



Piceance Energy, LLC

Mesa County, CO

Gunderson

Gunderson 29-08M

Slot A-4

Survey: Survey #1

Standard Survey Report

06 June, 2015



Project: Mesa County, CO
Site: Gunderson
Well: Gunderson 29-08M
Wellbore: Slot A-4
Design: Design #1
Latitude: 39.248811
Longitude: -107.788117
Ground Level: 7531.00
Well @ 7553.00usft

Archer

PROJECT DETAILS: Mesa County, CO

Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: Colorado Central Zone
System Datum: Mean Sea Level

REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well Gunderson 29-08M, True North
Vertical (TVD) Reference: Well @ 7553.00usft
Section (VS) Reference: Slot - (0.00N, 0.00E)
Measured Depth Reference: Well @ 7553.00usft
Calculation Method: Minimum Curvature

WELL DETAILS: Gunderson 29-08M

| | | | | | | | |
|-------|-------|-------------|---------------|-------------|-----------|-------------|------|
| +N/-S | +E/-W | Northing | Ground Level: | 7531.00 | Latitude | Longitude | Slot |
| 0.00 | 0.00 | 1523673.545 | Easting | 2352093.272 | 39.248811 | -107.788117 | |

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

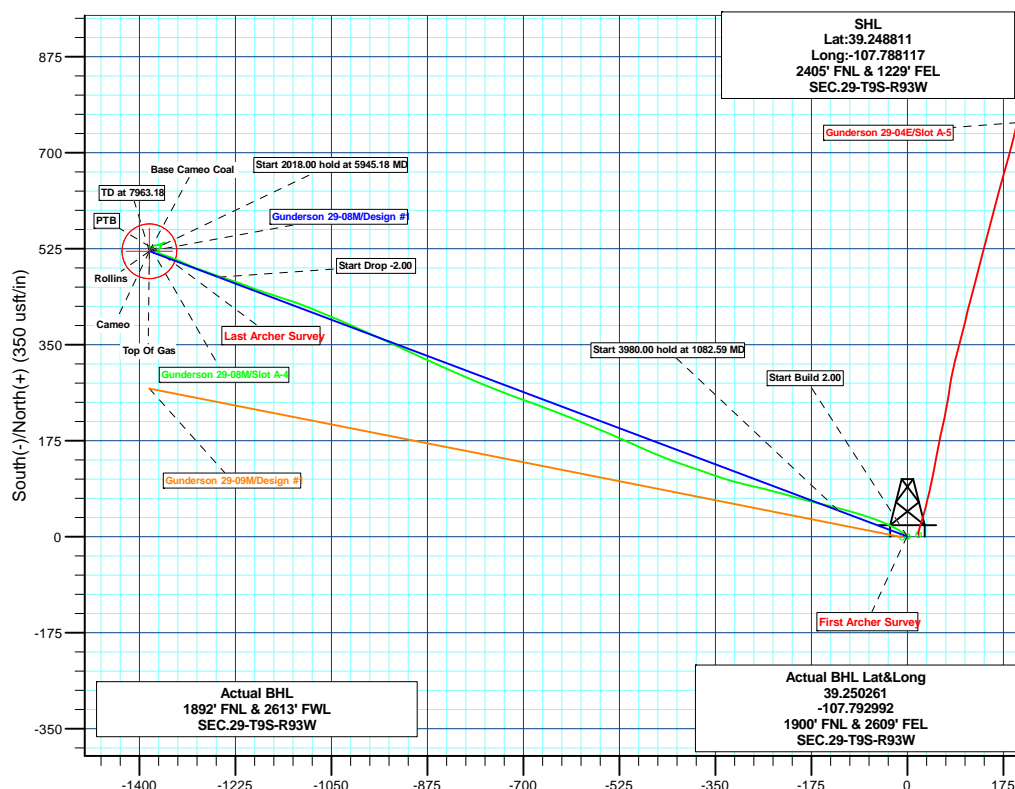
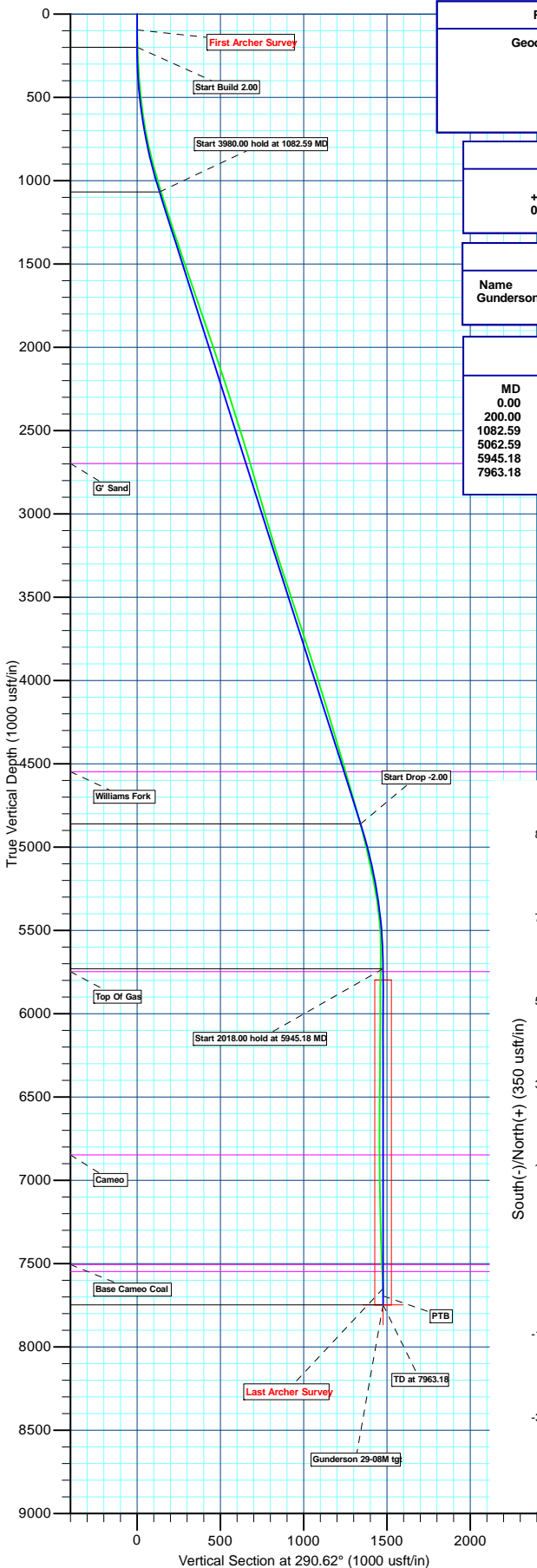
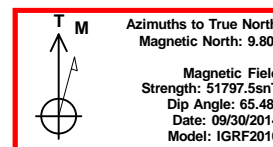
| Name | TVD | +N/-S | +E/-W | Northing | Easting | Latitude | Longitude | Shape |
|----------------------|---------|--------|----------|-------------|-------------|-----------|-------------|------------------------|
| Gunderson 29-08M tgt | 7748.00 | 520.09 | -1382.01 | 1524228.271 | 2350724.800 | 39.250239 | -107.792997 | Circle (Radius: 50.00) |

SECTION DETAILS

| MD | Inc | Azi | TVD | +N/-S | +E/-W | Dleg | TFace | VFace | Annotation |
|---------|-------|--------|---------|--------|----------|------|--------|---------|----------------------------------|
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 200.00 | 0.00 | 0.00 | 200.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | Start Build 2.00 |
| 1082.59 | 17.65 | 290.62 | 1068.70 | 47.51 | -126.24 | 2.00 | 290.62 | 134.88 | Start 3980.00 hold at 1082.59 MD |
| 5062.59 | 17.65 | 290.62 | 4861.30 | 472.58 | -1255.77 | 0.00 | 0.00 | 1341.75 | Start Drop -2.00 |
| 5945.18 | 0.00 | 0.00 | 5730.00 | 520.09 | -1382.01 | 2.00 | 180.00 | 1476.63 | Start 2018.00 hold at 5945.18 MD |
| 7963.18 | 0.00 | 0.00 | 7748.00 | 520.09 | -1382.01 | 0.00 | 0.00 | 1476.63 | TD at 7963.18 |

FORMATION TOP DETAILS

| TVDPath | MDPath | Formation |
|---------|---------|-----------------|
| 2698.00 | 2792.40 | G' Sand |
| 4548.00 | 4733.81 | Williams Fork |
| 5748.00 | 5963.18 | Top Of Gas |
| 6848.00 | 7063.18 | Cameo |
| 7506.00 | 7721.18 | Base Cameo Coal |
| 7548.00 | 7763.18 | Rollins |



Plan: Design #1 (Gunderson 29-08M/Slot A-4)

Created By: Ricky Osburn Date: 13:58, August 03 2015



Archer

Survey Report

| | | | |
|------------------|----------------------|-------------------------------------|-----------------------|
| Company: | Piceance Energy, LLC | Local Co-ordinate Reference: | Well Gunderson 29-08M |
| Project: | Mesa County, CO | TVD Reference: | Well @ 7558.00usft |
| Site: | Gunderson | MD Reference: | Well @ 7558.00usft |
| Well: | Gunderson 29-08M | North Reference: | True |
| Wellbore: | Slot A-4 | Survey Calculation Method: | Minimum Curvature |
| Design: | Slot A-4 | Database: | EDMDBBW |

| | | | |
|--------------------|---------------------------|----------------------|----------------|
| 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° 14' 55.692 N |
| From: | Lat/Long | Easting: | 2,352,063.747 usft | Longitude: | 107° 47' 17.595 W |
| Position Uncertainty: | 0.00 usft | Slot Radius: | 13-3/16 " | Grid Convergence: | -1.44 ° |

| | | | | | | |
|----------------------|------------------|-----------|---------------------|--------------------|---------------|-------------------|
| Well | Gunderson 29-08M | | | | | |
| Well Position | +N/-S | 0.00 usft | Northing: | 1,523,673.545 usft | Latitude: | 39° 14' 55.720 N |
| | +E/-W | 0.00 usft | Easting: | 2,352,093.272 usft | Longitude: | 107° 47' 17.220 W |
| Position Uncertainty | | 0.00 usft | Wellhead Elevation: | usft | Ground Level: | 7,531.00 usft |

| | | | | | |
|------------------|-------------------|--------------------|------------------------|----------------------|----------------------------|
| Wellbore | Slot A-4 | | | | |
| Magnetics | Model Name | Sample Date | Declination (°) | Dip Angle (°) | Field Strength (nT) |
| | IGRF2010 | 09/30/14 | 9.80 | 65.48 | 51,797 |

| | | | | | |
|-------------------|----------------------------|--------|-----------------|-----------------|------------------|
| Design | Slot A-4 | | | | |
| Audit Notes: | | | | | |
| Version: | 1.0 | Phase: | ACTUAL | Tie On Depth: | 0.00 |
| Vertical Section: | Depth From (TVD) (usft) | | +N/-S (usft) | +E/-W (usft) | Direction (°) |
| | 0.00 | | 0.00 | 0.00 | 288.32 |

| | | | | | |
|-----------------------|------------------|--------------------------|------------------|--------------------|--|
| Survey Program | Date | 06/06/15 | | | |
| From (usft) | To (usft) | Survey (Wellbore) | Tool Name | Description | |
| 106.00 | 7,918.00 | Survey #1 (Slot A-4) | MWD | MWD - Standard | |

| | | | | | | | | | | |
|------------------------------|------------------------|--------------------|------------------------------|---------------------|---------------------|--------------------------------|--------------------------------|-------------------------------|------------------------------|--|
| 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 | |
| First Archer Survey | | | | | | | | | | |
| 106.00 | 1.16 | 316.27 | 105.99 | 0.78 | -0.74 | 0.95 | 1.09 | 1.09 | 0.00 | |
| 198.00 | 1.32 | 319.97 | 197.97 | 2.26 | -2.07 | 2.67 | 0.19 | 0.17 | 4.02 | |
| 290.00 | 2.99 | 300.28 | 289.90 | 4.28 | -4.82 | 5.92 | 1.96 | 1.82 | -21.40 | |
| 383.00 | 4.26 | 305.64 | 382.72 | 7.52 | -9.72 | 11.59 | 1.41 | 1.37 | 5.76 | |
| 475.00 | 5.54 | 303.18 | 474.38 | 11.94 | -16.22 | 19.15 | 1.41 | 1.39 | -2.67 | |
| 567.00 | 7.34 | 297.64 | 565.79 | 17.10 | -25.14 | 29.24 | 2.07 | 1.96 | -6.02 | |
| 659.00 | 9.36 | 293.42 | 656.82 | 22.80 | -37.21 | 42.49 | 2.29 | 2.20 | -4.59 | |
| 751.00 | 11.25 | 291.23 | 747.33 | 29.02 | -52.44 | 58.91 | 2.10 | 2.05 | -2.38 | |
| 843.00 | 13.14 | 287.89 | 837.25 | 35.48 | -70.76 | 78.33 | 2.19 | 2.05 | -3.63 | |
| 936.00 | 15.16 | 287.09 | 927.42 | 42.30 | -92.45 | 101.06 | 2.18 | 2.17 | -0.86 | |
| 1,028.00 | 17.09 | 284.81 | 1,015.80 | 49.30 | -117.02 | 126.58 | 2.21 | 2.10 | -2.48 | |



Archer

Survey Report

| | | | |
|------------------|----------------------|-------------------------------------|-----------------------|
| Company: | Piceance Energy, LLC | Local Co-ordinate Reference: | Well Gunderson 29-08M |
| Project: | Mesa County, CO | TVD Reference: | Well @ 7558.00usft |
| Site: | Gunderson | MD Reference: | Well @ 7558.00usft |
| Well: | Gunderson 29-08M | North Reference: | True |
| Wellbore: | Slot A-4 | Survey Calculation Method: | Minimum Curvature |
| Design: | Slot A-4 | Database: | EDMDBBW |

| 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) | |
| 1,123.00 | 17.31 | 283.67 | 1,106.55 | 56.20 | -144.25 | 154.60 | 0.42 | 0.23 | -1.20 | |
| 1,218.00 | 18.15 | 283.49 | 1,197.04 | 63.00 | -172.37 | 183.43 | 0.89 | 0.88 | -0.19 | |
| 1,313.00 | 17.97 | 286.57 | 1,287.36 | 70.63 | -200.80 | 212.83 | 1.02 | -0.19 | 3.24 | |
| 1,407.00 | 18.81 | 285.16 | 1,376.56 | 78.73 | -229.33 | 242.45 | 1.01 | 0.89 | -1.50 | |
| 1,502.00 | 18.85 | 283.14 | 1,466.48 | 86.22 | -259.06 | 273.03 | 0.69 | 0.04 | -2.13 | |
| 1,602.00 | 18.85 | 283.14 | 1,561.11 | 93.56 | -290.52 | 305.21 | 0.00 | 0.00 | 0.00 | |
| 1,697.00 | 19.12 | 285.95 | 1,650.95 | 101.33 | -320.43 | 336.04 | 1.00 | 0.28 | 2.96 | |
| 1,792.00 | 19.12 | 289.11 | 1,740.71 | 110.70 | -350.09 | 367.14 | 1.09 | 0.00 | 3.33 | |
| 1,887.00 | 19.16 | 289.03 | 1,830.46 | 120.88 | -379.53 | 398.28 | 0.05 | 0.04 | -0.08 | |
| 1,982.00 | 18.85 | 290.00 | 1,920.28 | 131.21 | -408.69 | 429.21 | 0.47 | -0.33 | 1.02 | |
| 2,077.00 | 18.37 | 289.82 | 2,010.31 | 141.53 | -437.19 | 459.52 | 0.51 | -0.51 | -0.19 | |
| 2,171.00 | 18.37 | 294.04 | 2,099.52 | 152.59 | -464.65 | 489.07 | 1.41 | 0.00 | 4.49 | |
| 2,266.00 | 18.06 | 294.13 | 2,189.76 | 164.71 | -491.76 | 518.61 | 0.33 | -0.33 | 0.09 | |
| 2,361.00 | 17.89 | 293.51 | 2,280.13 | 176.55 | -518.58 | 547.79 | 0.27 | -0.18 | -0.65 | |
| 2,456.00 | 17.71 | 293.34 | 2,370.58 | 188.09 | -545.23 | 576.72 | 0.20 | -0.19 | -0.18 | |
| 2,551.00 | 17.53 | 292.63 | 2,461.12 | 199.32 | -571.70 | 605.38 | 0.30 | -0.19 | -0.75 | |
| 2,646.00 | 17.05 | 292.63 | 2,551.83 | 210.19 | -597.76 | 633.53 | 0.51 | -0.51 | 0.00 | |
| 2,741.00 | 16.70 | 291.49 | 2,642.74 | 220.55 | -623.32 | 661.05 | 0.51 | -0.37 | -1.20 | |
| 2,836.00 | 16.44 | 290.70 | 2,733.79 | 230.30 | -648.60 | 688.11 | 0.36 | -0.27 | -0.83 | |
| 2,928.00 | 16.13 | 290.08 | 2,822.10 | 239.29 | -672.78 | 713.89 | 0.39 | -0.34 | -0.67 | |
| 3,023.00 | 16.08 | 289.73 | 2,913.37 | 248.26 | -697.56 | 740.23 | 0.11 | -0.05 | -0.37 | |
| 3,118.00 | 16.08 | 290.43 | 3,004.66 | 257.29 | -722.27 | 766.53 | 0.20 | 0.00 | 0.74 | |
| 3,213.00 | 17.14 | 292.54 | 3,095.69 | 267.25 | -747.53 | 793.64 | 1.28 | 1.12 | 2.22 | |
| 3,308.00 | 17.27 | 291.58 | 3,186.44 | 277.81 | -773.57 | 821.68 | 0.33 | 0.14 | -1.01 | |
| 3,403.00 | 17.14 | 291.75 | 3,277.19 | 288.18 | -799.69 | 849.74 | 0.15 | -0.14 | 0.18 | |
| 3,498.00 | 18.46 | 294.83 | 3,367.64 | 299.68 | -826.34 | 878.65 | 1.71 | 1.39 | 3.24 | |
| 3,592.00 | 18.33 | 294.65 | 3,456.84 | 312.10 | -853.28 | 908.13 | 0.15 | -0.14 | -0.19 | |
| 3,687.00 | 18.28 | 293.69 | 3,547.03 | 324.31 | -880.50 | 937.81 | 0.32 | -0.05 | -1.01 | |
| 3,782.00 | 18.19 | 294.65 | 3,637.26 | 336.49 | -907.62 | 967.38 | 0.33 | -0.09 | 1.01 | |
| 3,877.00 | 18.11 | 294.65 | 3,727.54 | 348.83 | -934.52 | 996.80 | 0.08 | -0.08 | 0.00 | |
| 3,972.00 | 18.06 | 295.27 | 3,817.84 | 361.27 | -961.25 | 1,026.09 | 0.21 | -0.05 | 0.65 | |
| 4,067.00 | 17.71 | 294.04 | 3,908.25 | 373.44 | -987.77 | 1,055.08 | 0.54 | -0.37 | -1.29 | |
| 4,162.00 | 17.53 | 293.42 | 3,998.80 | 385.02 | -1,014.09 | 1,083.71 | 0.27 | -0.19 | -0.65 | |
| 4,257.00 | 17.27 | 293.42 | 4,089.45 | 396.31 | -1,040.16 | 1,112.01 | 0.27 | -0.27 | 0.00 | |
| 4,352.00 | 17.05 | 293.16 | 4,180.22 | 407.39 | -1,065.90 | 1,139.93 | 0.25 | -0.23 | -0.27 | |
| 4,447.00 | 16.83 | 291.49 | 4,271.10 | 417.91 | -1,091.51 | 1,167.54 | 0.56 | -0.23 | -1.76 | |
| 4,542.00 | 16.48 | 288.41 | 4,362.11 | 427.20 | -1,117.09 | 1,194.75 | 1.00 | -0.37 | -3.24 | |
| 4,637.00 | 16.22 | 288.50 | 4,453.27 | 435.67 | -1,142.46 | 1,221.49 | 0.27 | -0.27 | 0.09 | |
| 4,732.00 | 15.86 | 287.27 | 4,544.57 | 443.73 | -1,167.43 | 1,247.74 | 0.52 | -0.38 | -1.29 | |
| 4,827.00 | 16.08 | 290.00 | 4,635.91 | 452.08 | -1,192.19 | 1,273.87 | 0.82 | 0.23 | 2.87 | |
| 4,922.00 | 15.93 | 290.70 | 4,727.23 | 461.19 | -1,216.75 | 1,300.05 | 0.26 | -0.16 | 0.74 | |
| 5,017.00 | 15.38 | 289.38 | 4,818.70 | 469.98 | -1,240.83 | 1,325.67 | 0.69 | -0.58 | -1.39 | |
| 5,112.00 | 14.50 | 288.50 | 4,910.49 | 477.94 | -1,263.99 | 1,350.16 | 0.96 | -0.93 | -0.93 | |
| 5,206.00 | 13.84 | 287.27 | 5,001.63 | 485.01 | -1,285.89 | 1,373.17 | 0.77 | -0.70 | -1.31 | |
| 5,301.00 | 12.26 | 295.36 | 5,094.18 | 492.70 | -1,305.86 | 1,394.54 | 2.54 | -1.66 | 8.52 | |
| 5,396.00 | 11.95 | 293.86 | 5,187.07 | 501.00 | -1,323.97 | 1,414.34 | 0.46 | -0.33 | -1.58 | |
| 5,492.00 | 9.27 | 289.73 | 5,281.42 | 507.63 | -1,340.34 | 1,431.97 | 2.90 | -2.79 | -4.30 | |
| 5,586.00 | 7.38 | 292.19 | 5,374.43 | 512.47 | -1,353.06 | 1,445.56 | 2.05 | -2.01 | 2.62 | |
| 5,682.00 | 4.70 | 289.64 | 5,469.88 | 516.12 | -1,362.47 | 1,455.64 | 2.80 | -2.79 | -2.66 | |
| 5,776.00 | 1.10 | 285.69 | 5,563.75 | 517.66 | -1,366.97 | 1,460.40 | 3.83 | -3.83 | -4.20 | |
| 5,871.00 | 2.02 | 33.09 | 5,658.73 | 519.31 | -1,366.93 | 1,460.88 | 2.71 | 0.97 | 113.05 | |
| 5,966.00 | 2.11 | 29.84 | 5,753.66 | 522.23 | -1,365.15 | 1,460.11 | 0.16 | 0.09 | -3.42 | |
| 6,061.00 | 1.98 | 33.00 | 5,848.60 | 525.12 | -1,363.38 | 1,459.34 | 0.18 | -0.14 | 3.33 | |
| 6,156.00 | 1.19 | 23.34 | 5,943.57 | 527.40 | -1,362.10 | 1,458.84 | 0.87 | -0.83 | -10.17 | |



Archer Survey Report

| | | | |
|------------------|----------------------|-------------------------------------|-----------------------|
| Company: | Piceance Energy, LLC | Local Co-ordinate Reference: | Well Gunderson 29-08M |
| Project: | Mesa County, CO | TVD Reference: | Well @ 7558.00usft |
| Site: | Gunderson | MD Reference: | Well @ 7558.00usft |
| Well: | Gunderson 29-08M | North Reference: | True |
| Wellbore: | Slot A-4 | Survey Calculation Method: | Minimum Curvature |
| Design: | Slot A-4 | Database: | EDMDBBW |

| 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) | |
| 6,250.00 | 1.93 | 35.20 | 6,037.53 | 529.59 | -1,360.80 | 1,458.29 | 0.85 | 0.79 | 12.62 | |
| 6,345.00 | 1.54 | 37.31 | 6,132.49 | 531.92 | -1,359.10 | 1,457.41 | 0.42 | -0.41 | 2.22 | |
| 6,440.00 | 0.92 | 35.90 | 6,227.47 | 533.55 | -1,357.88 | 1,456.77 | 0.65 | -0.65 | -1.48 | |
| 6,535.00 | 0.57 | 57.26 | 6,322.46 | 534.42 | -1,357.04 | 1,456.24 | 0.46 | -0.37 | 22.48 | |
| 6,630.00 | 0.04 | 99.80 | 6,417.46 | 534.67 | -1,356.61 | 1,455.91 | 0.57 | -0.56 | 44.78 | |
| 6,724.00 | 0.97 | 85.74 | 6,511.45 | 534.73 | -1,355.78 | 1,455.14 | 0.99 | 0.99 | -14.96 | |
| 6,819.00 | 0.79 | 74.22 | 6,606.44 | 534.96 | -1,354.35 | 1,453.86 | 0.26 | -0.19 | -12.13 | |
| 6,914.00 | 0.66 | 57.79 | 6,701.43 | 535.43 | -1,353.26 | 1,452.97 | 0.26 | -0.14 | -17.29 | |
| 7,009.00 | 0.35 | 291.14 | 6,796.43 | 535.83 | -1,353.07 | 1,452.91 | 0.96 | -0.33 | -133.32 | |
| 7,104.00 | 0.53 | 257.83 | 6,891.43 | 535.84 | -1,353.77 | 1,453.58 | 0.32 | 0.19 | -35.06 | |
| 7,199.00 | 0.88 | 257.21 | 6,986.42 | 535.59 | -1,354.91 | 1,454.58 | 0.37 | 0.37 | -0.65 | |
| 7,294.00 | 1.10 | 249.30 | 7,081.41 | 535.10 | -1,356.47 | 1,455.91 | 0.27 | 0.23 | -8.33 | |
| 7,388.00 | 1.71 | 241.13 | 7,175.38 | 534.11 | -1,358.54 | 1,457.57 | 0.68 | 0.65 | -8.69 | |
| 7,483.00 | 1.89 | 245.35 | 7,270.33 | 532.77 | -1,361.21 | 1,459.68 | 0.24 | 0.19 | 4.44 | |
| 7,578.00 | 2.15 | 260.11 | 7,365.27 | 531.81 | -1,364.39 | 1,462.40 | 0.61 | 0.27 | 15.54 | |
| 7,673.00 | 2.81 | 261.96 | 7,460.18 | 531.18 | -1,368.45 | 1,466.05 | 0.70 | 0.69 | 1.95 | |
| 7,768.00 | 2.94 | 255.72 | 7,555.06 | 530.25 | -1,373.12 | 1,470.19 | 0.36 | 0.14 | -6.57 | |
| Last Archer Survey | | | | | | | | | | |
| 7,873.00 | 2.99 | 253.70 | 7,659.92 | 528.82 | -1,378.35 | 1,474.71 | 0.11 | 0.05 | -1.92 | |
| PTB - Gunderson 29-08M tgt | | | | | | | | | | |
| 7,918.00 | 2.99 | 253.70 | 7,704.86 | 528.16 | -1,380.61 | 1,476.64 | 0.00 | 0.00 | 0.00 | |

| Survey Annotations | | | | | |
|-----------------------|-----------------------|-------------------|--------------|---------------------|--|
| Measured Depth (usft) | Vertical Depth (usft) | Local Coordinates | | | |
| | | +N/-S (usft) | +E/-W (usft) | Comment | |
| 106.00 | 105.99 | 0.78 | -0.74 | First Archer Survey | |
| 7,873.00 | 7,659.92 | 528.82 | -1,378.35 | Last Archer Survey | |
| 7,918.00 | 7,704.86 | 528.16 | -1,380.61 | PTB | |

| | | |
|-------------------|--------------------|-------------|
| Checked By: _____ | Approved By: _____ | Date: _____ |
|-------------------|--------------------|-------------|