



Project: Mesa County, CO
 Site: Gunderson 20-03 Pad
 Well: Gunderson 20-04W
 Wellbore: Wellbore #1
 Design: Design #3
 Latitude: 39.266919
 Longitude: -107.795317
 Ground Level: 7146.0
 well @ 7176.0usft (H&P #522)



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 20-04W, True North
 Vertical (TVD) Reference: well @ 7176.0usft (H&P #522)
 Section (VS) Reference: Slot - (0.0N, 0.0E)
 Measured Depth Reference: well @ 7176.0usft (H&P #522)
 Calculation Method: Minimum Curvature

WELL DETAILS: Gunderson 20-04W

Ground Level: 7146.0

| +N/-S | +E/-W | Northing | Easting | Latitude | Longitude |
|-------|-------|------------|------------|-----------|-------------|
| 0.0 | 0.0 | 1530218.09 | 2350221.46 | 39.266919 | -107.795317 |

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

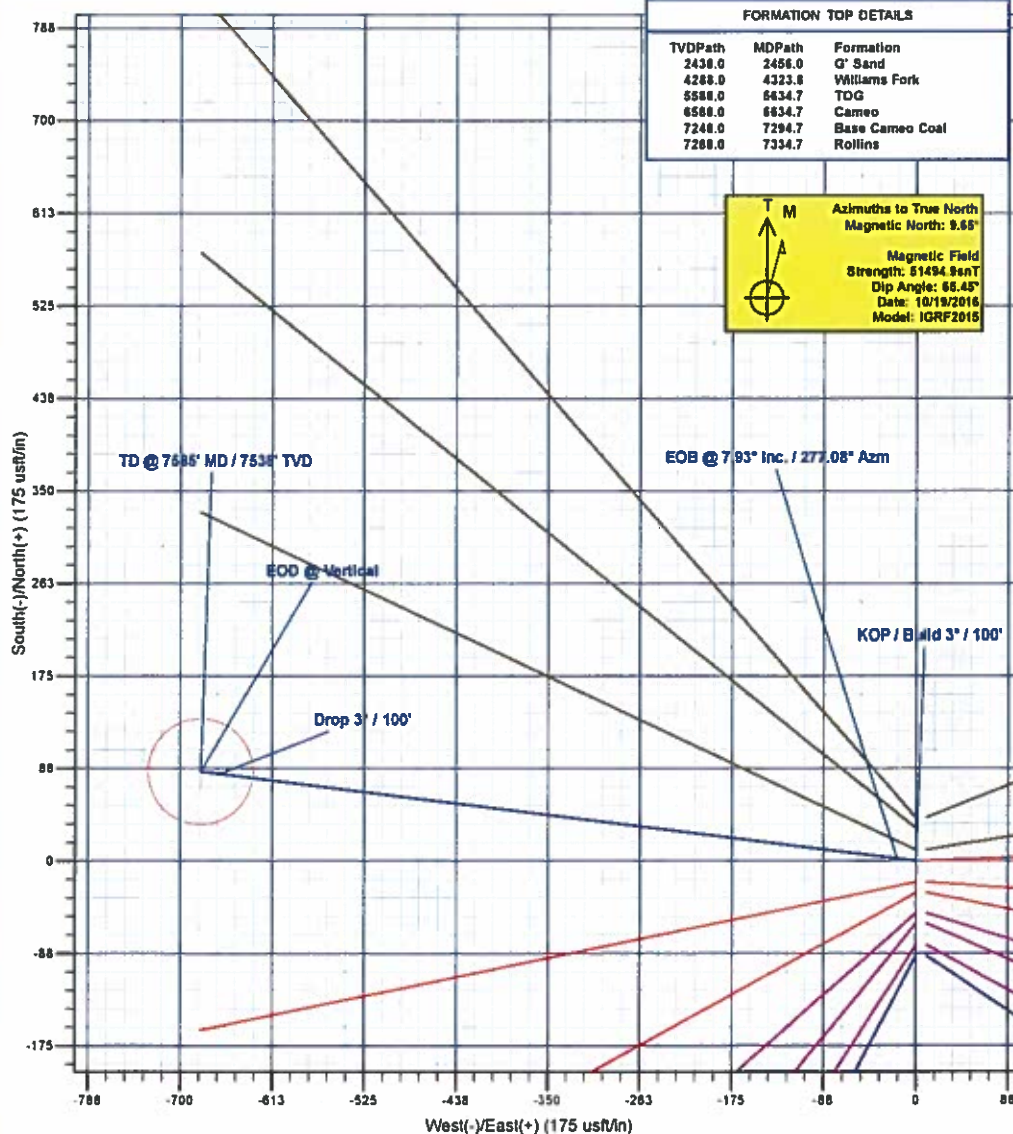
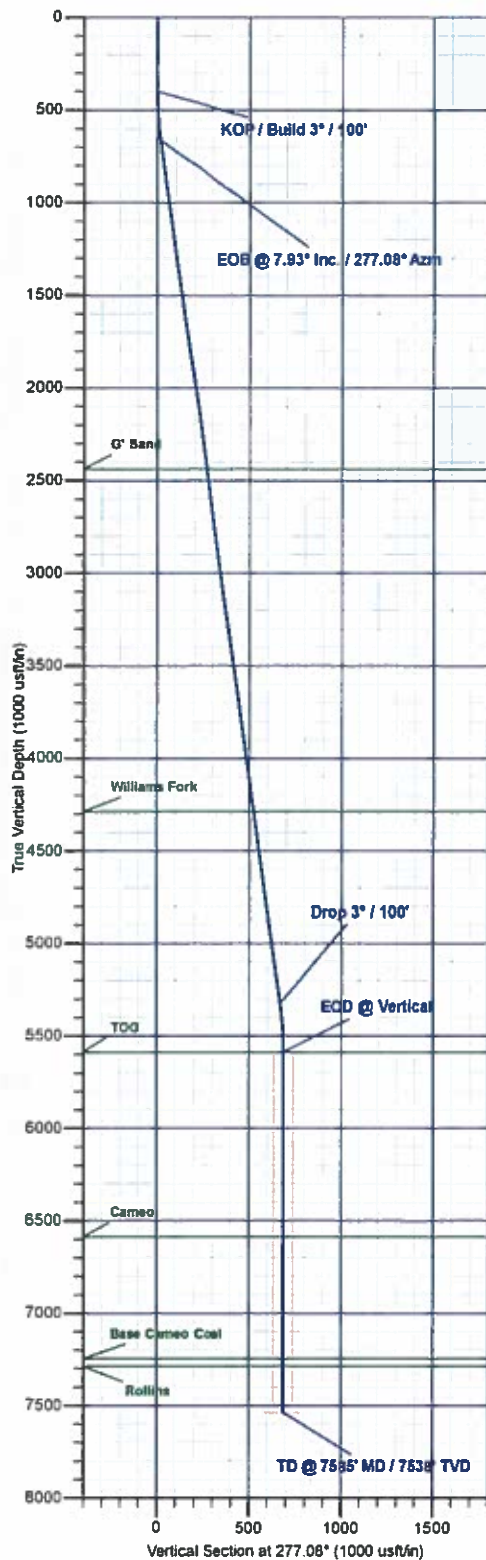
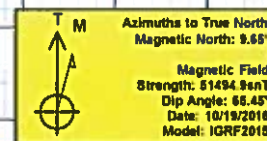
| Name | TVD | +N/-S | +E/-W | Northing | Easting | Latitude | Longitude |
|-------------------------|--------|-------|--------|------------|------------|-----------|-------------|
| PBHL - Gunderson 20-04W | 7538.0 | 84.5 | -680.6 | 1530419.77 | 2349543.20 | 39.267151 | -107.797721 |

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 | |
| 400.0 | 0.00 | 0.00 | 400.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.0 | KOP / Build 3" / 100' |
| 664.4 | 7.93 | 277.08 | 663.5 | 2.3 | -19.1 | 1.00 | 277.08 | 16.3 | EOB @ 7.93° Inc. / 277.08° Azm |
| 6370.3 | 7.93 | 277.08 | 6324.5 | 82.3 | -662.6 | 0.00 | 0.00 | 667.6 | Drop 3" / 100' |
| 6634.7 | 0.00 | 0.00 | 6586.0 | 84.5 | -680.6 | 3.00 | 180.00 | 685.8 | EOO @ Vertical |
| 7584.7 | 0.00 | 0.00 | 7538.0 | 84.5 | -680.6 | 0.00 | 0.00 | 685.8 | TD @ 7585' MD / 7538' TVD |

FORMATION TOP DETAILS

| TVDPath | MDPath | Formation |
|---------|--------|-----------------|
| 2438.0 | 2456.0 | G' Sand |
| 4288.0 | 4323.8 | Williams Fork |
| 5588.0 | 5634.7 | TOG |
| 6588.0 | 6634.7 | Cameo |
| 7248.0 | 7294.7 | Base Cameo Coal |
| 7288.0 | 7334.7 | Rollins |



Plan: Design #3 (Gunderson 20-04W/Wellbore #1)

Created By: Will Jircik Date: 8:58, February 14 2017



Laramie Energy, LLC

Mesa County, CO

Gunderson 20-03 Pad

Gunderson 20-04W

Wellbore #1

Plan: Design #3

QES Well Planning Report

14 February, 2017





Well Planning Report



| | | | |
|------------------|---------------------|-------------------------------------|------------------------------|
| Database: | EDM5002 | Local Co-ordinate Reference: | Well Gunderson 20-04W |
| Company: | Laramie Energy, LLC | TVD Reference: | well @ 7176.0usft (H&P #522) |
| Project: | Mesa County, CO | MD Reference: | well @ 7176.0usft (H&P #522) |
| Site: | Gunderson 20-03 Pad | North Reference: | True |
| Well: | Gunderson 20-04W | Survey Calculation Method: | Minimum Curvature |
| Wellbore: | Wellbore #1 | | |
| Design: | Design #3 | | |

| | | | |
|--------------------|---------------------------|----------------------|----------------|
| 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 20-03 Pad | | | |
| Site Position: | | Northing: | 1,530,258.75 usft | Latitude: 39.266756 |
| From: | Lat/Long | Easting: | 2,350,219.97 usft | Longitude: -107.795317 |
| Position Uncertainty: | 0.0 usft | Slot Radius: | 13-3/16" | Grid Convergence: -1.45° |

| | | | | |
|-----------------------------|------------------|-----------|----------------------------|-------------------|
| Well | Gunderson 20-04W | | | |
| Well Position | +N/-S | 59.4 usft | Northing: | 1,530,318.09 usft |
| | +E/-W | 0.0 usft | Easting: | 2,350,221.47 usft |
| Position Uncertainty | 0.0 usft | | Wellhead Elevation: | 0.0 usft |
| | | | Ground Level: | 7,146.0 usft |

| | | | | | |
|------------------|-------------------|--------------------|------------------------|----------------------|----------------------------|
| Wellbore | Wellbore #1 | | | | |
| Magnetics | Model Name | Sample Date | Declination (°) | Dip Angle (°) | Field Strength (nT) |
| | IGRF2015 | 10/19/2016 | 9.65 | 65.45 | 51,495 |

| | | | | |
|--------------------------|-------------------------|--------------|----------------------|------------------|
| Design | Design #3 | | | |
| Audit Notes: | | | | |
| Version: | Phase: | PLAN | Tie On Depth: | 0.0 |
| Vertical Section: | Depth From (TVD) | +N/-S | +E/-W | Direction |
| | (usft) | (usft) | (usft) | (°) |
| | 0.0 | 0.0 | 0.0 | 277.08 |

| 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 | |
| 400.0 | 0.00 | 0.00 | 400.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 664.4 | 7.93 | 277.08 | 663.5 | 2.3 | -18.1 | 3.00 | 3.00 | 0.00 | 277.08 | |
| 5,370.3 | 7.93 | 277.08 | 5,324.5 | 82.3 | -662.5 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 5,634.7 | 0.00 | 0.00 | 5,588.0 | 84.5 | -680.6 | 3.00 | -3.00 | 0.00 | 180.00 | |
| 7,584.7 | 0.00 | 0.00 | 7,538.0 | 84.5 | -680.6 | 0.00 | 0.00 | 0.00 | 0.00 | PBHL - Gunderson 20 |



Well Planning Report



| | | | |
|------------------|---------------------|-------------------------------------|------------------------------|
| Database: | EDM5002 | Local Co-ordinate Reference: | Well Gunderson 20-04W |
| Company: | Laramie Energy, LLC | TVD Reference: | well @ 7176.0usft (H&P #522) |
| Project: | Mesa County, CO | MD Reference: | well @ 7176.0usft (H&P #522) |
| Site: | Gunderson 20-03 Pad | North Reference: | True |
| Well: | Gunderson 20-04W | Survey Calculation Method: | Minimum Curvature |
| Wellbore: | Wellbore #1 | | |
| Design: | Design #3 | | |

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 |
| 300.0 | 0.00 | 0.00 | 300.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| KOP / Build 3° / 100' | | | | | | | | | |
| 400.0 | 0.00 | 0.00 | 400.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 500.0 | 3.00 | 277.08 | 500.0 | 0.3 | -2.6 | 2.6 | 3.00 | 3.00 | 0.00 |
| 600.0 | 6.00 | 277.08 | 599.6 | 1.3 | -10.4 | 10.5 | 3.00 | 3.00 | 0.00 |
| EOB @ 7.93° Inc. / 277.08° Azm | | | | | | | | | |
| 664.4 | 7.93 | 277.08 | 663.6 | 2.3 | -18.1 | 18.3 | 3.00 | 3.00 | 0.00 |
| 700.0 | 7.93 | 277.08 | 698.8 | 2.9 | -23.0 | 23.2 | 0.00 | 0.00 | 0.00 |
| 800.0 | 7.93 | 277.08 | 797.9 | 4.6 | -36.7 | 37.0 | 0.00 | 0.00 | 0.00 |
| 900.0 | 7.93 | 277.08 | 896.9 | 6.3 | -50.4 | 50.8 | 0.00 | 0.00 | 0.00 |
| 1,000.0 | 7.93 | 277.08 | 995.9 | 8.0 | -64.1 | 64.6 | 0.00 | 0.00 | 0.00 |
| 1,100.0 | 7.93 | 277.08 | 1,085.0 | 9.7 | -77.8 | 78.4 | 0.00 | 0.00 | 0.00 |
| 1,200.0 | 7.93 | 277.08 | 1,184.0 | 11.4 | -91.5 | 92.2 | 0.00 | 0.00 | 0.00 |
| 1,300.0 | 7.93 | 277.08 | 1,293.1 | 13.1 | -105.2 | 106.0 | 0.00 | 0.00 | 0.00 |
| 1,400.0 | 7.93 | 277.08 | 1,392.1 | 14.8 | -118.9 | 119.8 | 0.00 | 0.00 | 0.00 |
| 1,500.0 | 7.93 | 277.08 | 1,491.2 | 16.5 | -132.5 | 133.6 | 0.00 | 0.00 | 0.00 |
| 8 5/8" | | | | | | | | | |
| 1,530.0 | 7.93 | 277.08 | 1,520.9 | 17.0 | -136.7 | 137.7 | 0.00 | 0.00 | 0.00 |
| 1,600.0 | 7.93 | 277.08 | 1,590.2 | 18.2 | -146.2 | 147.4 | 0.00 | 0.00 | 0.00 |
| 1,700.0 | 7.93 | 277.08 | 1,689.3 | 19.9 | -159.9 | 161.2 | 0.00 | 0.00 | 0.00 |
| 1,800.0 | 7.93 | 277.08 | 1,788.3 | 21.6 | -173.6 | 175.0 | 0.00 | 0.00 | 0.00 |
| 1,900.0 | 7.93 | 277.08 | 1,887.3 | 23.3 | -187.3 | 188.8 | 0.00 | 0.00 | 0.00 |
| 2,000.0 | 7.93 | 277.08 | 1,986.4 | 25.0 | -201.0 | 202.6 | 0.00 | 0.00 | 0.00 |
| 2,100.0 | 7.93 | 277.08 | 2,085.4 | 26.7 | -214.7 | 216.3 | 0.00 | 0.00 | 0.00 |
| 2,200.0 | 7.93 | 277.08 | 2,184.5 | 28.4 | -228.4 | 230.1 | 0.00 | 0.00 | 0.00 |
| 2,300.0 | 7.93 | 277.08 | 2,283.5 | 30.1 | -242.1 | 243.9 | 0.00 | 0.00 | 0.00 |
| 2,400.0 | 7.93 | 277.08 | 2,382.6 | 31.8 | -255.8 | 257.7 | 0.00 | 0.00 | 0.00 |
| G' Sand | | | | | | | | | |
| 2,456.0 | 7.93 | 277.08 | 2,438.0 | 32.7 | -263.4 | 265.5 | 0.00 | 0.00 | 0.00 |
| 2,500.0 | 7.93 | 277.08 | 2,481.6 | 33.5 | -269.5 | 271.5 | 0.00 | 0.00 | 0.00 |
| 2,600.0 | 7.93 | 277.08 | 2,580.6 | 35.2 | -283.2 | 285.3 | 0.00 | 0.00 | 0.00 |
| 2,700.0 | 7.93 | 277.08 | 2,679.7 | 36.9 | -296.9 | 299.1 | 0.00 | 0.00 | 0.00 |
| 2,800.0 | 7.93 | 277.08 | 2,778.7 | 38.6 | -310.5 | 312.9 | 0.00 | 0.00 | 0.00 |
| 2,900.0 | 7.93 | 277.08 | 2,877.8 | 40.3 | -324.2 | 326.7 | 0.00 | 0.00 | 0.00 |
| 3,000.0 | 7.93 | 277.08 | 2,976.8 | 42.0 | -337.9 | 340.5 | 0.00 | 0.00 | 0.00 |
| 3,100.0 | 7.93 | 277.08 | 3,075.9 | 43.7 | -351.6 | 354.3 | 0.00 | 0.00 | 0.00 |
| 3,200.0 | 7.93 | 277.08 | 3,174.9 | 45.4 | -365.3 | 368.1 | 0.00 | 0.00 | 0.00 |
| 3,300.0 | 7.93 | 277.08 | 3,273.9 | 47.1 | -379.0 | 381.9 | 0.00 | 0.00 | 0.00 |
| 3,400.0 | 7.93 | 277.08 | 3,373.0 | 48.8 | -392.7 | 395.7 | 0.00 | 0.00 | 0.00 |
| 3,500.0 | 7.93 | 277.08 | 3,472.0 | 50.5 | -406.4 | 409.5 | 0.00 | 0.00 | 0.00 |
| 3,600.0 | 7.93 | 277.08 | 3,571.1 | 52.2 | -420.1 | 423.3 | 0.00 | 0.00 | 0.00 |
| 3,700.0 | 7.93 | 277.08 | 3,670.1 | 53.9 | -433.8 | 437.1 | 0.00 | 0.00 | 0.00 |
| 3,800.0 | 7.93 | 277.08 | 3,769.2 | 55.6 | -447.5 | 450.9 | 0.00 | 0.00 | 0.00 |
| 3,900.0 | 7.93 | 277.08 | 3,868.2 | 57.3 | -461.2 | 464.7 | 0.00 | 0.00 | 0.00 |
| 4,000.0 | 7.93 | 277.08 | 3,967.3 | 59.0 | -474.9 | 478.5 | 0.00 | 0.00 | 0.00 |
| 4,100.0 | 7.93 | 277.08 | 4,066.3 | 60.7 | -488.5 | 492.3 | 0.00 | 0.00 | 0.00 |
| 4,200.0 | 7.93 | 277.08 | 4,165.3 | 62.4 | -502.2 | 506.1 | 0.00 | 0.00 | 0.00 |
| 4,300.0 | 7.93 | 277.08 | 4,264.4 | 64.1 | -515.9 | 519.9 | 0.00 | 0.00 | 0.00 |
| Williams Fork | | | | | | | | | |
| 4,323.8 | 7.93 | 277.08 | 4,288.0 | 64.5 | -519.2 | 523.2 | 0.00 | 0.00 | 0.00 |
| 4,400.0 | 7.93 | 277.08 | 4,363.4 | 65.8 | -529.6 | 533.7 | 0.00 | 0.00 | 0.00 |



Well Planning Report



| | | | |
|------------------|---------------------|-------------------------------------|------------------------------|
| Database: | EDM5002 | Local Co-ordinate Reference: | Well Gunderson 20-04W |
| Company: | Laramie Energy, LLC | TVD Reference: | well @ 7176.0usft (H&P #522) |
| Project: | Mesa County, CO | MD Reference: | well @ 7176.0usft (H&P #522) |
| Site: | Gunderson 20-03 Pad | North Reference: | True |
| Well: | Gunderson 20-04W | Survey Calculation Method: | Minimum Curvature |
| Wellbore: | Wellbore #1 | | |
| Design: | Design #3 | | |

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) |
|----------------------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| 4,500.0 | 7.93 | 277.08 | 4,462.5 | 67.5 | -543.3 | 547.5 | 0.00 | 0.00 | 0.00 |
| 4,600.0 | 7.93 | 277.08 | 4,561.5 | 69.2 | -557.0 | 561.3 | 0.00 | 0.00 | 0.00 |
| 4,700.0 | 7.93 | 277.08 | 4,660.6 | 70.9 | -570.7 | 575.1 | 0.00 | 0.00 | 0.00 |
| 4,800.0 | 7.93 | 277.08 | 4,759.6 | 72.6 | -584.4 | 588.9 | 0.00 | 0.00 | 0.00 |
| 4,900.0 | 7.93 | 277.08 | 4,858.6 | 74.3 | -598.1 | 602.7 | 0.00 | 0.00 | 0.00 |
| 5,000.0 | 7.93 | 277.08 | 4,957.7 | 76.0 | -611.8 | 616.5 | 0.00 | 0.00 | 0.00 |
| 5,100.0 | 7.93 | 277.08 | 5,056.7 | 77.7 | -625.5 | 630.3 | 0.00 | 0.00 | 0.00 |
| 5,200.0 | 7.93 | 277.08 | 5,155.8 | 79.4 | -639.2 | 644.1 | 0.00 | 0.00 | 0.00 |
| 5,300.0 | 7.93 | 277.08 | 5,254.8 | 81.1 | -652.9 | 657.9 | 0.00 | 0.00 | 0.00 |
| Drop 3° / 100' | | | | | | | | | |
| 5,370.3 | 7.93 | 277.08 | 5,324.4 | 82.3 | -662.5 | 667.6 | 0.00 | 0.00 | 0.00 |
| 5,400.0 | 7.04 | 277.08 | 5,353.9 | 82.7 | -666.3 | 671.4 | 3.00 | -3.00 | 0.00 |
| 5,500.0 | 4.04 | 277.08 | 5,453.4 | 83.9 | -675.9 | 681.1 | 3.00 | -3.00 | 0.00 |
| 5,600.0 | 1.04 | 277.08 | 5,553.3 | 84.5 | -680.3 | 685.5 | 3.00 | -3.00 | 0.00 |
| EOD @ Vertical - TOG | | | | | | | | | |
| 5,634.7 | 0.00 | 0.00 | 5,588.0 | 84.5 | -680.6 | 685.8 | 3.00 | -3.00 | 0.00 |
| 5,700.0 | 0.00 | 0.00 | 5,653.3 | 84.5 | -680.6 | 685.8 | 0.00 | 0.00 | 0.00 |
| 5,800.0 | 0.00 | 0.00 | 5,753.3 | 84.5 | -680.6 | 685.8 | 0.00 | 0.00 | 0.00 |
| 5,900.0 | 0.00 | 0.00 | 5,853.3 | 84.5 | -680.6 | 685.8 | 0.00 | 0.00 | 0.00 |
| 6,000.0 | 0.00 | 0.00 | 5,953.3 | 84.5 | -680.6 | 685.8 | 0.00 | 0.00 | 0.00 |
| 6,100.0 | 0.00 | 0.00 | 6,053.3 | 84.5 | -680.6 | 685.8 | 0.00 | 0.00 | 0.00 |
| 6,200.0 | 0.00 | 0.00 | 6,153.3 | 84.5 | -680.6 | 685.8 | 0.00 | 0.00 | 0.00 |
| 6,300.0 | 0.00 | 0.00 | 6,253.3 | 84.5 | -680.6 | 685.8 | 0.00 | 0.00 | 0.00 |
| 6,400.0 | 0.00 | 0.00 | 6,353.3 | 84.5 | -680.6 | 685.8 | 0.00 | 0.00 | 0.00 |
| 6,500.0 | 0.00 | 0.00 | 6,453.3 | 84.5 | -680.6 | 685.8 | 0.00 | 0.00 | 0.00 |
| 6,600.0 | 0.00 | 0.00 | 6,553.3 | 84.5 | -680.6 | 685.8 | 0.00 | 0.00 | 0.00 |
| Cameo | | | | | | | | | |
| 6,634.7 | 0.00 | 0.00 | 6,588.0 | 84.5 | -680.6 | 685.8 | 0.00 | 0.00 | 0.00 |
| 6,700.0 | 0.00 | 0.00 | 6,653.3 | 84.5 | -680.6 | 685.8 | 0.00 | 0.00 | 0.00 |
| 6,800.0 | 0.00 | 0.00 | 6,753.3 | 84.5 | -680.6 | 685.8 | 0.00 | 0.00 | 0.00 |
| 6,900.0 | 0.00 | 0.00 | 6,853.3 | 84.5 | -680.6 | 685.8 | 0.00 | 0.00 | 0.00 |
| 7,000.0 | 0.00 | 0.00 | 6,953.3 | 84.5 | -680.6 | 685.8 | 0.00 | 0.00 | 0.00 |
| 7,100.0 | 0.00 | 0.00 | 7,053.3 | 84.5 | -680.6 | 685.8 | 0.00 | 0.00 | 0.00 |
| 7,200.0 | 0.00 | 0.00 | 7,153.3 | 84.5 | -680.6 | 685.8 | 0.00 | 0.00 | 0.00 |
| Base Cameo Coal | | | | | | | | | |
| 7,294.7 | 0.00 | 0.00 | 7,248.0 | 84.5 | -680.6 | 685.8 | 0.00 | 0.00 | 0.00 |
| 7,300.0 | 0.00 | 0.00 | 7,253.3 | 84.5 | -680.6 | 685.8 | 0.00 | 0.00 | 0.00 |
| Rollins | | | | | | | | | |
| 7,334.7 | 0.00 | 0.00 | 7,288.0 | 84.5 | -680.6 | 685.8 | 0.00 | 0.00 | 0.00 |
| 7,400.0 | 0.00 | 0.00 | 7,353.3 | 84.5 | -680.6 | 685.8 | 0.00 | 0.00 | 0.00 |
| 7,500.0 | 0.00 | 0.00 | 7,453.3 | 84.5 | -680.6 | 685.8 | 0.00 | 0.00 | 0.00 |
| TD @ 7585' MD / 7538' TVD | | | | | | | | | |
| 7,584.7 | 0.00 | 0.00 | 7,538.0 | 84.5 | -680.6 | 685.8 | 0.00 | 0.00 | 0.00 |



Well Planning Report



| | | | |
|------------------|---------------------|-------------------------------------|------------------------------|
| Database: | EDM5002 | Local Co-ordinate Reference: | Well Gunderson 20-04W |
| Company: | Laramie Energy, LLC | TVD Reference: | well @ 7176.0usft (H&P #522) |
| Project: | Mesa County, CO | MD Reference: | well @ 7176.0usft (H&P #522) |
| Site: | Gunderson 20-03 Pad | North Reference: | True |
| Well: | Gunderson 20-04W | Survey Calculation Method: | Minimum Curvature |
| Wellbore: | Wellbore #1 | | |
| Design: | Design #3 | | |

| 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 | | | | | | | | | |
| PBHL - Gunderson 20-0 | 0.00 | 0.00 | 7,538.0 | 84.5 | -680.6 | 1,530,419.77 | 2,349,543.20 | 39.267151 | -107.797721 |
| - plan hits target center | | | | | | | | | |
| - Circle (radius 50.0) | | | | | | | | | |

| Casing Points | | | | |
|-----------------------------|-----------------------------|--------|---------------------------|-------------------------|
| Measured Depth (usft) | Vertical Depth (usft) | Name | Casing Diameter (") | Hole Diameter (") |
| 1,530.0 | 1,520.9 | 8 5/8" | 8-5/8 | 11 |

| Formations | | | | | |
|-----------------------------|-----------------------------|-----------------|-----------|------------|-------------------------|
| Measured Depth (usft) | Vertical Depth (usft) | Name | Lithology | Dip (°) | Dip Direction (°) |
| 2,456.0 | 2,438.0 | G' Sand | | 0.00 | |
| 4,323.8 | 4,288.0 | Williams Fork | | 0.00 | |
| 5,634.7 | 5,588.0 | TOG | | 0.00 | |
| 6,634.7 | 6,588.0 | Cameo | | 0.00 | |
| 7,294.7 | 7,248.0 | Base Cameo Coal | | 0.00 | |
| 7,334.7 | 7,288.0 | Rollins | | 0.00 | |

| Plan Annotations | | | | |
|-----------------------------|-----------------------------|-------------------|-----------------|--------------------------------|
| Measured Depth (usft) | Vertical Depth (usft) | Local Coordinates | | Comment |
| | | +N/-S (usft) | +E/-W (usft) | |
| 400.0 | 400.0 | 0.0 | 0.0 | KOP / Build 3" / 100' |
| 664.4 | 663.6 | 2.3 | -18.1 | EOB @ 7.93" Inc. / 277.08" Azm |
| 5,370.3 | 5,324.4 | 82.3 | -662.5 | Drop 3" / 100' |
| 5,634.7 | 5,588.0 | 84.5 | -680.6 | EOD @ Vertical |
| 7,584.7 | 7,538.0 | 84.5 | -680.6 | TD @ 7585' MD / 7538' TVD |