference:**	Well Gunderson 20-18E
Project:	Mesa County, CO	**TVD Reference:**	Well @ 7497.0usft
Reference Site:	Gunderson 20-09	**MD Reference:**	Well @ 7497.0usft
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	Gunderson 20-18E	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Slot A-4	**Database:**	EDMDBBW
Reference Design:	Design #1	**Offset TVD Reference:**	Reference Datum

Offset Design Gunderson 20-09 - Gunderson 20-17E - Slot A-5 - Design #1

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,100.0	4,904.0	5,083.5	4,955.0	27.3	23.5	154.92	-940.7	-577.7	245.2	211.2	33.98	7.215	
5,200.0	5,000.1	5,183.3	5,051.9	27.7	24.0	154.94	-961.1	-590.0	249.8	215.2	34.63	7.213	
5,300.0	5,097.0	5,277.2	5,143.3	28.1	24.4	154.75	-979.4	-601.0	252.3	217.1	35.22	7.164	
5,400.0	5,194.8	5,370.0	5,234.4	28.4	24.7	154.60	-995.0	-610.4	254.5	218.7	35.73	7.121	
5,500.0	5,293.2	5,462.9	5,325.9	28.7	24.9	154.47	-1,008.1	-618.3	256.3	220.1	36.18	7.084	
5,600.0	5,392.2	5,555.7	5,417.9	29.0	25.2	154.37	-1,018.5	-624.6	257.8	221.2	36.55	7.053	
5,700.0	5,491.6	5,648.5	5,510.2	29.2	25.3	154.29	-1,026.5	-629.4	258.9	222.0	36.85	7.025	
5,800.0	5,591.3	5,741.2	5,602.8	29.3	25.5	154.24	-1,031.8	-632.6	259.6	222.5	37.07	7.002	
5,900.0	5,691.2	5,834.0	5,695.5	29.5	25.6	154.22	-1,034.6	-634.3	260.0	222.8	37.23	6.983	
6,000.0	5,791.2	5,929.7	5,791.2	29.6	25.7	0.38	-1,035.1	-634.6	260.1	222.6	37.41	6.952	
6,100.0	5,891.2	6,029.7	5,891.2	29.6	25.8	0.38	-1,035.1	-634.6	260.1	222.4	37.65	6.907	
6,200.0	5,991.2	6,129.7	5,991.2	29.7	25.9	0.38	-1,035.1	-634.6	260.1	222.2	37.90	6.861	
6,300.0	6,091.2	6,229.7	6,091.2	29.8	26.0	0.38	-1,035.1	-634.6	260.1	221.9	38.16	6.816	
6,400.0	6,191.2	6,329.7	6,191.2	29.9	26.1	0.38	-1,035.1	-634.6	260.1	221.6	38.41	6.770	
6,500.0	6,291.2	6,429.7	6,291.2	29.9	26.2	0.38	-1,035.1	-634.6	260.1	221.4	38.67	6.725	
6,600.0	6,391.2	6,529.7	6,391.2	30.0	26.3	0.38	-1,035.1	-634.6	260.1	221.1	38.93	6.679	
6,700.0	6,491.2	6,629.7	6,491.2	30.1	26.3	0.38	-1,035.1	-634.6	260.1	220.9	39.20	6.634	
6,800.0	6,591.2	6,729.7	6,591.2	30.2	26.4	0.38	-1,035.1	-634.6	260.1	220.6	39.47	6.589	
6,900.0	6,691.2	6,829.7	6,691.2	30.3	26.5	0.38	-1,035.1	-634.6	260.1	220.3	39.74	6.543	
7,000.0	6,791.2	6,929.7	6,791.2	30.4	26.6	0.38	-1,035.1	-634.6	260.1	220.0	40.02	6.498	
7,100.0	6,891.2	7,029.7	6,891.2	30.5	26.7	0.38	-1,035.1	-634.6	260.1	219.8	40.30	6.453	
7,200.0	6,991.2	7,129.7	6,991.2	30.5	26.8	0.38	-1,035.1	-634.6	260.1	219.5	40.58	6.408	
7,300.0	7,091.2	7,229.7	7,091.2	30.6	27.0	0.38	-1,035.1	-634.6	260.1	219.2	40.87	6.364	
7,400.0	7,191.2	7,329.7	7,191.2	30.7	27.1	0.38	-1,035.1	-634.6	260.1	218.9	41.16	6.319	
7,500.0	7,291.2	7,429.7	7,291.2	30.8	27.2	0.38	-1,035.1	-634.6	260.1	218.6	41.45	6.275	
7,600.0	7,391.2	7,529.7	7,391.2	30.9	27.3	0.38	-1,035.1	-634.6	260.1	218.3	41.74	6.230	
7,700.0	7,491.2	7,629.7	7,491.2	31.0	27.4	0.38	-1,035.1	-634.6	260.1	218.0	42.04	6.186	
7,800.0	7,591.2	7,729.7	7,591.2	31.1	27.5	0.38	-1,035.1	-634.6	260.1	217.7	42.34	6.143	
7,900.0	7,691.2	7,829.7	7,691.2	31.2	27.6	0.38	-1,035.1	-634.6	260.1	217.4	42.64	6.099	
7,950.8	7,742.0	7,880.5	7,742.0	31.3	27.7	0.38	-1,035.1	-634.6	260.1	217.3	42.79	6.077	

Company:	Piceance Energy, LLC	**Local Co-ordinate Reference:**	Well Gunderson 20-18E
Project:	Mesa County, CO	**TVD Reference:**	Well @ 7497.0usft
Reference Site:	Gunderson 20-09	**MD Reference:**	Well @ 7497.0usft
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	Gunderson 20-18E	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Slot A-4	**Database:**	EDMDBBW
Reference Design:	Design #1	**Offset TVD Reference:**	Reference Datum

Offset Design Gunderson 20-09 - Gunderson 20-19E - Slot A-3 - Design #1

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	65.47	4.0	8.8	9.6				
100.0	100.0	100.0	100.0	0.1	0.1	65.47	4.0	8.8	9.6	9.5	0.18	55.035	
200.0	200.0	200.2	200.2	0.3	0.3	73.59	2.4	8.1	8.5	7.8	0.63	13.359	
300.0	300.0	300.2	300.0	0.5	0.5	111.89	-2.5	6.1	6.6	5.5	1.06	6.201	
301.0	301.0	301.2	301.0	0.5	0.5	-93.65	-2.5	6.1	6.6	5.5	1.06	6.173	CC, ES
400.0	400.0	399.8	399.3	0.7	0.8	-47.75	-10.5	2.8	9.6	8.0	1.60	6.008	
500.0	499.8	499.2	497.9	0.9	1.1	-30.48	-21.6	-1.9	15.5	13.4	2.12	7.327	
600.0	599.5	598.4	595.8	1.2	1.4	-23.59	-35.9	-7.8	22.2	19.5	2.64	8.405	
700.0	698.7	697.3	693.0	1.4	1.8	-20.32	-53.3	-15.0	29.0	25.8	3.16	9.172	
800.0	797.5	796.0	789.1	1.8	2.3	-18.63	-73.7	-23.5	35.9	32.2	3.70	9.702	
900.0	895.6	894.4	884.3	2.1	2.8	-17.77	-97.1	-33.2	42.8	38.5	4.26	10.058	
1,000.0	993.1	992.6	978.3	2.6	3.3	-17.40	-123.4	-44.1	49.7	44.9	4.84	10.283	
1,100.0	1,089.6	1,090.6	1,071.0	3.1	3.9	-17.33	-152.6	-56.2	56.7	51.2	5.45	10.403	
1,200.0	1,185.3	1,190.0	1,164.3	3.6	4.6	-17.68	-184.3	-69.4	62.7	56.6	6.05	10.352	
1,300.0	1,280.6	1,289.9	1,258.0	4.2	5.3	-18.24	-216.3	-82.6	67.8	61.1	6.69	10.130	
1,400.0	1,376.0	1,389.7	1,351.6	4.8	5.9	-18.73	-248.2	-95.9	72.9	65.6	7.36	9.913	
1,500.0	1,471.4	1,489.6	1,445.3	5.4	6.6	-19.15	-280.1	-109.1	78.1	70.0	8.04	9.712	
1,600.0	1,566.7	1,589.5	1,539.0	6.0	7.3	-19.51	-312.1	-122.4	83.2	74.5	8.73	9.527	
1,700.0	1,662.1	1,689.3	1,632.7	6.6	8.0	-19.84	-344.0	-135.6	88.4	78.9	9.44	9.358	
1,800.0	1,757.4	1,789.2	1,726.4	7.2	8.7	-20.13	-375.9	-148.9	93.5	83.3	10.16	9.205	
1,900.0	1,852.8	1,889.1	1,820.1	7.8	9.4	-20.39	-407.9	-162.1	98.6	87.8	10.88	9.065	
2,000.0	1,948.1	1,988.9	1,913.8	8.4	10.0	-20.62	-439.8	-175.4	103.8	92.2	11.61	8.938	
2,100.0	2,043.5	2,088.8	2,007.5	9.0	10.7	-20.83	-471.7	-188.6	108.9	96.6	12.35	8.823	
2,200.0	2,138.8	2,188.7	2,101.2	9.6	11.4	-21.03	-503.7	-201.9	114.1	101.0	13.09	8.717	
2,300.0	2,234.2	2,288.5	2,194.9	10.2	12.1	-21.20	-535.6	-215.1	119.2	105.4	13.83	8.620	
2,400.0	2,329.5	2,388.4	2,288.5	10.8	12.8	-21.36	-567.5	-228.4	124.4	109.8	14.58	8.532	
2,500.0	2,424.9	2,488.3	2,382.2	11.4	13.5	-21.51	-599.5	-241.6	129.5	114.2	15.33	8.450	
2,600.0	2,520.2	2,588.1	2,475.9	12.0	14.2	-21.65	-631.4	-254.9	134.7	118.6	16.08	8.375	
2,700.0	2,615.6	2,688.0	2,569.6	12.6	14.9	-21.78	-663.3	-268.1	139.9	123.0	16.84	8.305	
2,800.0	2,710.9	2,787.9	2,663.3	13.2	15.6	-21.89	-695.3	-281.4	145.0	127.4	17.60	8.241	
2,900.0	2,806.3	2,887.7	2,757.0	13.8	16.2	-22.00	-727.2	-294.6	150.2	131.8	18.36	8.181	
3,000.0	2,901.6	2,987.6	2,850.7	14.5	16.9	-22.11	-759.2	-307.9	155.3	136.2	19.12	8.125	
3,100.0	2,997.0	3,087.5	2,944.4	15.1	17.6	-22.20	-791.1	-321.2	160.5	140.6	19.88	8.073	
3,200.0	3,092.3	3,187.3	3,038.1	15.7	18.3	-22.29	-823.0	-334.4	165.6	145.0	20.64	8.024	
3,300.0	3,187.7	3,287.2	3,131.8	16.3	19.0	-22.38	-855.0	-347.7	170.8	149.4	21.41	7.978	
3,400.0	3,283.0	3,387.1	3,225.5	16.9	19.7	-22.46	-886.9	-360.9	176.0	153.8	22.17	7.935	
3,500.0	3,378.4	3,486.9	3,319.1	17.5	20.4	-22.53	-918.8	-374.2	181.1	158.2	22.94	7.895	
3,600.0	3,473.7	3,586.8	3,412.8	18.1	21.1	-22.60	-950.8	-387.4	186.3	162.6	23.71	7.857	
3,700.0	3,569.1	3,686.7	3,506.5	18.7	21.8	-22.67	-982.7	-400.7	191.4	167.0	24.48	7.821	
3,800.0	3,664.5	3,786.5	3,600.2	19.4	22.5	-22.73	-1,014.6	-413.9	196.6	171.4	25.25	7.788	
3,900.0	3,759.8	3,886.4	3,693.9	20.0	23.1	-22.79	-1,046.6	-427.2	201.8	175.7	26.01	7.755	
4,000.0	3,855.2	3,986.3	3,787.6	20.6	23.8	-22.85	-1,078.5	-440.4	206.9	180.1	26.79	7.725	
4,100.0	3,950.5	4,086.1	3,881.3	21.2	24.5	-22.91	-1,110.4	-453.7	212.1	184.5	27.56	7.696	
4,200.0	4,045.9	4,186.0	3,975.0	21.8	25.2	-22.96	-1,142.4	-466.9	217.2	188.9	28.33	7.669	
4,300.0	4,141.2	4,285.9	4,068.7	22.4	25.9	-23.01	-1,174.3	-480.2	222.4	193.3	29.10	7.643	
4,400.0	4,236.6	4,385.7	4,162.4	23.0	26.6	-23.06	-1,206.2	-493.4	227.6	197.7	29.87	7.618	
4,500.0	4,331.9	4,485.6	4,256.0	23.7	27.3	-23.10	-1,238.2	-506.7	232.7	202.1	30.64	7.594	
4,600.0	4,427.3	4,585.5	4,349.7	24.3	28.0	-23.14	-1,270.1	-519.9	237.9	206.5	31.42	7.572	
4,700.0	4,522.6	4,685.3	4,443.4	24.9	28.7	-23.18	-1,302.0	-533.2	243.0	210.9	32.19	7.550	
4,800.0	4,618.0	4,785.2	4,537.1	25.5	29.4	-23.22	-1,334.0	-546.4	248.2	215.2	32.96	7.530	
4,900.0	4,713.3	4,885.1	4,630.8	26.1	30.1	-23.26	-1,365.9	-559.7	253.4	219.6	33.74	7.510	
5,000.0	4,808.7	4,986.5	4,726.0	26.7	30.7	-23.30	-1,398.3	-573.1	258.5	224.0	34.52	7.487	

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

Company:	Piceance Energy, LLC	**Local Co-ordinate Reference:**	Well Gunderson 20-18E
Project:	Mesa County, CO	**TVD Reference:**	Well @ 7497.0usft
Reference Site:	Gunderson 20-09	**MD Reference:**	Well @ 7497.0usft
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	Gunderson 20-18E	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Slot A-4	**Database:**	EDMDBBW
Reference Design:	Design #1	**Offset TVD Reference:**	Reference Datum

Offset Design Gunderson 20-09 - Gunderson 20-19E - Slot A-3 - Design #1

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,100.0	4,904.0	5,095.8	4,829.5	27.3	31.3	-23.55	-1,430.8	-586.6	261.3	225.9	35.35	7.391	
5,200.0	5,000.1	5,205.2	4,934.3	27.7	31.7	-23.89	-1,459.7	-598.6	262.6	226.5	36.08	7.279	
5,300.0	5,097.0	5,314.6	5,040.2	28.1	32.1	-24.21	-1,484.8	-609.0	263.6	226.9	36.73	7.177	
5,400.0	5,194.8	5,424.0	5,147.2	28.4	32.5	-24.50	-1,506.2	-617.9	264.2	226.9	37.29	7.085	
5,500.0	5,293.2	5,533.4	5,254.9	28.7	32.8	-24.76	-1,523.8	-625.2	264.4	226.6	37.77	7.001	
5,600.0	5,392.2	5,642.8	5,363.3	29.0	33.1	-25.01	-1,537.6	-630.9	264.2	226.0	38.15	6.925	
5,700.0	5,491.6	5,752.2	5,472.1	29.2	33.3	-25.23	-1,547.5	-635.0	263.6	225.2	38.45	6.856	
5,800.0	5,591.3	5,861.5	5,581.2	29.3	33.4	-25.43	-1,553.6	-637.6	262.7	224.0	38.66	6.794	
5,900.0	5,691.2	5,970.8	5,690.4	29.5	33.5	-25.61	-1,555.9	-638.5	261.3	222.5	38.79	6.737	
6,000.0	5,791.2	6,071.6	5,791.2	29.6	33.6	-179.50	-1,555.9	-638.5	260.8	221.8	39.04	6.680	
6,100.0	5,891.2	6,171.6	5,891.2	29.6	33.7	-179.50	-1,555.9	-638.5	260.8	221.5	39.27	6.641	
6,200.0	5,991.2	6,271.6	5,991.2	29.7	33.7	-179.50	-1,555.9	-638.5	260.8	221.3	39.51	6.601	
6,300.0	6,091.2	6,371.6	6,091.2	29.8	33.8	-179.50	-1,555.9	-638.5	260.8	221.0	39.75	6.561	
6,400.0	6,191.2	6,471.6	6,191.2	29.9	33.9	-179.50	-1,555.9	-638.5	260.8	220.8	39.99	6.521	
6,500.0	6,291.2	6,571.6	6,291.2	29.9	33.9	-179.50	-1,555.9	-638.5	260.8	220.6	40.24	6.481	
6,600.0	6,391.2	6,671.6	6,391.2	30.0	34.0	-179.50	-1,555.9	-638.5	260.8	220.3	40.49	6.441	
6,700.0	6,491.2	6,771.6	6,491.2	30.1	34.1	-179.50	-1,555.9	-638.5	260.8	220.0	40.74	6.401	
6,800.0	6,591.2	6,871.6	6,591.2	30.2	34.2	-179.50	-1,555.9	-638.5	260.8	219.8	41.00	6.361	
6,900.0	6,691.2	6,971.6	6,691.2	30.3	34.2	-179.50	-1,555.9	-638.5	260.8	219.5	41.26	6.321	
7,000.0	6,791.2	7,071.6	6,791.2	30.4	34.3	-179.50	-1,555.9	-638.5	260.8	219.3	41.52	6.281	
7,100.0	6,891.2	7,171.6	6,891.2	30.5	34.4	-179.50	-1,555.9	-638.5	260.8	219.0	41.79	6.240	
7,200.0	6,991.2	7,271.6	6,991.2	30.5	34.5	-179.50	-1,555.9	-638.5	260.8	218.7	42.06	6.200	
7,300.0	7,091.2	7,371.6	7,091.2	30.6	34.5	-179.50	-1,555.9	-638.5	260.8	218.5	42.33	6.160	
7,400.0	7,191.2	7,471.6	7,191.2	30.7	34.6	-179.50	-1,555.9	-638.5	260.8	218.2	42.61	6.120	
7,500.0	7,291.2	7,571.6	7,291.2	30.8	34.7	-179.50	-1,555.9	-638.5	260.8	217.9	42.89	6.081	
7,600.0	7,391.2	7,671.6	7,391.2	30.9	34.8	-179.50	-1,555.9	-638.5	260.8	217.6	43.17	6.041	
7,700.0	7,491.2	7,771.6	7,491.2	31.0	34.9	-179.50	-1,555.9	-638.5	260.8	217.3	43.46	6.001	
7,800.0	7,591.2	7,871.6	7,591.2	31.1	35.0	-179.50	-1,555.9	-638.5	260.8	217.0	43.74	5.962	
7,900.0	7,691.2	7,971.6	7,691.2	31.2	35.1	-179.50	-1,555.9	-638.5	260.8	216.8	44.03	5.923	
7,906.6	7,697.9	7,978.2	7,697.9	31.2	35.1	-179.50	-1,555.9	-638.5	260.8	216.7	44.05	5.920	
7,950.8	7,742.0	8,017.3	7,737.0	31.3	35.1	-179.50	-1,555.9	-638.5	260.8	216.5	44.31	5.887	SF

Company:	Piceance Energy, LLC	**Local Co-ordinate Reference:**	Well Gunderson 20-18E
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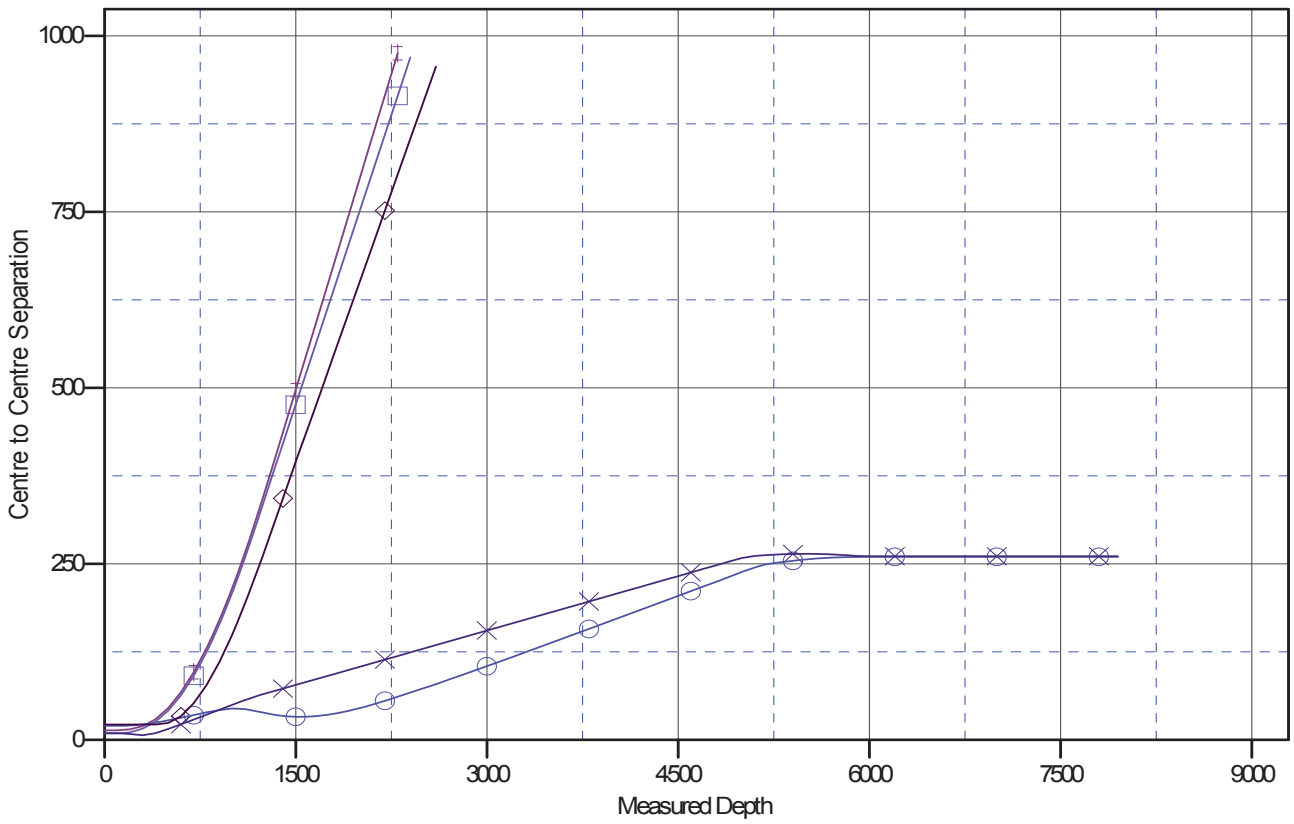
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	Gunderson 20-18E	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Slot A-4	**Database:**	EDMDBBW
Reference Design:	Design #1	**Offset TVD Reference:**	Reference Datum

Reference Depths are relative to Well @ 7497.0usft
Offset Depths are relative to Offset Datum
Central Meridian is 105° 30' 0.000 W
Coordinates are relative to: Gunderson 20-18E
Coordinate System is US State Plane 1983, Colorado Central Zone
Grid Convergence at Surface is: -1.44°

Ladder Plot



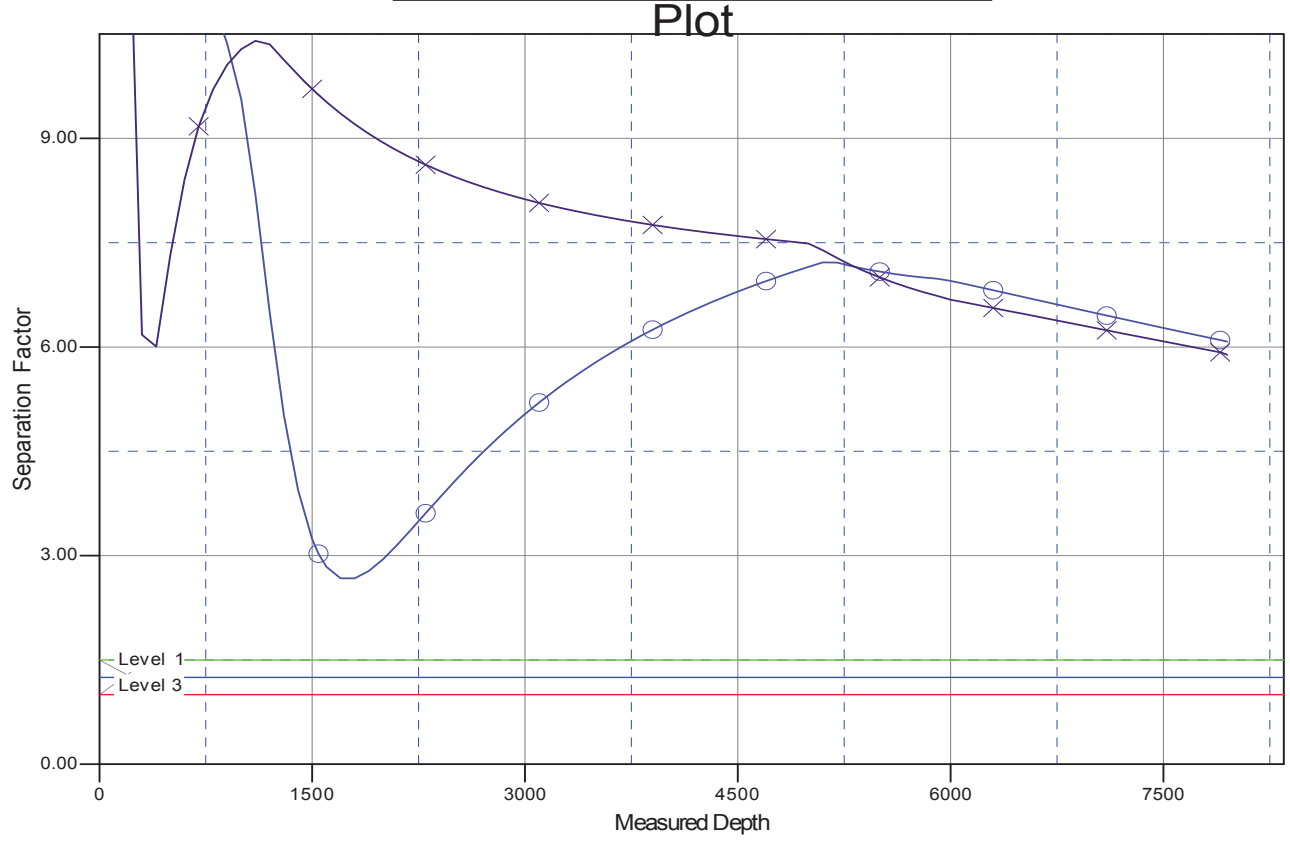
LEGEND

Gunderson 20-06E, SlotB-3, Design #1 V0
Gunderson 20-07E, SlotB-4, Design #1 V0
Gunderson 20-17E, SlotA-5, Design #1 V0
Gunderson 20-08E, SlotB-5, Design #1 V0
Gunderson 20-19E, SlotA-3, Design #1 V0

Company:	Piceance Energy, LLC	**Local Co-ordinate Reference:**	Well Gunderson 20-18E
Project:	Mesa County, CO	**TVD Reference:**	Well @ 7497.0usft
Reference Site:	Gunderson 20-09	**MD Reference:**	Well @ 7497.0usft
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	Gunderson 20-18E	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Slot A-4	**Database:**	EDMDBBW
Reference Design:	Design #1	**Offset TVD Reference:**	Reference Datum

Reference Depths are relative to Well @ 7497.0usft
Offset Depths are relative to Offset Datum
Central Meridian is 105° 30' 0.000 W

Coordinates are relative to: Gunderson 20-18E
Coordinate System is US State Plane 1983, Colorado Central Zone
Grid Convergence at Surface is: -1.44°



LEGEND

Gunderson 20-06E, Slot B-3, Design #1 V0
Gunderson 20-17E, Slot A-5, Design #1 V0
Gunderson 20-19E, Slot A-3, Design #1 V0
Gunderson 20-07E, Slot B-4, Design #1 V0
Gunderson 20-08E, Slot B-5, Design #1 V0