



Well Details: GM 412-8

TVD Reference: GL 6175' & RKB 24' @ 6199.00usft
 +N/-S +E/-W Northing Easting Latitude Longitude Slot
 0.00 0.00 1601127.46 2257375.39 39.4543483 -108.1303610 GM 412-8 (A4)

REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well GM 412-8 - Slot GM 412-8 (A4), True North
 Vertical (TVD) Reference: GL 6175' & RKB 24' @ 6199.00usft
 Section (VS) Reference: Slot - GM 412-8 (A4)(0.00N, 0.00E)
 Measured Depth Reference: GL 6175' & RKB 24' @ 6199.00usft
 Calculation Method: Minimum Curvature

PROJECT DETAILS: Garfield County, CO NAD83

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

System Datum: Mean Sea Level

Plan: OH

12:40, January 17 2019
 Created By: Mel Mireles Jr.



Directional Survey Certification

2948 I-70 Business Loop
Grand Junction, CO 81504
(970)-245-9447 Fax (970)-245-9454

| | |
|----------------------------|--------------------------|
| Operator | TEP Rocky Mountain, LLC. |
| Well Name & No. | GM 412-8 |
| County & State | Garfield County, CO |
| SDI Job No. | OP.014975 |
| Rig | H&P 271 |

I, Mel Mireles Jr., having personal knowledge of all the facts, hereby certify that the attached directional survey run from a measured depth of 130 feet to a measured depth of 7,124 feet is true and correct as determined from all available records.

A handwritten signature in black ink, appearing to read 'Mel Mireles Jr.', written over a horizontal line.

Signature

17-Jan-19

Date

Mel Mireles Jr.

Grand Junction Assistant Well Planner
Scientific Drilling - Colorado District

| | | | |
|------------------|---------------------------|-------------------------------------|------------------------------------|
| Company: | TEP Rocky Mountain LLC | Local Co-ordinate Reference: | Well GM 412-8 - Slot GM 412-8 (A4) |
| Project: | Garfield County, CO NAD83 | TVD Reference: | GL 6175' & RKB 24' @ 6199.00usft |
| Site: | MV 60-8D Pad | MD Reference: | GL 6175' & RKB 24' @ 6199.00usft |
| Well: | GM 412-8 | North Reference: | True |
| Wellbore: | OH | Survey Calculation Method: | Minimum Curvature |
| Design: | OH | Database: | Grand Junction District |

| | | | |
|--------------------|---------------------------|----------------------|----------------|
| Project | Garfield County, CO NAD83 | | |
| Map System: | US State Plane 1983 | System Datum: | Mean Sea Level |
| Geo Datum: | North American Datum 1983 | | |
| Map Zone: | Colorado Central Zone | | |

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|-----------------------|-----|--------------|--------------|--------------|-------------------|--------------|
| Site | | MV 60-8D Pad | | | | |
| Site Position: | | Northing: | 1,601,172.03 | usft | Latitude: | 39.4544712 |
| From: | Map | Easting: | 2,257,381.57 | usft | Longitude: | -108.1303437 |
| Position Uncertainty: | | 0.00 | usft | Slot Radius: | 13.20 | in |
| | | | | | Grid Convergence: | -1.66 ° |

| | | | | | | |
|----------------------|-------------------------------|-----------|---------------------|-------------------|---------------|---------------|
| Well | GM 412-8 - Slot GM 412-8 (A4) | | | | | |
| Well Position | +N/-S | 0.00 usft | Northing: | 1,601,127.46 usft | Latitude: | 39.4543484 |
| | +E/-W | 0.00 usft | Easting: | 2,257,375.39 usft | Longitude: | -108.1303611 |
| Position Uncertainty | | 0.00 usft | Wellhead Elevation: | 0.00 usft | Ground Level: | 6,175.00 usft |

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|------------------|-------------------|--------------------|------------------------|----------------------|----------------------------|
| Wellbore | OH | | | | |
| Magnetics | Model Name | Sample Date | Declination (°) | Dip Angle (°) | Field Strength (nT) |
| | HDGM | 1/1/2019 | 9.48 | 65.67 | 51,616 |

| | | | | | |
|--------------------------|--------------------------------|---------------------|---------------------|----------------------|------|
| Design | OH | | | | |
| 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 | 271.69 | |

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|-----------------------|------------------|--|------------------|--------------------------------|--|
| Survey Program | Date | 1/17/2019 | | | |
| From (usft) | To (usft) | Survey (Wellbore) | Tool Name | Description | |
| 130.00 | 401.00 | Survey #1 - Gyro MWD Survey (OH) | Gyro MWD 105 | Gyro MWD Error Model Ver 1.0.5 | |
| 473.00 | 967.00 | Survey #2 - Surface MWD Survey (OH) | MWD+HDGM | OWSG MWD + HDGM | |
| 1,079.00 | 7,124.00 | Survey #3 - Production MWD Survey (OH) | MWD+HDGM | OWSG MWD + HDGM | |

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|----------------------------------|------------------------|--------------------|------------------------------|---------------------|---------------------|--------------------------------|--------------------------------|-------------------------------|------------------------------|--|
| 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 | |
| 130.00 | 1.32 | 325.63 | 129.99 | 1.24 | -0.85 | 0.88 | 1.02 | 1.02 | 0.00 | |
| First SDI Gyro MWD Survey | | | | | | | | | | |
| 218.00 | 3.70 | 294.96 | 217.90 | 3.27 | -3.99 | 4.09 | 3.01 | 2.70 | -34.85 | |
| 249.00 | 4.31 | 292.32 | 248.82 | 4.14 | -5.98 | 6.10 | 2.06 | 1.97 | -8.52 | |
| 279.00 | 4.31 | 284.68 | 278.74 | 4.85 | -8.11 | 8.25 | 1.91 | 0.00 | -25.47 | |
| 310.00 | 4.05 | 284.00 | 309.66 | 5.41 | -10.30 | 10.45 | 0.85 | -0.84 | -2.19 | |
| 357.00 | 4.93 | 275.10 | 356.51 | 5.99 | -13.92 | 14.09 | 2.38 | 1.87 | -18.94 | |
| 401.00 | 6.86 | 273.08 | 400.28 | 6.30 | -18.43 | 18.61 | 4.41 | 4.39 | -4.59 | |

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|------------------|---------------------------|-------------------------------------|------------------------------------|
| Company: | TEP Rocky Mountain LLC | Local Co-ordinate Reference: | Well GM 412-8 - Slot GM 412-8 (A4) |
| Project: | Garfield County, CO NAD83 | TVD Reference: | GL 6175' & RKB 24' @ 6199.00usft |
| Site: | MV 60-8D Pad | MD Reference: | GL 6175' & RKB 24' @ 6199.00usft |
| Well: | GM 412-8 | North Reference: | True |
| Wellbore: | OH | Survey Calculation Method: | Minimum Curvature |
| Design: | OH | Database: | Grand Junction District |

| 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) |
| Last SDI Gyro MWD Survey | | | | | | | | | |
| 473.00 | 10.35 | 270.16 | 471.46 | 6.55 | -29.19 | 29.37 | 4.88 | 4.85 | -4.06 |
| First SDI Surface MWD Survey | | | | | | | | | |
| 565.00 | 14.17 | 267.94 | 561.34 | 6.17 | -48.72 | 48.88 | 4.18 | 4.15 | -2.41 |
| 657.00 | 17.42 | 269.85 | 649.86 | 5.73 | -73.75 | 73.89 | 3.58 | 3.53 | 2.08 |
| 749.00 | 21.06 | 271.87 | 736.71 | 6.23 | -104.05 | 104.19 | 4.02 | 3.96 | 2.20 |
| 840.00 | 23.75 | 271.29 | 820.83 | 7.18 | -138.72 | 138.87 | 2.97 | 2.96 | -0.64 |
| 933.00 | 27.55 | 270.39 | 904.65 | 7.74 | -178.97 | 179.12 | 4.11 | 4.09 | -0.97 |
| 967.00 | 28.75 | 271.13 | 934.63 | 7.96 | -195.00 | 195.15 | 3.68 | 3.53 | 2.18 |
| Last SDI Surface MWD Survey | | | | | | | | | |
| 1,079.00 | 30.96 | 271.99 | 1,031.76 | 9.49 | -250.73 | 250.90 | 2.01 | 1.97 | 0.77 |
| First SDI Production MWD Survey | | | | | | | | | |
| 1,173.00 | 32.02 | 271.58 | 1,111.91 | 11.02 | -299.81 | 300.00 | 1.15 | 1.13 | -0.44 |
| 1,267.00 | 33.40 | 270.90 | 1,191.01 | 12.11 | -350.59 | 350.80 | 1.52 | 1.47 | -0.72 |
| 1,361.00 | 32.04 | 268.81 | 1,270.09 | 12.00 | -401.39 | 401.57 | 1.88 | -1.45 | -2.22 |
| 1,456.00 | 33.13 | 270.43 | 1,350.14 | 11.67 | -452.55 | 452.70 | 1.47 | 1.15 | 1.71 |
| 1,550.00 | 31.51 | 266.96 | 1,429.58 | 10.56 | -502.77 | 502.87 | 2.62 | -1.72 | -3.69 |
| 1,644.00 | 31.45 | 270.61 | 1,509.75 | 9.52 | -551.83 | 551.87 | 2.03 | -0.06 | 3.88 |
| 1,738.00 | 31.42 | 273.01 | 1,589.96 | 11.07 | -600.82 | 600.89 | 1.33 | -0.03 | 2.55 |
| 1,833.00 | 31.60 | 270.76 | 1,670.95 | 12.70 | -650.44 | 650.53 | 1.25 | 0.19 | -2.37 |
| 1,927.00 | 31.69 | 271.79 | 1,750.98 | 13.80 | -699.74 | 699.84 | 0.58 | 0.10 | 1.10 |
| 2,022.00 | 32.44 | 271.86 | 1,831.48 | 15.40 | -750.15 | 750.28 | 0.79 | 0.79 | 0.07 |
| 2,116.00 | 32.94 | 272.94 | 1,910.60 | 17.53 | -800.87 | 801.04 | 0.82 | 0.53 | 1.15 |
| 2,210.00 | 31.99 | 274.34 | 1,989.91 | 20.73 | -851.22 | 851.47 | 1.29 | -1.01 | 1.49 |
| 2,304.00 | 32.10 | 273.71 | 2,069.58 | 24.23 | -900.98 | 901.30 | 0.37 | 0.12 | -0.67 |
| 2,399.00 | 32.47 | 272.79 | 2,149.90 | 27.10 | -951.64 | 952.02 | 0.65 | 0.39 | -0.97 |
| 2,493.00 | 31.50 | 273.57 | 2,229.63 | 29.86 | -1,001.35 | 1,001.79 | 1.12 | -1.03 | 0.83 |
| 2,588.00 | 32.53 | 273.21 | 2,310.18 | 32.83 | -1,051.62 | 1,052.13 | 1.10 | 1.08 | -0.38 |
| 2,682.00 | 33.81 | 274.47 | 2,388.86 | 36.29 | -1,102.93 | 1,103.52 | 1.55 | 1.36 | 1.34 |
| 2,776.00 | 31.10 | 272.70 | 2,468.17 | 39.47 | -1,153.27 | 1,153.93 | 3.05 | -2.88 | -1.88 |
| 2,870.00 | 30.36 | 270.60 | 2,548.97 | 40.86 | -1,201.27 | 1,201.96 | 1.39 | -0.79 | -2.23 |
| 2,965.00 | 30.52 | 271.75 | 2,630.88 | 41.85 | -1,249.39 | 1,250.08 | 0.64 | 0.17 | 1.21 |
| 3,059.00 | 31.01 | 272.19 | 2,711.65 | 43.51 | -1,297.45 | 1,298.16 | 0.57 | 0.52 | 0.47 |
| 3,153.00 | 31.03 | 272.50 | 2,792.21 | 45.49 | -1,345.85 | 1,346.60 | 0.17 | 0.02 | 0.33 |
| 3,247.00 | 31.85 | 270.96 | 2,872.41 | 46.96 | -1,394.85 | 1,395.63 | 1.22 | 0.87 | -1.64 |
| 3,342.00 | 30.57 | 270.79 | 2,953.66 | 47.71 | -1,444.07 | 1,444.85 | 1.35 | -1.35 | -0.18 |
| 3,436.00 | 33.21 | 274.61 | 3,033.47 | 50.11 | -1,493.65 | 1,494.47 | 3.53 | 2.81 | 4.06 |
| 3,530.00 | 32.49 | 275.13 | 3,112.44 | 54.44 | -1,544.45 | 1,545.38 | 0.82 | -0.77 | 0.55 |
| 3,625.00 | 31.00 | 276.25 | 3,193.23 | 59.38 | -1,594.19 | 1,595.24 | 1.69 | -1.57 | 1.18 |
| 3,719.00 | 29.66 | 277.27 | 3,274.36 | 64.96 | -1,641.32 | 1,642.52 | 1.53 | -1.43 | 1.09 |
| 3,813.00 | 29.96 | 274.36 | 3,355.92 | 69.69 | -1,687.80 | 1,689.12 | 1.57 | 0.32 | -3.10 |
| 3,907.00 | 27.72 | 274.68 | 3,438.26 | 73.26 | -1,733.00 | 1,734.40 | 2.39 | -2.38 | 0.34 |
| 4,002.00 | 25.65 | 273.78 | 3,523.14 | 76.42 | -1,775.54 | 1,777.02 | 2.22 | -2.18 | -0.95 |
| 4,096.00 | 25.57 | 270.08 | 3,607.91 | 77.79 | -1,816.13 | 1,817.63 | 1.70 | -0.09 | -3.94 |

| | | | |
|------------------|---------------------------|-------------------------------------|------------------------------------|
| Company: | TEP Rocky Mountain LLC | Local Co-ordinate Reference: | Well GM 412-8 - Slot GM 412-8 (A4) |
| Project: | Garfield County, CO NAD83 | TVD Reference: | GL 6175' & RKB 24' @ 6199.00usft |
| Site: | MV 60-8D Pad | MD Reference: | GL 6175' & RKB 24' @ 6199.00usft |
| Well: | GM 412-8 | North Reference: | True |
| Wellbore: | OH | Survey Calculation Method: | Minimum Curvature |
| Design: | OH | Database: | Grand Junction District |

| 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) |
| 4,191.00 | 25.78 | 270.04 | 3,693.53 | 77.83 | -1,857.29 | 1,858.78 | 0.22 | 0.22 | -0.04 |
| 4,285.00 | 23.53 | 269.05 | 3,778.95 | 77.53 | -1,896.50 | 1,897.96 | 2.43 | -2.39 | -1.05 |
| 4,379.00 | 23.84 | 269.56 | 3,865.04 | 77.08 | -1,934.25 | 1,935.69 | 0.40 | 0.33 | 0.54 |
| 4,474.00 | 20.51 | 267.95 | 3,953.00 | 76.33 | -1,970.09 | 1,971.49 | 3.56 | -3.51 | -1.69 |
| 4,568.00 | 20.23 | 270.95 | 4,041.12 | 76.01 | -2,002.80 | 2,004.17 | 1.15 | -0.30 | 3.19 |
| 4,662.00 | 19.91 | 271.16 | 4,129.41 | 76.61 | -2,035.05 | 2,036.43 | 0.35 | -0.34 | 0.22 |
| 4,756.00 | 17.23 | 270.95 | 4,218.51 | 77.16 | -2,064.98 | 2,066.36 | 2.85 | -2.85 | -0.22 |
| 4,851.00 | 17.81 | 268.51 | 4,309.11 | 77.02 | -2,093.57 | 2,094.94 | 0.99 | 0.61 | -2.57 |
| 4,945.00 | 16.58 | 269.61 | 4,398.90 | 76.55 | -2,121.36 | 2,122.69 | 1.35 | -1.31 | 1.17 |
| 5,039.00 | 16.00 | 266.71 | 4,489.13 | 75.72 | -2,147.70 | 2,149.00 | 1.06 | -0.62 | -3.09 |
| 5,134.00 | 13.27 | 266.98 | 4,581.04 | 74.39 | -2,171.67 | 2,172.92 | 2.87 | -2.87 | 0.28 |
| 5,228.00 | 10.81 | 273.19 | 4,672.97 | 74.31 | -2,191.25 | 2,192.48 | 2.95 | -2.62 | 6.61 |
| 5,322.00 | 9.19 | 267.84 | 4,765.54 | 74.52 | -2,207.55 | 2,208.79 | 1.98 | -1.72 | -5.69 |
| 5,405.09 | 8.38 | 266.25 | 4,847.66 | 73.88 | -2,220.23 | 2,221.44 | 1.01 | -0.97 | -1.91 |
| GM 412-8 BTV | | | | | | | | | |
| 5,417.00 | 8.27 | 266.00 | 4,859.44 | 73.76 | -2,221.95 | 2,223.15 | 1.01 | -0.96 | -2.12 |
| 5,511.00 | 6.67 | 268.64 | 4,952.64 | 73.16 | -2,234.15 | 2,235.33 | 1.74 | -1.70 | 2.81 |
| 5,605.00 | 5.39 | 278.30 | 5,046.12 | 73.67 | -2,243.98 | 2,245.17 | 1.73 | -1.36 | 10.28 |
| 5,699.00 | 3.73 | 270.12 | 5,139.82 | 74.31 | -2,251.40 | 2,252.61 | 1.89 | -1.77 | -8.70 |
| 5,793.00 | 2.96 | 297.79 | 5,233.66 | 75.45 | -2,256.61 | 2,257.85 | 1.88 | -0.82 | 29.44 |
| 5,888.00 | 1.19 | 359.05 | 5,328.61 | 77.58 | -2,258.79 | 2,260.10 | 2.74 | -1.86 | 64.48 |
| 5,982.00 | 0.34 | 253.04 | 5,422.60 | 78.47 | -2,259.08 | 2,260.41 | 1.41 | -0.90 | -112.78 |
| 6,077.00 | 1.00 | 241.72 | 5,517.59 | 78.00 | -2,260.08 | 2,261.39 | 0.71 | 0.69 | -11.92 |
| 6,171.00 | 1.11 | 238.12 | 5,611.58 | 77.13 | -2,261.57 | 2,262.86 | 0.14 | 0.12 | -3.83 |
| 6,265.00 | 1.85 | 222.52 | 5,705.54 | 75.53 | -2,263.37 | 2,264.61 | 0.89 | 0.79 | -16.60 |
| 6,359.00 | 1.62 | 210.74 | 5,799.50 | 73.27 | -2,265.08 | 2,266.25 | 0.45 | -0.24 | -12.53 |
| 6,454.00 | 2.29 | 210.22 | 5,894.45 | 70.47 | -2,266.72 | 2,267.81 | 0.71 | 0.71 | -0.55 |
| 6,548.00 | 2.46 | 221.64 | 5,988.37 | 67.34 | -2,269.00 | 2,270.00 | 0.53 | 0.18 | 12.15 |
| 6,642.00 | 2.47 | 203.32 | 6,082.28 | 63.98 | -2,271.14 | 2,272.04 | 0.83 | 0.01 | -19.49 |
| 6,736.00 | 1.48 | 188.52 | 6,176.22 | 60.92 | -2,272.13 | 2,272.93 | 1.18 | -1.05 | -15.74 |
| 6,831.00 | 2.68 | 206.63 | 6,271.16 | 57.72 | -2,273.30 | 2,274.02 | 1.43 | 1.26 | 19.06 |
| 6,925.00 | 3.38 | 202.36 | 6,365.03 | 53.19 | -2,275.34 | 2,275.92 | 0.78 | 0.74 | -4.54 |
| 7,019.00 | 3.34 | 214.09 | 6,458.87 | 48.36 | -2,277.93 | 2,278.37 | 0.73 | -0.04 | 12.48 |
| 7,064.00 | 2.90 | 216.28 | 6,503.80 | 46.36 | -2,279.34 | 2,279.72 | 1.01 | -0.98 | 4.87 |
| Last SDI Production MWD Survey | | | | | | | | | |
| 7,124.00 | 2.90 | 216.28 | 6,563.72 | 43.91 | -2,281.14 | 2,281.44 | 0.00 | 0.00 | 0.00 |
| Projection to TD - GM 412-8 PBHL | | | | | | | | | |



Scientific Drilling, Intl
Survey Report

| | | | |
|------------------|---------------------------|-------------------------------------|------------------------------------|
| Company: | TEP Rocky Mountain LLC | Local Co-ordinate Reference: | Well GM 412-8 - Slot GM 412-8 (A4) |
| Project: | Garfield County, CO NAD83 | TVD Reference: | GL 6175' & RKB 24' @ 6199.00usft |
| Site: | MV 60-8D Pad | MD Reference: | GL 6175' & RKB 24' @ 6199.00usft |
| Well: | GM 412-8 | North Reference: | True |
| Wellbore: | OH | Survey Calculation Method: | Minimum Curvature |
| Design: | OH | Database: | Grand Junction District |

| Design Annotations | | | | |
|-----------------------|-----------------------|-------------------|--------------|---------------------------------|
| Measured Depth (usft) | Vertical Depth (usft) | Local Coordinates | | Comment |
| | | +N/-S (usft) | +E/-W (usft) | |
| 130.00 | 129.99 | 1.24 | -0.85 | First SDI Gyro MWD Survey |
| 401.00 | 400.28 | 6.30 | -18.43 | Last SDI Gyro MWD Survey |
| 473.00 | 471.46 | 6.55 | -29.19 | First SDI Surface MWD Survey |
| 967.00 | 934.63 | 7.96 | -195.00 | Last SDI Surface MWD Survey |
| 1,079.00 | 1,031.76 | 9.49 | -250.73 | First SDI Production MWD Survey |
| 7,064.00 | 6,503.80 | 46.36 | -2,279.34 | Last SDI Production MWD Survey |
| 7,124.00 | 6,563.72 | 43.91 | -2,281.14 | Projection to TD |

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