

WHITING PETROLEUM CORPORATION

Project: Weld County, CO
Site: Horsetail #30F
Well: 3107
Wellbore: OH
Design: OH



Azimuths to True North
Magnetic North: 8.03°

Magnetic Field
Strength: 53018.1snT
Dip Angle: 67.42°
Date: 7/9/2014
Model: BGGM2014



PROJECT DETAILS: Weld County, CO

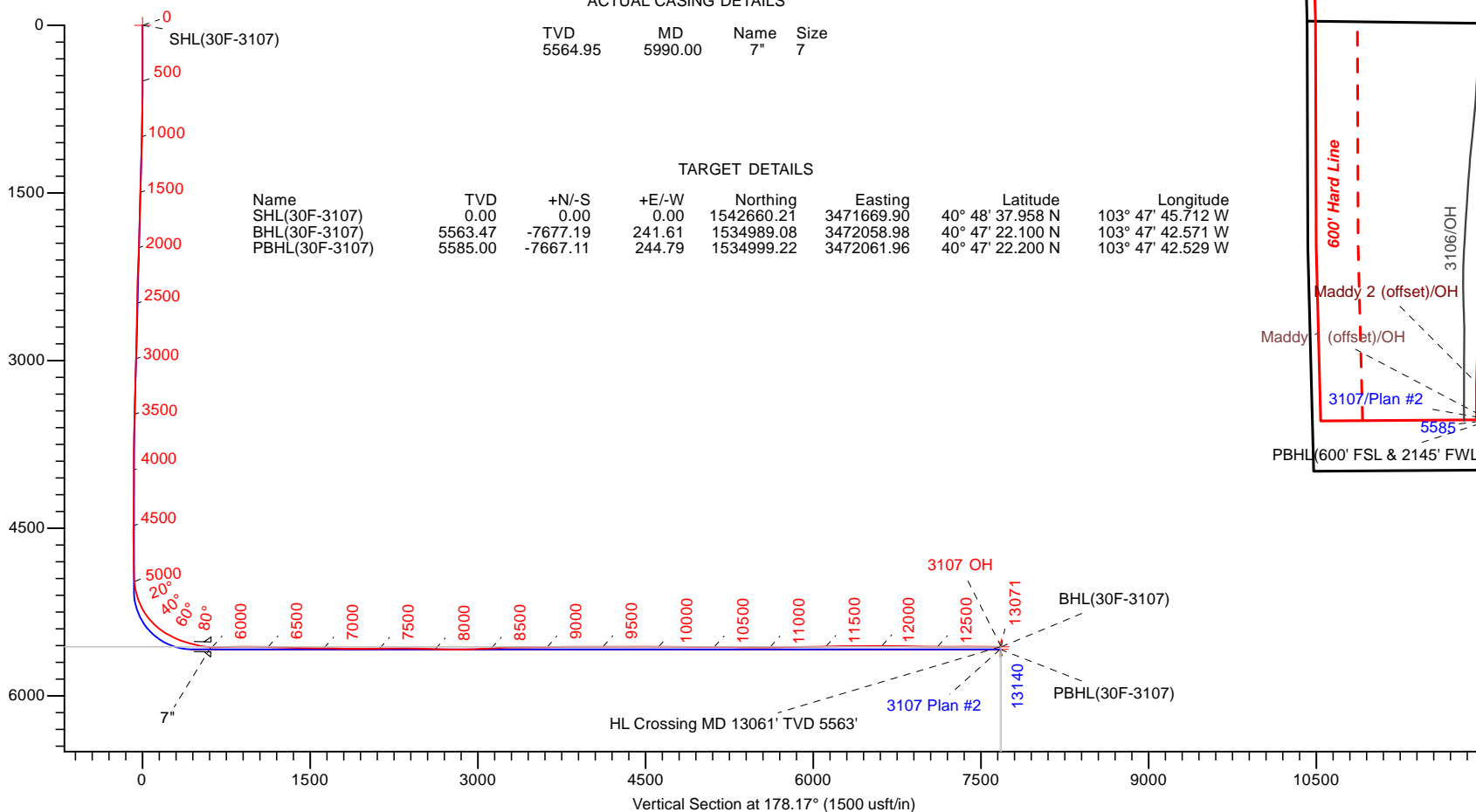
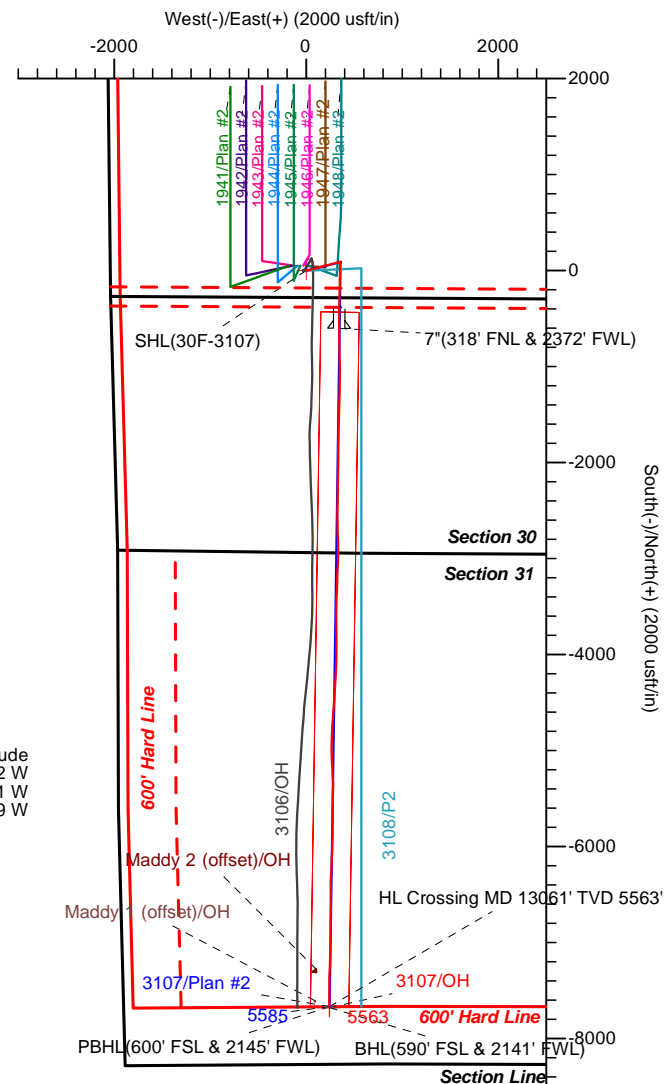
Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: Colorado Northern Zone

ACTUAL CASING DETAILS

| TVD | MD | Name | Size |
|---------|---------|------|------|
| 5564.95 | 5990.00 | 7" | 7 |

TARGET DETAILS

| Name | TVD | +N/-S | +E/-W | Northing | Easting | Latitude | Longitude |
|----------------|---------|----------|--------|------------|------------|------------------|-------------------|
| SHL(30F-3107) | 0.00 | 0.00 | 0.00 | 1542660.21 | 3471669.90 | 40° 48' 37.958 N | 103° 47' 45.712 W |
| BHL(30F-3107) | 5563.47 | -7677.19 | 241.61 | 1534989.08 | 3472058.98 | 40° 47' 22.100 N | 103° 47' 42.571 W |
| PBHL(30F-3107) | 5585.00 | -7667.11 | 244.79 | 1534999.22 | 3472061.96 | 40° 47' 22.200 N | 103° 47' 42.529 W |



LEAM DRILLING SYSTEMS LLC
2010 East Davis, Conroe, Texas 77301
Phone: 936/756-7577, Fax: 936/756-7595

Design: OH (3107/OH)
Horsetail #30F
Created By: Cindy Ponce
Date: 16:10, November 17 2014
Approved: _____
Date: _____

LEAM Drilling Systems LLC

Survey Report

| | | | |
|------------------|-------------------------------|-------------------------------------|---|
| Company: | WHITING PETROLEUM CORPORATION | Local Co-ordinate Reference: | Well 3107 |
| Project: | Weld County, CO | TVD Reference: | GE 4780' + KB 17' @ 4797.00usft (Xtreme 18) |
| Site: | Horsetail #30F | MD Reference: | GE 4780' + KB 17' @ 4797.00usft (Xtreme 18) |
| Well: | 3107 | North Reference: | True |
| Wellbore: | OH | Survey Calculation Method: | Minimum Curvature |
| Design: | OH | Database: | EDM 5000.1 Multi User Db |

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

| | | | | | |
|-----------------------|-----------|----------------|-------------------|-------------------|-------------------|
| Site | | Horsetail #30F | | | |
| Site Position: | | Northing: | 1,542,711.44 usft | Latitude: | 40° 48' 38.459 N |
| From: | Lat/Long | Easting: | 3,471,699.09 usft | Longitude: | 103° 47' 45.319 W |
| Position Uncertainty: | 0.00 usft | Slot Radius: | 13-3/16 " | Grid Convergence: | 1.10 ° |

| | | | | | | |
|----------------------|------|-----------|---------------------|-------------------|---------------|-------------------|
| Well | 3107 | | | | | |
| Well Position | +N-S | 0.00 usft | Northing: | 1,542,660.22 usft | Latitude: | 40° 48' 37.958 N |
| | +E-W | 0.00 usft | Easting: | 3,471,669.90 usft | Longitude: | 103° 47' 45.712 W |
| Position Uncertainty | | 0.00 usft | Wellhead Elevation: | 0.00 usft | Ground Level: | 4,780.00 usft |

| | | | | | |
|------------------|-------------------|--------------------|------------------------|----------------------|----------------------------|
| Wellbore | OH | | | | |
| Magnetics | Model Name | Sample Date | Declination (°) | Dip Angle (°) | Field Strength (nT) |
| | BGGM2014 | 07/09/14 | 8.03 | 67.42 | 53,018 |

| | | | | | |
|--------------------------|--------------------------------|--------------------|--------------------|----------------------|------|
| 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 | 178.17 | |

| | | | | | |
|-----------------------|------------------|--------------------------|------------------|--------------------|--|
| Survey Program | Date | 11/12/14 | | | |
| From (usft) | To (usft) | Survey (Wellbore) | Tool Name | Description | |
| 140.00 | 13,023.00 | Survey #1 (OH) | LEAM_MWD | LEAM MWD | |
| 13,071.00 | 13,071.00 | Survey #2 (OH) | Project | Projection | |

| | | | | | | | | | | |
|------------------------------|------------------------|--------------------|------------------------------|--------------------|--------------------|--------------------------------|--------------------------------|-------------------------------|------------------------------|--|
| 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 | |
| 140.00 | 0.09 | 105.09 | 140.00 | -0.03 | 0.11 | 0.03 | 0.06 | 0.06 | 0.00 | |
| 232.00 | 0.00 | 253.97 | 232.00 | -0.05 | 0.18 | 0.05 | 0.10 | -0.10 | 0.00 | |
| 325.00 | 0.13 | 177.59 | 325.00 | -0.15 | 0.18 | 0.16 | 0.14 | 0.14 | 0.00 | |
| 417.00 | 0.26 | 143.05 | 417.00 | -0.42 | 0.31 | 0.43 | 0.18 | 0.14 | -37.54 | |
| 509.00 | 0.13 | 90.77 | 509.00 | -0.59 | 0.54 | 0.61 | 0.23 | -0.14 | -56.83 | |
| 601.00 | 1.05 | 95.25 | 600.99 | -0.67 | 1.48 | 0.72 | 1.00 | 1.00 | 4.87 | |
| 692.00 | 2.37 | 71.60 | 691.95 | -0.15 | 4.10 | 0.28 | 1.62 | 1.45 | -25.99 | |
| 783.00 | 4.84 | 61.01 | 782.77 | 2.30 | 9.24 | -2.01 | 2.80 | 2.71 | -11.64 | |
| 875.00 | 5.76 | 81.24 | 874.38 | 4.89 | 17.20 | -4.33 | 2.25 | 1.00 | 21.99 | |

LEAM Drilling Systems LLC

Survey Report

| | | | |
|------------------|-------------------------------|-------------------------------------|---|
| Company: | WHITING PETROLEUM CORPORATION | Local Co-ordinate Reference: | Well 3107 |
| Project: | Weld County, CO | TVD Reference: | GE 4780' + KB 17' @ 4797.00usft (Xtreme 18) |
| Site: | Horsetail #30F | MD Reference: | GE 4780' + KB 17' @ 4797.00usft (Xtreme 18) |
| Well: | 3107 | North Reference: | True |
| Wellbore: | OH | Survey Calculation Method: | Minimum Curvature |
| Design: | OH | Database: | EDM 5000.1 Multi User Db |

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) |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| 966.00 | 6.73 | 75.69 | 964.84 | 6.90 | 26.88 | -6.04 | 1.25 | 1.07 | -6.10 |
| 1,058.00 | 7.16 | 76.96 | 1,056.16 | 9.53 | 37.69 | -8.32 | 0.50 | 0.47 | 1.38 |
| 1,150.00 | 7.30 | 78.74 | 1,147.43 | 11.96 | 49.01 | -10.39 | 0.29 | 0.15 | 1.93 |
| 1,242.00 | 6.90 | 82.27 | 1,238.73 | 13.85 | 60.22 | -11.92 | 0.64 | -0.43 | 3.84 |
| 1,334.00 | 7.43 | 75.81 | 1,330.01 | 16.05 | 71.46 | -13.76 | 1.05 | 0.58 | -7.02 |
| 1,425.00 | 8.13 | 78.30 | 1,420.17 | 18.79 | 83.47 | -16.12 | 0.85 | 0.77 | 2.74 |
| 1,518.00 | 7.52 | 73.02 | 1,512.31 | 21.91 | 95.73 | -18.84 | 1.01 | -0.66 | -5.68 |
| 1,579.00 | 7.52 | 73.93 | 1,572.78 | 24.18 | 103.38 | -20.86 | 0.20 | 0.00 | 1.49 |
| 1,677.00 | 5.96 | 77.59 | 1,670.10 | 27.04 | 114.51 | -23.37 | 1.65 | -1.59 | 3.73 |
| 1,768.00 | 6.87 | 78.92 | 1,760.53 | 29.11 | 124.47 | -25.12 | 1.01 | 1.00 | 1.46 |
| 1,860.00 | 8.12 | 69.38 | 1,851.75 | 32.45 | 135.95 | -28.09 | 1.91 | 1.36 | -10.37 |
| 1,951.00 | 6.02 | 65.35 | 1,942.05 | 36.71 | 146.30 | -32.01 | 2.37 | -2.31 | -4.43 |
| 2,043.00 | 6.33 | 71.56 | 2,033.52 | 40.32 | 155.50 | -35.34 | 0.80 | 0.34 | 6.75 |
| 2,135.00 | 6.59 | 72.34 | 2,124.93 | 43.53 | 165.34 | -38.23 | 0.30 | 0.28 | 0.85 |
| 2,227.00 | 6.90 | 67.97 | 2,216.30 | 47.20 | 175.49 | -41.57 | 0.65 | 0.34 | -4.75 |
| 2,319.00 | 5.93 | 74.89 | 2,307.72 | 50.51 | 185.21 | -44.57 | 1.35 | -1.05 | 7.52 |
| 2,410.00 | 6.13 | 72.39 | 2,398.22 | 53.21 | 194.37 | -46.97 | 0.36 | 0.22 | -2.75 |
| 2,503.00 | 6.09 | 81.92 | 2,490.69 | 55.40 | 203.99 | -48.86 | 1.09 | -0.04 | 10.25 |
| 2,596.00 | 6.00 | 79.16 | 2,583.18 | 57.01 | 213.65 | -50.16 | 0.33 | -0.10 | -2.97 |
| 2,688.00 | 6.92 | 84.37 | 2,674.59 | 58.46 | 223.89 | -51.28 | 1.18 | 1.00 | 5.66 |
| 2,780.00 | 6.96 | 82.32 | 2,765.92 | 59.75 | 234.93 | -52.22 | 0.27 | 0.04 | -2.23 |
| 2,871.00 | 7.00 | 79.84 | 2,856.24 | 61.46 | 245.85 | -53.58 | 0.33 | 0.04 | -2.73 |
| 2,962.00 | 7.26 | 73.00 | 2,946.54 | 64.12 | 256.81 | -55.89 | 0.98 | 0.29 | -7.52 |
| 3,055.00 | 6.92 | 64.68 | 3,038.83 | 68.24 | 267.49 | -59.66 | 1.16 | -0.37 | -8.95 |
| 3,146.00 | 5.87 | 72.74 | 3,129.27 | 71.96 | 276.89 | -63.08 | 1.52 | -1.15 | 8.86 |
| 3,238.00 | 7.12 | 77.72 | 3,220.67 | 74.57 | 286.95 | -65.37 | 1.49 | 1.36 | 5.41 |
| 3,331.00 | 7.18 | 75.46 | 3,312.95 | 77.26 | 298.21 | -67.69 | 0.31 | 0.06 | -2.43 |
| 3,423.00 | 7.87 | 80.75 | 3,404.16 | 79.71 | 309.99 | -69.77 | 1.06 | 0.75 | 5.75 |
| 3,515.00 | 7.87 | 77.71 | 3,495.29 | 82.07 | 322.37 | -71.73 | 0.45 | 0.00 | -3.30 |
| 3,608.00 | 6.97 | 80.49 | 3,587.51 | 84.35 | 334.15 | -73.64 | 1.04 | -0.97 | 2.99 |
| 3,699.00 | 5.76 | 71.84 | 3,677.95 | 86.69 | 343.94 | -75.66 | 1.69 | -1.33 | -9.51 |
| 3,792.00 | 2.60 | 65.81 | 3,770.70 | 89.01 | 350.30 | -77.78 | 3.43 | -3.40 | -6.48 |
| 3,884.00 | 1.06 | 103.77 | 3,862.65 | 89.66 | 353.03 | -78.34 | 2.04 | -1.67 | 41.26 |
| 3,976.00 | 0.25 | 290.05 | 3,954.64 | 89.53 | 353.67 | -78.19 | 1.42 | -0.88 | -188.83 |
| 4,067.00 | 0.44 | 290.32 | 4,045.64 | 89.72 | 353.15 | -78.39 | 0.21 | 0.21 | 0.30 |
| 4,159.00 | 0.66 | 315.36 | 4,137.64 | 90.22 | 352.45 | -78.92 | 0.35 | 0.24 | 27.22 |
| 4,251.00 | 0.14 | 191.39 | 4,229.64 | 90.48 | 352.05 | -79.19 | 0.81 | -0.57 | -134.75 |
| 4,343.00 | 0.22 | 306.41 | 4,321.64 | 90.48 | 351.89 | -79.19 | 0.33 | 0.09 | 125.02 |
| 4,435.00 | 0.91 | 331.52 | 4,413.63 | 91.22 | 351.40 | -79.96 | 0.78 | 0.75 | 27.29 |
| 4,528.00 | 0.66 | 19.00 | 4,506.62 | 92.38 | 351.22 | -81.12 | 0.72 | -0.27 | 51.05 |
| 4,620.00 | 0.62 | 183.19 | 4,598.62 | 92.38 | 351.37 | -81.12 | 1.38 | -0.04 | 178.47 |
| 4,713.00 | 0.66 | 232.21 | 4,691.62 | 91.55 | 350.91 | -80.30 | 0.57 | 0.04 | 52.71 |
| 4,804.00 | 0.57 | 166.82 | 4,782.61 | 90.79 | 350.60 | -79.55 | 0.73 | -0.10 | -71.86 |

LEAM Drilling Systems LLC

Survey Report

| | | | |
|------------------|-------------------------------|-------------------------------------|---|
| Company: | WHITING PETROLEUM CORPORATION | Local Co-ordinate Reference: | Well 3107 |
| Project: | Weld County, CO | TVD Reference: | GE 4780' + KB 17' @ 4797.00usft (Xtreme 18) |
| Site: | Horsetail #30F | MD Reference: | GE 4780' + KB 17' @ 4797.00usft (Xtreme 18) |
| Well: | 3107 | North Reference: | True |
| Wellbore: | OH | Survey Calculation Method: | Minimum Curvature |
| Design: | OH | Database: | EDM 5000.1 Multi User Db |

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) |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| 4,895.00 | 0.70 | 180.30 | 4,873.61 | 89.80 | 350.70 | -78.55 | 0.22 | 0.14 | 14.81 |
| 4,987.00 | 2.99 | 161.24 | 4,965.55 | 86.96 | 351.47 | -75.69 | 2.54 | 2.49 | -20.72 |
| 5,078.00 | 12.97 | 177.72 | 5,055.57 | 74.48 | 352.65 | -63.18 | 11.14 | 10.97 | 18.11 |
| 5,170.00 | 19.96 | 180.38 | 5,143.74 | 48.43 | 352.95 | -37.13 | 7.64 | 7.60 | 2.89 |
| 5,263.00 | 29.01 | 182.83 | 5,228.29 | 9.95 | 351.73 | 1.29 | 9.79 | 9.73 | 2.63 |
| 5,355.00 | 38.50 | 177.91 | 5,304.71 | -41.08 | 351.67 | 52.28 | 10.73 | 10.32 | -5.35 |
| 5,446.00 | 47.65 | 180.96 | 5,371.12 | -103.14 | 352.14 | 114.33 | 10.31 | 10.05 | 3.35 |
| 5,538.00 | 55.52 | 181.91 | 5,428.24 | -175.14 | 350.31 | 186.24 | 8.59 | 8.55 | 1.03 |
| 5,569.00 | 60.92 | 182.42 | 5,444.56 | -201.47 | 349.31 | 212.52 | 17.48 | 17.42 | 1.65 |
| 5,600.00 | 62.46 | 182.01 | 5,459.26 | -228.74 | 348.26 | 239.74 | 5.10 | 4.97 | -1.32 |
| 5,631.00 | 63.38 | 181.36 | 5,473.37 | -256.33 | 347.44 | 267.29 | 3.51 | 2.97 | -2.10 |
| 5,661.00 | 64.57 | 180.71 | 5,486.53 | -283.28 | 346.96 | 294.22 | 4.42 | 3.97 | -2.17 |
| 5,691.00 | 68.40 | 181.17 | 5,498.50 | -310.78 | 346.51 | 321.69 | 12.84 | 12.77 | 1.53 |
| 5,722.00 | 71.57 | 181.39 | 5,509.11 | -339.90 | 345.85 | 350.77 | 10.25 | 10.23 | 0.71 |
| 5,753.00 | 73.54 | 181.35 | 5,518.40 | -369.46 | 345.15 | 380.30 | 6.36 | 6.35 | -0.13 |
| 5,783.00 | 73.32 | 181.52 | 5,526.96 | -398.21 | 344.43 | 409.00 | 0.91 | -0.73 | 0.57 |
| 5,814.00 | 73.45 | 181.41 | 5,535.82 | -427.90 | 343.67 | 438.66 | 0.54 | 0.42 | -0.35 |
| 5,844.00 | 75.56 | 180.11 | 5,543.84 | -456.81 | 343.29 | 467.54 | 8.18 | 7.03 | -4.33 |
| 5,875.00 | 78.20 | 178.90 | 5,550.87 | -486.99 | 343.55 | 497.72 | 9.33 | 8.52 | -3.90 |
| 5,906.00 | 79.82 | 178.02 | 5,556.78 | -517.41 | 344.37 | 528.15 | 5.92 | 5.23 | -2.84 |
| 5,936.00 | 83.43 | 178.52 | 5,561.15 | -547.07 | 345.26 | 557.82 | 12.15 | 12.03 | 1.67 |
| 5,990.00 | 88.51 | 180.04 | 5,564.95 | -600.92 | 345.94 | 611.66 | 9.81 | 9.40 | 2.81 |
| 7" | | | | | | | | | |
| 6,015.00 | 90.86 | 180.74 | 5,565.08 | -625.91 | 345.77 | 636.64 | 9.81 | 9.41 | 2.80 |
| 6,105.00 | 90.42 | 179.21 | 5,564.08 | -715.91 | 345.81 | 726.58 | 1.77 | -0.49 | -1.70 |
| 6,195.00 | 90.68 | 178.51 | 5,563.21 | -805.88 | 347.60 | 816.57 | 0.83 | 0.29 | -0.78 |
| 6,284.00 | 91.38 | 179.33 | 5,561.61 | -894.85 | 349.27 | 905.55 | 1.21 | 0.79 | 0.92 |
| 6,374.00 | 88.53 | 179.22 | 5,561.69 | -984.84 | 350.41 | 995.52 | 3.17 | -3.17 | -0.12 |
| 6,463.00 | 88.70 | 180.37 | 5,563.84 | -1,073.81 | 350.73 | 1,084.46 | 1.31 | 0.19 | 1.29 |
| 6,553.00 | 88.66 | 180.28 | 5,565.91 | -1,163.78 | 350.22 | 1,174.37 | 0.11 | -0.04 | -0.10 |
| 6,643.00 | 88.35 | 180.75 | 5,568.26 | -1,253.75 | 349.41 | 1,264.27 | 0.63 | -0.34 | 0.52 |
| 6,732.00 | 88.44 | 181.47 | 5,570.75 | -1,342.70 | 347.69 | 1,353.11 | 0.81 | 0.10 | 0.81 |
| 6,822.00 | 88.62 | 181.48 | 5,573.06 | -1,432.64 | 345.37 | 1,442.93 | 0.20 | 0.20 | 0.01 |
| 6,911.00 | 88.88 | 181.74 | 5,575.00 | -1,521.58 | 342.87 | 1,531.75 | 0.41 | 0.29 | 0.29 |
| 7,001.00 | 90.68 | 182.99 | 5,575.35 | -1,611.50 | 339.16 | 1,621.51 | 2.43 | 2.00 | 1.39 |
| 7,090.00 | 88.00 | 180.54 | 5,576.37 | -1,700.43 | 336.42 | 1,710.31 | 4.08 | -3.01 | -2.75 |
| 7,180.00 | 88.53 | 179.70 | 5,579.10 | -1,790.39 | 336.23 | 1,800.22 | 1.10 | 0.59 | -0.93 |
| 7,270.00 | 90.20 | 180.92 | 5,580.09 | -1,880.38 | 335.74 | 1,890.14 | 2.30 | 1.86 | 1.36 |
| 7,357.00 | 90.20 | 180.39 | 5,579.79 | -1,967.37 | 334.75 | 1,977.06 | 0.61 | 0.00 | -0.61 |
| 7,441.00 | 90.95 | 180.72 | 5,578.95 | -2,051.36 | 333.93 | 2,060.98 | 0.98 | 0.89 | 0.39 |
| 7,529.00 | 90.77 | 181.00 | 5,577.63 | -2,139.34 | 332.61 | 2,148.87 | 0.38 | -0.20 | 0.32 |
| 7,617.00 | 90.77 | 181.29 | 5,576.44 | -2,227.32 | 330.85 | 2,236.75 | 0.33 | 0.00 | 0.33 |
| 7,706.00 | 89.05 | 181.53 | 5,576.58 | -2,316.29 | 328.66 | 2,325.60 | 1.95 | -1.93 | 0.27 |

LEAM Drilling Systems LLC

Survey Report

| | | | |
|------------------|-------------------------------|-------------------------------------|---|
| Company: | WHITING PETROLEUM CORPORATION | Local Co-ordinate Reference: | Well 3107 |
| Project: | Weld County, CO | TVD Reference: | GE 4780' + KB 17' @ 4797.00usft (Xtreme 18) |
| Site: | Horsetail #30F | MD Reference: | GE 4780' + KB 17' @ 4797.00usft (Xtreme 18) |
| Well: | 3107 | North Reference: | True |
| Wellbore: | OH | Survey Calculation Method: | Minimum Curvature |
| Design: | OH | Database: | EDM 5000.1 Multi User Db |

| 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) | |
| 7,794.00 | 89.27 | 180.81 | 5,577.87 | -2,404.26 | 326.87 | 2,413.47 | 0.86 | 0.25 | -0.82 | |
| 7,883.00 | 88.22 | 179.09 | 5,579.82 | -2,493.23 | 326.95 | 2,502.40 | 2.26 | -1.18 | -1.93 | |
| 7,976.00 | 88.70 | 179.66 | 5,582.32 | -2,586.19 | 327.96 | 2,595.35 | 0.80 | 0.52 | 0.61 | |
| 8,068.00 | 88.57 | 179.38 | 5,584.51 | -2,678.16 | 328.73 | 2,687.30 | 0.34 | -0.14 | -0.30 | |
| 8,161.00 | 89.14 | 178.27 | 5,586.37 | -2,771.12 | 330.64 | 2,780.27 | 1.34 | 0.61 | -1.19 | |
| 8,253.00 | 91.21 | 179.40 | 5,586.09 | -2,863.10 | 332.51 | 2,872.26 | 2.56 | 2.25 | 1.23 | |
| 8,345.00 | 92.18 | 180.49 | 5,583.37 | -2,955.06 | 332.60 | 2,964.17 | 1.59 | 1.05 | 1.18 | |
| 8,437.00 | 92.97 | 182.06 | 5,579.24 | -3,046.94 | 330.55 | 3,055.94 | 1.91 | 0.86 | 1.71 | |
| 8,528.00 | 93.45 | 182.21 | 5,574.14 | -3,137.73 | 327.17 | 3,146.58 | 0.55 | 0.53 | 0.16 | |
| 8,619.00 | 92.44 | 182.16 | 5,569.47 | -3,228.54 | 323.70 | 3,237.23 | 1.11 | -1.11 | -0.05 | |
| 8,710.00 | 90.42 | 181.60 | 5,567.20 | -3,319.46 | 320.72 | 3,328.01 | 2.30 | -2.22 | -0.62 | |
| 8,802.00 | 89.89 | 181.06 | 5,566.95 | -3,411.43 | 318.58 | 3,419.87 | 0.82 | -0.58 | -0.59 | |
| 8,894.00 | 91.03 | 182.40 | 5,566.21 | -3,503.39 | 315.81 | 3,511.68 | 1.91 | 1.24 | 1.46 | |
| 8,986.00 | 90.33 | 180.21 | 5,565.12 | -3,595.35 | 313.71 | 3,603.53 | 2.50 | -0.76 | -2.38 | |
| 9,078.00 | 90.95 | 180.96 | 5,564.09 | -3,687.34 | 312.77 | 3,695.45 | 1.06 | 0.67 | 0.82 | |
| 9,169.00 | 90.59 | 178.36 | 5,562.87 | -3,778.32 | 313.31 | 3,786.40 | 2.88 | -0.40 | -2.86 | |
| 9,261.00 | 89.45 | 177.77 | 5,562.83 | -3,870.27 | 316.42 | 3,878.40 | 1.40 | -1.24 | -0.64 | |
| 9,354.00 | 90.46 | 180.87 | 5,562.91 | -3,963.25 | 317.52 | 3,971.37 | 3.51 | 1.09 | 3.33 | |
| 9,446.00 | 89.89 | 181.55 | 5,562.63 | -4,055.22 | 315.58 | 4,063.23 | 0.96 | -0.62 | 0.74 | |
| 9,539.00 | 90.20 | 183.34 | 5,562.55 | -4,148.14 | 311.61 | 4,155.97 | 1.95 | 0.33 | 1.92 | |
| 9,631.00 | 90.24 | 183.12 | 5,562.20 | -4,239.99 | 306.43 | 4,247.61 | 0.24 | 0.04 | -0.24 | |
| 9,722.00 | 90.20 | 182.10 | 5,561.85 | -4,330.89 | 302.28 | 4,338.34 | 1.12 | -0.04 | -1.12 | |
| 9,813.00 | 90.68 | 184.92 | 5,561.15 | -4,421.71 | 296.71 | 4,428.93 | 3.14 | 0.53 | 3.10 | |
| 9,905.00 | 89.45 | 185.04 | 5,561.05 | -4,513.36 | 288.73 | 4,520.28 | 1.34 | -1.34 | 0.13 | |
| 9,997.00 | 88.75 | 184.33 | 5,562.49 | -4,605.04 | 281.21 | 4,611.67 | 1.08 | -0.76 | -0.77 | |
| 10,089.00 | 90.73 | 183.88 | 5,562.91 | -4,696.80 | 274.63 | 4,703.17 | 2.21 | 2.15 | -0.49 | |
| 10,181.00 | 89.49 | 181.79 | 5,562.73 | -4,788.68 | 270.08 | 4,794.86 | 2.64 | -1.35 | -2.27 | |
| 10,274.00 | 89.58 | 181.27 | 5,563.49 | -4,881.64 | 267.60 | 4,887.70 | 0.57 | 0.10 | -0.56 | |
| 10,366.00 | 90.24 | 181.00 | 5,563.63 | -4,973.62 | 265.77 | 4,979.58 | 0.78 | 0.72 | -0.29 | |
| 10,458.00 | 89.80 | 178.13 | 5,563.60 | -5,065.61 | 266.47 | 5,071.54 | 3.16 | -0.48 | -3.12 | |
| 10,550.00 | 89.80 | 176.68 | 5,563.92 | -5,157.51 | 270.64 | 5,163.53 | 1.58 | 0.00 | -1.58 | |
| 10,642.00 | 89.45 | 176.79 | 5,564.52 | -5,249.36 | 275.88 | 5,255.50 | 0.40 | -0.38 | 0.12 | |
| 10,734.00 | 89.67 | 177.07 | 5,565.23 | -5,341.23 | 280.80 | 5,347.47 | 0.39 | 0.24 | 0.30 | |
| 10,826.00 | 89.80 | 183.05 | 5,565.65 | -5,433.19 | 280.71 | 5,439.38 | 6.50 | 0.14 | 6.50 | |
| 10,918.00 | 89.93 | 180.71 | 5,565.87 | -5,525.13 | 277.69 | 5,531.18 | 2.55 | 0.14 | -2.54 | |
| 11,010.00 | 89.23 | 178.72 | 5,566.55 | -5,617.12 | 278.15 | 5,623.14 | 2.29 | -0.76 | -2.16 | |
| 11,102.00 | 90.81 | 179.66 | 5,566.51 | -5,709.11 | 279.45 | 5,715.12 | 2.00 | 1.72 | 1.02 | |
| 11,193.00 | 91.12 | 182.22 | 5,564.98 | -5,800.07 | 277.95 | 5,805.99 | 2.83 | 0.34 | 2.81 | |
| 11,286.00 | 91.65 | 181.97 | 5,562.73 | -5,892.98 | 274.56 | 5,898.75 | 0.63 | 0.57 | -0.27 | |
| 11,378.00 | 89.98 | 181.09 | 5,561.42 | -5,984.94 | 272.10 | 5,990.58 | 2.05 | -1.82 | -0.96 | |
| 11,470.00 | 90.90 | 182.44 | 5,560.72 | -6,076.89 | 269.27 | 6,082.39 | 1.78 | 1.00 | 1.47 | |
| 11,563.00 | 91.87 | 182.81 | 5,558.47 | -6,169.76 | 265.01 | 6,175.08 | 1.12 | 1.04 | 0.40 | |
| 11,655.00 | 90.15 | 182.07 | 5,556.85 | -6,261.66 | 261.09 | 6,266.81 | 2.04 | -1.87 | -0.80 | |
| 11,746.00 | 90.29 | 181.95 | 5,556.50 | -6,352.60 | 257.90 | 6,357.60 | 0.20 | 0.15 | -0.13 | |

LEAM Drilling Systems LLC

Survey Report

| | | | |
|------------------|-------------------------------|-------------------------------------|---|
| Company: | WHITING PETROLEUM CORPORATION | Local Co-ordinate Reference: | Well 3107 |
| Project: | Weld County, CO | TVD Reference: | GE 4780' + KB 17' @ 4797.00usft (Xtreme 18) |
| Site: | Horsetail #30F | MD Reference: | GE 4780' + KB 17' @ 4797.00usft (Xtreme 18) |
| Well: | 3107 | North Reference: | True |
| Wellbore: | OH | Survey Calculation Method: | Minimum Curvature |
| Design: | OH | Database: | EDM 5000.1 Multi User Db |

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) |
|--|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| 11,837.00 | 89.98 | 180.26 | 5,556.28 | -6,443.58 | 256.15 | 6,448.48 | 1.89 | -0.34 | -1.86 |
| 11,929.00 | 90.33 | 180.29 | 5,556.04 | -6,535.58 | 255.70 | 6,540.42 | 0.38 | 0.38 | 0.03 |
| 12,021.00 | 90.55 | 179.63 | 5,555.33 | -6,627.58 | 255.77 | 6,632.37 | 0.76 | 0.24 | -0.72 |
| 12,113.00 | 89.63 | 179.79 | 5,555.18 | -6,719.58 | 256.23 | 6,724.33 | 1.02 | -1.00 | 0.17 |
| 12,205.00 | 88.35 | 180.02 | 5,556.81 | -6,811.56 | 256.39 | 6,816.27 | 1.41 | -1.39 | 0.25 |
| 12,297.00 | 88.48 | 180.14 | 5,559.35 | -6,903.53 | 256.26 | 6,908.19 | 0.19 | 0.14 | 0.13 |
| 12,389.00 | 89.41 | 181.35 | 5,561.05 | -6,995.50 | 255.06 | 7,000.08 | 1.66 | 1.01 | 1.32 |
| 12,481.00 | 90.07 | 182.60 | 5,561.46 | -7,087.44 | 251.89 | 7,091.87 | 1.54 | 0.72 | 1.36 |
| 12,573.00 | 90.29 | 181.80 | 5,561.17 | -7,179.37 | 248.36 | 7,183.64 | 0.90 | 0.24 | -0.87 |
| 12,664.00 | 91.21 | 183.12 | 5,559.98 | -7,270.28 | 244.45 | 7,274.38 | 1.77 | 1.01 | 1.45 |
| 12,756.00 | 89.54 | 180.06 | 5,559.38 | -7,362.23 | 241.90 | 7,366.20 | 3.79 | -1.82 | -3.33 |
| 12,848.00 | 88.75 | 180.07 | 5,560.75 | -7,454.22 | 241.80 | 7,458.13 | 0.86 | -0.86 | 0.01 |
| 12,941.00 | 89.80 | 180.34 | 5,561.93 | -7,547.21 | 241.47 | 7,551.07 | 1.17 | 1.13 | 0.29 |
| 13,023.00 | 89.10 | 179.75 | 5,562.72 | -7,629.20 | 241.40 | 7,633.02 | 1.12 | -0.85 | -0.72 |
| 13,061.00 | 89.10 | 179.75 | 5,563.31 | -7,667.20 | 241.57 | 7,671.00 | 0.00 | 0.00 | 0.00 |
| HL Crossing MD 13061' TVD 5563' | | | | | | | | | |
| 13,071.00 | 89.10 | 179.75 | 5,563.47 | -7,677.19 | 241.61 | 7,680.99 | 0.00 | 0.00 | 0.00 |
| Projection | | | | | | | | | |

Casing Points

| Measured Depth (usft) | Vertical Depth (usft) | Name | Casing Diameter (") | Hole Diameter (") |
|-----------------------|-----------------------|------|---------------------|-------------------|
| 5,990.00 | 5,564.95 | 7" | 7 | 7-1/2 |

Design Annotations

| Measured Depth (usft) | Vertical Depth (usft) | Local Coordinates | | Comment |
|-----------------------|-----------------------|-------------------|--------------|---------------------------------|
| | | +N/-S (usft) | +E/-W (usft) | |
| 13,061.00 | 5,563.31 | -7,667.20 | 241.57 | HL Crossing MD 13061' TVD 5563' |
| 13,071.00 | 5,563.47 | -7,677.19 | 241.61 | Projection |

WHITING PETROLEUM CORPORATION

**Weld County, CO
Horsetail #30F
3107**

OH

Design: OH

Survey Report - Geographic

12 November, 2014

LEAM Drilling Systems LLC

Survey Report - Geographic

| | | | |
|------------------|-------------------------------|-------------------------------------|---|
| Company: | WHITING PETROLEUM CORPORATION | Local Co-ordinate Reference: | Well 3107 |
| Project: | Weld County, CO | TVD Reference: | GE 4780' + KB 17' @ 4797.00usft (Xtreme 18) |
| Site: | Horsetail #30F | MD Reference: | GE 4780' + KB 17' @ 4797.00usft (Xtreme 18) |
| Well: | 3107 | North Reference: | True |
| Wellbore: | OH | Survey Calculation Method: | Minimum Curvature |
| Design: | OH | Database: | EDM 5000.1 Multi User Db |

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

| | | | | | |
|-----------------------|----------------|--------------|-------------------|-------------------|-------------------|
| Site | Horsetail #30F | | | | |
| Site Position: | | Northing: | 1,542,711.44 usft | Latitude: | 40° 48' 38.459 N |
| From: | Lat/Long | Easting: | 3,471,699.09 usft | Longitude: | 103° 47' 45.319 W |
| Position Uncertainty: | 0.00 usft | Slot Radius: | 13-3/16 " | Grid Convergence: | 1.10 ° |

| | | | | | | |
|----------------------|------|-----------|---------------------|-------------------|---------------|-------------------|
| Well | 3107 | | | | | |
| Well Position | +N-S | 0.00 usft | Northing: | 1,542,660.22 usft | Latitude: | 40° 48' 37.958 N |
| | +E-W | 0.00 usft | Easting: | 3,471,669.90 usft | Longitude: | 103° 47' 45.712 W |
| Position Uncertainty | | 0.00 usft | Wellhead Elevation: | 0.00 usft | Ground Level: | 4,780.00 usft |

| | | | | | |
|------------------|-------------------|--------------------|------------------------|----------------------|----------------------------|
| Wellbore | OH | | | | |
| Magnetics | Model Name | Sample Date | Declination (°) | Dip Angle (°) | Field Strength (nT) |
| | BGGM2014 | 07/09/14 | 8.03 | 67.42 | 53,018 |

| | | | | | |
|--------------------------|--------------------------------|--------------------|--------------------|----------------------|------|
| 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 | 178.17 | |

| | | | | | |
|-----------------------|------------------|--------------------------|------------------|--------------------|--|
| Survey Program | Date | 11/12/14 | | | |
| From (usft) | To (usft) | Survey (Wellbore) | Tool Name | Description | |
| 140.00 | 13,023.00 | Survey #1 (OH) | LEAM_MWD | LEAM MWD | |
| 13,071.00 | 13,071.00 | Survey #2 (OH) | Project | Projection | |

| | | | | | | | | | | |
|------------------------------|------------------------|--------------------|------------------------------|--------------------|--------------------|----------------------------|---------------------------|------------------|-------------------|--|
| Survey | | | | | | | | | | |
| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N-S (usft) | +E-W (usft) | Map Northing (usft) | Map Easting (usft) | Latitude | Longitude | |
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1,542,660.22 | 3,471,669.90 | 40° 48' 37.958 N | 103° 47' 45.712 W | |
| 140.00 | 0.09 | 105.09 | 140.00 | -0.03 | 0.11 | 1,542,660.19 | 3,471,670.00 | 40° 48' 37.958 N | 103° 47' 45.710 W | |
| 232.00 | 0.00 | 253.97 | 232.00 | -0.05 | 0.18 | 1,542,660.17 | 3,471,670.07 | 40° 48' 37.958 N | 103° 47' 45.709 W | |
| 325.00 | 0.13 | 177.59 | 325.00 | -0.15 | 0.18 | 1,542,660.07 | 3,471,670.08 | 40° 48' 37.957 N | 103° 47' 45.709 W | |
| 417.00 | 0.26 | 143.05 | 417.00 | -0.42 | 0.31 | 1,542,659.80 | 3,471,670.22 | 40° 48' 37.954 N | 103° 47' 45.708 W | |
| 509.00 | 0.13 | 90.77 | 509.00 | -0.59 | 0.54 | 1,542,659.64 | 3,471,670.45 | 40° 48' 37.952 N | 103° 47' 45.705 W | |
| 601.00 | 1.05 | 95.25 | 600.99 | -0.67 | 1.48 | 1,542,659.58 | 3,471,671.39 | 40° 48' 37.952 N | 103° 47' 45.692 W | |
| 692.00 | 2.37 | 71.60 | 691.95 | -0.15 | 4.10 | 1,542,660.14 | 3,471,674.00 | 40° 48' 37.957 N | 103° 47' 45.658 W | |
| 783.00 | 4.84 | 61.01 | 782.77 | 2.30 | 9.24 | 1,542,662.70 | 3,471,679.09 | 40° 48' 37.981 N | 103° 47' 45.591 W | |
| 875.00 | 5.76 | 81.24 | 874.38 | 4.89 | 17.20 | 1,542,665.43 | 3,471,687.00 | 40° 48' 38.007 N | 103° 47' 45.488 W | |
| 966.00 | 6.73 | 75.69 | 964.84 | 6.90 | 26.88 | 1,542,667.63 | 3,471,696.64 | 40° 48' 38.026 N | 103° 47' 45.362 W | |

LEAM Drilling Systems LLC

Survey Report - Geographic

| | | | |
|------------------|-------------------------------|-------------------------------------|---|
| Company: | WHITING PETROLEUM CORPORATION | Local Co-ordinate Reference: | Well 3107 |
| Project: | Weld County, CO | TVD Reference: | GE 4780' + KB 17' @ 4797.00usft (Xtreme 18) |
| Site: | Horsetail #30F | MD Reference: | GE 4780' + KB 17' @ 4797.00usft (Xtreme 18) |
| Well: | 3107 | North Reference: | True |
| Wellbore: | OH | Survey Calculation Method: | Minimum Curvature |
| Design: | OH | Database: | EDM 5000.1 Multi User Db |

| Survey | | | | | | | | | |
|-----------------------|-----------------|-------------|-----------------------|-------------|-------------|---------------------|--------------------|------------------|-------------------|
| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N-S (usft) | +E-W (usft) | Map Northing (usft) | Map Easting (usft) | Latitude | Longitude |
| 1,058.00 | 7.16 | 76.96 | 1,056.16 | 9.53 | 37.69 | 1,542,670.47 | 3,471,707.40 | 40° 48' 38.052 N | 103° 47' 45.221 W |
| 1,150.00 | 7.30 | 78.74 | 1,147.43 | 11.96 | 49.01 | 1,542,673.12 | 3,471,718.67 | 40° 48' 38.076 N | 103° 47' 45.074 W |
| 1,242.00 | 6.90 | 82.27 | 1,238.73 | 13.85 | 60.22 | 1,542,675.22 | 3,471,729.84 | 40° 48' 38.095 N | 103° 47' 44.928 W |
| 1,334.00 | 7.43 | 75.81 | 1,330.01 | 16.05 | 71.46 | 1,542,677.63 | 3,471,741.04 | 40° 48' 38.117 N | 103° 47' 44.782 W |
| 1,425.00 | 8.13 | 78.30 | 1,420.17 | 18.79 | 83.47 | 1,542,680.61 | 3,471,752.99 | 40° 48' 38.144 N | 103° 47' 44.626 W |
| 1,518.00 | 7.52 | 73.02 | 1,512.31 | 21.91 | 95.73 | 1,542,683.96 | 3,471,765.19 | 40° 48' 38.175 N | 103° 47' 44.467 W |
| 1,579.00 | 7.52 | 73.93 | 1,572.78 | 24.18 | 103.38 | 1,542,686.38 | 3,471,772.79 | 40° 48' 38.197 N | 103° 47' 44.367 W |
| 1,677.00 | 5.96 | 77.59 | 1,670.10 | 27.04 | 114.51 | 1,542,689.46 | 3,471,783.87 | 40° 48' 38.226 N | 103° 47' 44.222 W |
| 1,768.00 | 6.87 | 78.92 | 1,760.53 | 29.11 | 124.47 | 1,542,691.71 | 3,471,793.78 | 40° 48' 38.246 N | 103° 47' 44.093 W |
| 1,860.00 | 8.12 | 69.38 | 1,851.75 | 32.45 | 135.95 | 1,542,695.28 | 3,471,805.20 | 40° 48' 38.279 N | 103° 47' 43.944 W |
| 1,951.00 | 6.02 | 65.35 | 1,942.05 | 36.71 | 146.30 | 1,542,699.73 | 3,471,815.47 | 40° 48' 38.321 N | 103° 47' 43.809 W |
| 2,043.00 | 6.33 | 71.56 | 2,033.52 | 40.32 | 155.50 | 1,542,703.52 | 3,471,824.59 | 40° 48' 38.357 N | 103° 47' 43.689 W |
| 2,135.00 | 6.59 | 72.34 | 2,124.93 | 43.53 | 165.34 | 1,542,706.91 | 3,471,834.37 | 40° 48' 38.388 N | 103° 47' 43.561 W |
| 2,227.00 | 6.90 | 67.97 | 2,216.30 | 47.20 | 175.49 | 1,542,710.78 | 3,471,844.45 | 40° 48' 38.425 N | 103° 47' 43.429 W |
| 2,319.00 | 5.93 | 74.89 | 2,307.72 | 50.51 | 185.21 | 1,542,714.28 | 3,471,854.10 | 40° 48' 38.457 N | 103° 47' 43.303 W |
| 2,410.00 | 6.13 | 72.39 | 2,398.22 | 53.21 | 194.37 | 1,542,717.15 | 3,471,863.21 | 40° 48' 38.484 N | 103° 47' 43.184 W |
| 2,503.00 | 6.09 | 81.92 | 2,490.69 | 55.40 | 203.99 | 1,542,719.53 | 3,471,872.79 | 40° 48' 38.506 N | 103° 47' 43.059 W |
| 2,596.00 | 6.00 | 79.16 | 2,583.18 | 57.01 | 213.65 | 1,542,721.32 | 3,471,882.41 | 40° 48' 38.522 N | 103° 47' 42.933 W |
| 2,688.00 | 6.92 | 84.37 | 2,674.59 | 58.46 | 223.89 | 1,542,722.97 | 3,471,892.62 | 40° 48' 38.536 N | 103° 47' 42.800 W |
| 2,780.00 | 6.96 | 82.32 | 2,765.92 | 59.75 | 234.93 | 1,542,724.47 | 3,471,903.63 | 40° 48' 38.549 N | 103° 47' 42.656 W |
| 2,871.00 | 7.00 | 79.84 | 2,856.24 | 61.46 | 245.85 | 1,542,726.39 | 3,471,914.52 | 40° 48' 38.566 N | 103° 47' 42.514 W |
| 2,962.00 | 7.26 | 73.00 | 2,946.54 | 64.12 | 256.81 | 1,542,729.26 | 3,471,925.42 | 40° 48' 38.592 N | 103° 47' 42.372 W |
| 3,055.00 | 6.92 | 64.68 | 3,038.83 | 68.24 | 267.49 | 1,542,733.58 | 3,471,936.03 | 40° 48' 38.633 N | 103° 47' 42.233 W |
| 3,146.00 | 5.87 | 72.74 | 3,129.27 | 71.96 | 276.89 | 1,542,737.49 | 3,471,945.35 | 40° 48' 38.669 N | 103° 47' 42.111 W |
| 3,238.00 | 7.12 | 77.72 | 3,220.67 | 74.57 | 286.95 | 1,542,740.29 | 3,471,955.37 | 40° 48' 38.695 N | 103° 47' 41.980 W |
| 3,331.00 | 7.18 | 75.46 | 3,312.95 | 77.26 | 298.21 | 1,542,743.19 | 3,471,966.57 | 40° 48' 38.722 N | 103° 47' 41.833 W |
| 3,423.00 | 7.87 | 80.75 | 3,404.16 | 79.71 | 309.99 | 1,542,745.87 | 3,471,978.30 | 40° 48' 38.746 N | 103° 47' 41.680 W |
| 3,515.00 | 7.87 | 77.71 | 3,495.29 | 82.07 | 322.37 | 1,542,748.46 | 3,471,990.63 | 40° 48' 38.769 N | 103° 47' 41.519 W |
| 3,608.00 | 6.97 | 80.49 | 3,587.51 | 84.35 | 334.15 | 1,542,750.98 | 3,472,002.37 | 40° 48' 38.792 N | 103° 47' 41.366 W |
| 3,699.00 | 5.76 | 71.84 | 3,677.95 | 86.69 | 343.94 | 1,542,753.50 | 3,472,012.10 | 40° 48' 38.815 N | 103° 47' 41.239 W |
| 3,792.00 | 2.60 | 65.81 | 3,770.70 | 89.01 | 350.30 | 1,542,755.94 | 3,472,018.42 | 40° 48' 38.838 N | 103° 47' 41.156 W |
| 3,884.00 | 1.06 | 103.77 | 3,862.65 | 89.66 | 353.03 | 1,542,756.65 | 3,472,021.14 | 40° 48' 38.844 N | 103° 47' 41.121 W |
| 3,976.00 | 0.25 | 290.05 | 3,954.64 | 89.53 | 353.67 | 1,542,756.52 | 3,472,021.78 | 40° 48' 38.843 N | 103° 47' 41.112 W |
| 4,067.00 | 0.44 | 290.32 | 4,045.64 | 89.72 | 353.15 | 1,542,756.70 | 3,472,021.26 | 40° 48' 38.845 N | 103° 47' 41.119 W |
| 4,159.00 | 0.66 | 315.36 | 4,137.64 | 90.22 | 352.45 | 1,542,757.19 | 3,472,020.55 | 40° 48' 38.850 N | 103° 47' 41.128 W |
| 4,251.00 | 0.14 | 191.39 | 4,229.64 | 90.48 | 352.05 | 1,542,757.45 | 3,472,020.15 | 40° 48' 38.852 N | 103° 47' 41.133 W |
| 4,343.00 | 0.22 | 306.41 | 4,321.64 | 90.48 | 351.89 | 1,542,757.44 | 3,472,019.98 | 40° 48' 38.852 N | 103° 47' 41.135 W |
| 4,435.00 | 0.91 | 331.52 | 4,413.63 | 91.22 | 351.40 | 1,542,758.18 | 3,472,019.48 | 40° 48' 38.860 N | 103° 47' 41.142 W |
| 4,528.00 | 0.66 | 19.00 | 4,506.62 | 92.38 | 351.22 | 1,542,759.33 | 3,472,019.28 | 40° 48' 38.871 N | 103° 47' 41.144 W |
| 4,620.00 | 0.62 | 183.19 | 4,598.62 | 92.38 | 351.37 | 1,542,759.34 | 3,472,019.42 | 40° 48' 38.871 N | 103° 47' 41.142 W |
| 4,713.00 | 0.66 | 232.21 | 4,691.62 | 91.55 | 350.91 | 1,542,758.50 | 3,472,018.99 | 40° 48' 38.863 N | 103° 47' 41.148 W |
| 4,804.00 | 0.57 | 166.82 | 4,782.61 | 90.79 | 350.60 | 1,542,757.73 | 3,472,018.69 | 40° 48' 38.855 N | 103° 47' 41.152 W |
| 4,895.00 | 0.70 | 180.30 | 4,873.61 | 89.80 | 350.70 | 1,542,756.74 | 3,472,018.81 | 40° 48' 38.846 N | 103° 47' 41.151 W |
| 4,987.00 | 2.99 | 161.24 | 4,965.55 | 86.96 | 351.47 | 1,542,753.92 | 3,472,019.63 | 40° 48' 38.818 N | 103° 47' 41.141 W |
| 5,078.00 | 12.97 | 177.72 | 5,055.57 | 74.48 | 352.65 | 1,542,741.46 | 3,472,021.05 | 40° 48' 38.694 N | 103° 47' 41.126 W |
| 5,170.00 | 19.96 | 180.38 | 5,143.74 | 48.43 | 352.95 | 1,542,715.42 | 3,472,021.85 | 40° 48' 38.437 N | 103° 47' 41.122 W |
| 5,263.00 | 29.01 | 182.83 | 5,228.29 | 9.95 | 351.73 | 1,542,676.92 | 3,472,021.37 | 40° 48' 38.057 N | 103° 47' 41.137 W |
| 5,355.00 | 38.50 | 177.91 | 5,304.71 | -41.08 | 351.67 | 1,542,625.91 | 3,472,022.29 | 40° 48' 37.552 N | 103° 47' 41.138 W |
| 5,446.00 | 47.65 | 180.96 | 5,371.12 | -103.14 | 352.14 | 1,542,563.86 | 3,472,023.96 | 40° 48' 36.939 N | 103° 47' 41.132 W |
| 5,538.00 | 55.52 | 181.91 | 5,428.24 | -175.14 | 350.31 | 1,542,491.84 | 3,472,023.51 | 40° 48' 36.228 N | 103° 47' 41.156 W |
| 5,569.00 | 60.92 | 182.42 | 5,444.56 | -201.47 | 349.31 | 1,542,465.50 | 3,472,023.01 | 40° 48' 35.968 N | 103° 47' 41.169 W |
| 5,600.00 | 62.46 | 182.01 | 5,459.26 | -228.74 | 348.26 | 1,542,438.21 | 3,472,022.48 | 40° 48' 35.698 N | 103° 47' 41.183 W |
| 5,631.00 | 63.38 | 181.36 | 5,473.37 | -256.33 | 347.44 | 1,542,410.61 | 3,472,022.20 | 40° 48' 35.426 N | 103° 47' 41.193 W |
| 5,661.00 | 64.57 | 180.71 | 5,486.53 | -283.28 | 346.96 | 1,542,383.66 | 3,472,022.23 | 40° 48' 35.159 N | 103° 47' 41.200 W |
| 5,691.00 | 68.40 | 181.17 | 5,498.50 | -310.78 | 346.51 | 1,542,356.15 | 3,472,022.31 | 40° 48' 34.887 N | 103° 47' 41.205 W |

LEAM Drilling Systems LLC

Survey Report - Geographic

| | | | |
|------------------|-------------------------------|-------------------------------------|---|
| Company: | WHITING PETROLEUM CORPORATION | Local Co-ordinate Reference: | Well 3107 |
| Project: | Weld County, CO | TVD Reference: | GE 4780' + KB 17' @ 4797.00usft (Xtreme 18) |
| Site: | Horsetail #30F | MD Reference: | GE 4780' + KB 17' @ 4797.00usft (Xtreme 18) |
| Well: | 3107 | North Reference: | True |
| Wellbore: | OH | Survey Calculation Method: | Minimum Curvature |
| Design: | OH | Database: | EDM 5000.1 Multi User Db |

| Survey | | | | | | | | | |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|---------------------|--------------------|------------------|-------------------|
| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Map Northing (usft) | Map Easting (usft) | Latitude | Longitude |
| 5,722.00 | 71.57 | 181.39 | 5,509.11 | -339.90 | 345.85 | 1,542,327.03 | 3,472,022.22 | 40° 48' 34.600 N | 103° 47' 41.214 W |
| 5,753.00 | 73.54 | 181.35 | 5,518.40 | -369.46 | 345.15 | 1,542,297.46 | 3,472,022.08 | 40° 48' 34.308 N | 103° 47' 41.223 W |
| 5,783.00 | 73.32 | 181.52 | 5,526.96 | -398.21 | 344.43 | 1,542,268.70 | 3,472,021.91 | 40° 48' 34.024 N | 103° 47' 41.233 W |
| 5,814.00 | 73.45 | 181.41 | 5,535.82 | -427.90 | 343.67 | 1,542,239.00 | 3,472,021.72 | 40° 48' 33.730 N | 103° 47' 41.242 W |
| 5,844.00 | 75.56 | 180.11 | 5,543.84 | -456.81 | 343.29 | 1,542,210.09 | 3,472,021.90 | 40° 48' 33.445 N | 103° 47' 41.247 W |
| 5,875.00 | 78.20 | 178.90 | 5,550.87 | -486.99 | 343.55 | 1,542,179.91 | 3,472,022.74 | 40° 48' 33.146 N | 103° 47' 41.244 W |
| 5,906.00 | 79.82 | 178.02 | 5,556.78 | -517.41 | 344.37 | 1,542,149.52 | 3,472,024.14 | 40° 48' 32.846 N | 103° 47' 41.233 W |
| 5,936.00 | 83.43 | 178.52 | 5,561.15 | -547.07 | 345.26 | 1,542,119.88 | 3,472,025.61 | 40° 48' 32.553 N | 103° 47' 41.222 W |
| 5,990.00 | 88.51 | 180.04 | 5,564.95 | -600.92 | 345.94 | 1,542,066.06 | 3,472,027.32 | 40° 48' 32.021 N | 103° 47' 41.213 W |
| 7" | | | | | | | | | |
| 6,015.00 | 90.86 | 180.74 | 5,565.08 | -625.91 | 345.77 | 1,542,041.06 | 3,472,027.63 | 40° 48' 31.774 N | 103° 47' 41.215 W |
| 6,105.00 | 90.42 | 179.21 | 5,564.08 | -715.91 | 345.81 | 1,541,951.09 | 3,472,029.39 | 40° 48' 30.884 N | 103° 47' 41.215 W |
| 6,195.00 | 90.68 | 178.51 | 5,563.21 | -805.88 | 347.60 | 1,541,861.16 | 3,472,032.91 | 40° 48' 29.995 N | 103° 47' 41.191 W |
| 6,284.00 | 91.38 | 179.33 | 5,561.61 | -894.85 | 349.27 | 1,541,772.24 | 3,472,036.30 | 40° 48' 29.116 N | 103° 47' 41.170 W |
| 6,374.00 | 88.53 | 179.22 | 5,561.69 | -984.84 | 350.41 | 1,541,682.30 | 3,472,039.17 | 40° 48' 28.227 N | 103° 47' 41.155 W |
| 6,463.00 | 88.70 | 180.37 | 5,563.84 | -1,073.81 | 350.73 | 1,541,593.35 | 3,472,041.20 | 40° 48' 27.348 N | 103° 47' 41.151 W |
| 6,553.00 | 88.66 | 180.28 | 5,565.91 | -1,163.78 | 350.22 | 1,541,503.38 | 3,472,042.41 | 40° 48' 26.459 N | 103° 47' 41.157 W |
| 6,643.00 | 88.35 | 180.75 | 5,568.26 | -1,253.75 | 349.41 | 1,541,413.42 | 3,472,043.33 | 40° 48' 25.570 N | 103° 47' 41.168 W |
| 6,732.00 | 88.44 | 181.47 | 5,570.75 | -1,342.70 | 347.69 | 1,541,324.45 | 3,472,043.32 | 40° 48' 24.691 N | 103° 47' 41.190 W |
| 6,822.00 | 88.62 | 181.48 | 5,573.06 | -1,432.64 | 345.37 | 1,541,234.48 | 3,472,042.73 | 40° 48' 23.803 N | 103° 47' 41.220 W |
| 6,911.00 | 88.88 | 181.74 | 5,575.00 | -1,521.58 | 342.87 | 1,541,145.51 | 3,472,041.94 | 40° 48' 22.924 N | 103° 47' 41.253 W |
| 7,001.00 | 90.68 | 182.99 | 5,575.35 | -1,611.50 | 339.16 | 1,541,055.54 | 3,472,039.96 | 40° 48' 22.035 N | 103° 47' 41.301 W |
| 7,090.00 | 88.00 | 180.54 | 5,576.37 | -1,700.43 | 336.42 | 1,540,966.56 | 3,472,038.93 | 40° 48' 21.156 N | 103° 47' 41.337 W |
| 7,180.00 | 88.53 | 179.70 | 5,579.10 | -1,790.39 | 336.23 | 1,540,876.62 | 3,472,040.47 | 40° 48' 20.268 N | 103° 47' 41.339 W |
| 7,270.00 | 90.20 | 180.92 | 5,580.09 | -1,880.38 | 335.74 | 1,540,786.64 | 3,472,041.71 | 40° 48' 19.378 N | 103° 47' 41.346 W |
| 7,357.00 | 90.20 | 180.39 | 5,579.79 | -1,967.37 | 334.75 | 1,540,699.64 | 3,472,042.38 | 40° 48' 18.519 N | 103° 47' 41.359 W |
| 7,441.00 | 90.95 | 180.72 | 5,578.95 | -2,051.36 | 333.93 | 1,540,615.65 | 3,472,043.19 | 40° 48' 17.689 N | 103° 47' 41.369 W |
| 7,529.00 | 90.77 | 181.00 | 5,577.63 | -2,139.34 | 332.61 | 1,540,527.66 | 3,472,043.56 | 40° 48' 16.820 N | 103° 47' 41.386 W |
| 7,617.00 | 90.77 | 181.29 | 5,576.44 | -2,227.32 | 330.85 | 1,540,439.67 | 3,472,043.49 | 40° 48' 15.950 N | 103° 47' 41.409 W |
| 7,706.00 | 89.05 | 181.53 | 5,576.58 | -2,316.29 | 328.66 | 1,540,350.67 | 3,472,043.01 | 40° 48' 15.071 N | 103° 47' 41.438 W |
| 7,794.00 | 89.27 | 180.81 | 5,577.87 | -2,404.26 | 326.87 | 1,540,262.68 | 3,472,042.90 | 40° 48' 14.202 N | 103° 47' 41.461 W |
| 7,883.00 | 88.22 | 179.09 | 5,579.82 | -2,493.23 | 326.95 | 1,540,173.73 | 3,472,044.69 | 40° 48' 13.323 N | 103° 47' 41.460 W |
| 7,976.00 | 88.70 | 179.66 | 5,582.32 | -2,586.19 | 327.96 | 1,540,080.80 | 3,472,047.49 | 40° 48' 12.404 N | 103° 47' 41.447 W |
| 8,068.00 | 88.57 | 179.38 | 5,584.51 | -2,678.16 | 328.73 | 1,539,988.86 | 3,472,050.03 | 40° 48' 11.496 N | 103° 47' 41.437 W |
| 8,161.00 | 89.14 | 178.27 | 5,586.37 | -2,771.12 | 330.64 | 1,539,895.96 | 3,472,053.72 | 40° 48' 10.577 N | 103° 47' 41.412 W |
| 8,253.00 | 91.21 | 179.40 | 5,586.09 | -2,863.10 | 332.51 | 1,539,804.04 | 3,472,057.36 | 40° 48' 9.668 N | 103° 47' 41.388 W |
| 8,345.00 | 92.18 | 180.49 | 5,583.37 | -2,955.06 | 332.60 | 1,539,712.10 | 3,472,059.21 | 40° 48' 8.760 N | 103° 47' 41.387 W |
| 8,437.00 | 92.97 | 182.06 | 5,579.24 | -3,046.94 | 330.55 | 1,539,620.20 | 3,472,058.93 | 40° 48' 7.852 N | 103° 47' 41.413 W |
| 8,528.00 | 93.45 | 182.21 | 5,574.14 | -3,137.73 | 327.17 | 1,539,529.35 | 3,472,057.29 | 40° 48' 6.955 N | 103° 47' 41.457 W |
| 8,619.00 | 92.44 | 182.16 | 5,569.47 | -3,228.54 | 323.70 | 1,539,438.49 | 3,472,055.57 | 40° 48' 6.057 N | 103° 47' 41.503 W |
| 8,710.00 | 90.42 | 181.60 | 5,567.20 | -3,319.46 | 320.72 | 1,539,347.53 | 3,472,054.34 | 40° 48' 5.159 N | 103° 47' 41.541 W |
| 8,802.00 | 89.89 | 181.06 | 5,566.95 | -3,411.43 | 318.58 | 1,539,255.53 | 3,472,053.97 | 40° 48' 4.250 N | 103° 47' 41.569 W |
| 8,894.00 | 91.03 | 182.40 | 5,566.21 | -3,503.39 | 315.81 | 1,539,163.55 | 3,472,052.96 | 40° 48' 3.342 N | 103° 47' 41.605 W |
| 8,986.00 | 90.33 | 180.21 | 5,565.12 | -3,595.35 | 313.71 | 1,539,071.56 | 3,472,052.63 | 40° 48' 2.433 N | 103° 47' 41.632 W |
| 9,078.00 | 90.95 | 180.96 | 5,564.09 | -3,687.34 | 312.77 | 1,538,979.57 | 3,472,053.46 | 40° 48' 1.524 N | 103° 47' 41.645 W |
| 9,169.00 | 90.59 | 178.36 | 5,562.87 | -3,778.32 | 313.31 | 1,538,888.62 | 3,472,055.75 | 40° 48' 0.625 N | 103° 47' 41.638 W |
| 9,261.00 | 89.45 | 177.77 | 5,562.83 | -3,870.27 | 316.42 | 1,538,796.75 | 3,472,060.62 | 40° 47' 59.716 N | 103° 47' 41.597 W |
| 9,354.00 | 90.46 | 180.87 | 5,562.91 | -3,963.25 | 317.52 | 1,538,703.80 | 3,472,063.51 | 40° 47' 58.798 N | 103° 47' 41.583 W |
| 9,446.00 | 89.89 | 181.55 | 5,562.63 | -4,055.22 | 315.58 | 1,538,611.81 | 3,472,063.34 | 40° 47' 57.889 N | 103° 47' 41.608 W |
| 9,539.00 | 90.20 | 183.34 | 5,562.55 | -4,148.14 | 311.61 | 1,538,518.83 | 3,472,061.16 | 40° 47' 56.971 N | 103° 47' 41.660 W |
| 9,631.00 | 90.24 | 183.12 | 5,562.20 | -4,239.99 | 306.43 | 1,538,426.90 | 3,472,057.74 | 40° 47' 56.063 N | 103° 47' 41.727 W |
| 9,722.00 | 90.20 | 182.10 | 5,561.85 | -4,330.89 | 302.28 | 1,538,335.93 | 3,472,055.34 | 40° 47' 55.165 N | 103° 47' 41.781 W |
| 9,813.00 | 90.68 | 184.92 | 5,561.15 | -4,421.71 | 296.71 | 1,538,245.02 | 3,472,051.52 | 40° 47' 54.268 N | 103° 47' 41.854 W |
| 9,905.00 | 89.45 | 185.04 | 5,561.05 | -4,513.36 | 288.73 | 1,538,153.24 | 3,472,045.29 | 40° 47' 53.362 N | 103° 47' 41.957 W |
| 9,997.00 | 88.75 | 184.33 | 5,562.49 | -4,605.04 | 281.21 | 1,538,061.43 | 3,472,039.54 | 40° 47' 52.456 N | 103° 47' 42.055 W |

LEAM Drilling Systems LLC

Survey Report - Geographic

| | | | |
|------------------|-------------------------------|-------------------------------------|---|
| Company: | WHITING PETROLEUM CORPORATION | Local Co-ordinate Reference: | Well 3107 |
| Project: | Weld County, CO | TVD Reference: | GE 4780' + KB 17' @ 4797.00usft (Xtreme 18) |
| Site: | Horsetail #30F | MD Reference: | GE 4780' + KB 17' @ 4797.00usft (Xtreme 18) |
| Well: | 3107 | North Reference: | True |
| Wellbore: | OH | Survey Calculation Method: | Minimum Curvature |
| Design: | OH | Database: | EDM 5000.1 Multi User Db |

Survey

| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Map Northing (usft) | Map Easting (usft) | Latitude | Longitude |
|--|-----------------|-------------|-----------------------|--------------|--------------|---------------------|--------------------|------------------|-------------------|
| 10,089.00 | 90.73 | 183.88 | 5,562.91 | -4,696.80 | 274.63 | 1,537,969.56 | 3,472,034.72 | 40° 47' 51.550 N | 103° 47' 42.141 W |
| 10,181.00 | 89.49 | 181.79 | 5,562.73 | -4,788.68 | 270.08 | 1,537,877.61 | 3,472,031.94 | 40° 47' 50.642 N | 103° 47' 42.200 W |
| 10,274.00 | 89.58 | 181.27 | 5,563.49 | -4,881.64 | 267.60 | 1,537,784.62 | 3,472,031.24 | 40° 47' 49.723 N | 103° 47' 42.232 W |
| 10,366.00 | 90.24 | 181.00 | 5,563.63 | -4,973.62 | 265.77 | 1,537,692.62 | 3,472,031.19 | 40° 47' 48.814 N | 103° 47' 42.256 W |
| 10,458.00 | 89.80 | 178.13 | 5,563.60 | -5,065.61 | 266.47 | 1,537,600.66 | 3,472,033.65 | 40° 47' 47.905 N | 103° 47' 42.247 W |
| 10,550.00 | 89.80 | 176.68 | 5,563.92 | -5,157.51 | 270.64 | 1,537,508.86 | 3,472,039.58 | 40° 47' 46.997 N | 103° 47' 42.193 W |
| 10,642.00 | 89.45 | 176.79 | 5,564.52 | -5,249.36 | 275.88 | 1,537,417.12 | 3,472,046.59 | 40° 47' 46.090 N | 103° 47' 42.125 W |
| 10,734.00 | 89.67 | 177.07 | 5,565.23 | -5,341.23 | 280.80 | 1,537,325.37 | 3,472,053.28 | 40° 47' 45.182 N | 103° 47' 42.061 W |
| 10,826.00 | 89.80 | 183.05 | 5,565.65 | -5,433.19 | 280.71 | 1,537,233.43 | 3,472,054.95 | 40° 47' 44.273 N | 103° 47' 42.062 W |
| 10,918.00 | 89.93 | 180.71 | 5,565.87 | -5,525.13 | 277.69 | 1,537,141.44 | 3,472,053.70 | 40° 47' 43.365 N | 103° 47' 42.101 W |
| 11,010.00 | 89.23 | 178.72 | 5,566.55 | -5,617.12 | 278.15 | 1,537,049.48 | 3,472,055.92 | 40° 47' 42.456 N | 103° 47' 42.095 W |
| 11,102.00 | 90.81 | 179.66 | 5,566.51 | -5,709.11 | 279.45 | 1,536,957.53 | 3,472,058.99 | 40° 47' 41.547 N | 103° 47' 42.078 W |
| 11,193.00 | 91.12 | 182.22 | 5,564.98 | -5,800.07 | 277.95 | 1,536,866.55 | 3,472,059.25 | 40° 47' 40.648 N | 103° 47' 42.098 W |
| 11,286.00 | 91.65 | 181.97 | 5,562.73 | -5,892.98 | 274.56 | 1,536,773.60 | 3,472,057.63 | 40° 47' 39.730 N | 103° 47' 42.142 W |
| 11,378.00 | 89.98 | 181.09 | 5,561.42 | -5,984.94 | 272.10 | 1,536,681.61 | 3,472,056.95 | 40° 47' 38.821 N | 103° 47' 42.174 W |
| 11,470.00 | 90.90 | 182.44 | 5,560.72 | -6,076.89 | 269.27 | 1,536,589.62 | 3,472,055.88 | 40° 47' 37.913 N | 103° 47' 42.211 W |
| 11,563.00 | 91.87 | 182.81 | 5,558.47 | -6,169.76 | 265.01 | 1,536,496.69 | 3,472,053.41 | 40° 47' 36.995 N | 103° 47' 42.266 W |
| 11,655.00 | 90.15 | 182.07 | 5,556.85 | -6,261.66 | 261.09 | 1,536,404.73 | 3,472,051.26 | 40° 47' 36.087 N | 103° 47' 42.317 W |
| 11,746.00 | 90.29 | 181.95 | 5,556.50 | -6,352.60 | 257.90 | 1,536,313.74 | 3,472,049.81 | 40° 47' 35.189 N | 103° 47' 42.359 W |
| 11,837.00 | 89.98 | 180.26 | 5,556.28 | -6,443.58 | 256.15 | 1,536,222.74 | 3,472,049.81 | 40° 47' 34.290 N | 103° 47' 42.381 W |
| 11,929.00 | 90.33 | 180.29 | 5,556.04 | -6,535.58 | 255.70 | 1,536,130.75 | 3,472,051.13 | 40° 47' 33.381 N | 103° 47' 42.387 W |
| 12,021.00 | 90.55 | 179.63 | 5,555.33 | -6,627.58 | 255.77 | 1,536,038.78 | 3,472,052.97 | 40° 47' 32.472 N | 103° 47' 42.386 W |
| 12,113.00 | 89.63 | 179.79 | 5,555.18 | -6,719.58 | 256.23 | 1,535,946.80 | 3,472,055.20 | 40° 47' 31.563 N | 103° 47' 42.380 W |
| 12,205.00 | 88.35 | 180.02 | 5,556.81 | -6,811.56 | 256.39 | 1,535,854.84 | 3,472,057.12 | 40° 47' 30.654 N | 103° 47' 42.378 W |
| 12,297.00 | 88.48 | 180.14 | 5,559.35 | -6,903.53 | 256.26 | 1,535,762.89 | 3,472,058.76 | 40° 47' 29.745 N | 103° 47' 42.380 W |
| 12,389.00 | 89.41 | 181.35 | 5,561.05 | -6,995.50 | 255.06 | 1,535,670.91 | 3,472,059.33 | 40° 47' 28.836 N | 103° 47' 42.396 W |
| 12,481.00 | 90.07 | 182.60 | 5,561.46 | -7,087.44 | 251.89 | 1,535,578.92 | 3,472,057.93 | 40° 47' 27.928 N | 103° 47' 42.437 W |
| 12,573.00 | 90.29 | 181.80 | 5,561.17 | -7,179.37 | 248.36 | 1,535,486.94 | 3,472,056.16 | 40° 47' 27.019 N | 103° 47' 42.483 W |
| 12,664.00 | 91.21 | 183.12 | 5,559.98 | -7,270.28 | 244.45 | 1,535,395.98 | 3,472,054.00 | 40° 47' 26.121 N | 103° 47' 42.533 W |
| 12,756.00 | 89.54 | 180.06 | 5,559.38 | -7,362.23 | 241.90 | 1,535,304.00 | 3,472,053.22 | 40° 47' 25.213 N | 103° 47' 42.567 W |
| 12,848.00 | 88.75 | 180.07 | 5,560.75 | -7,454.22 | 241.80 | 1,535,212.02 | 3,472,054.88 | 40° 47' 24.304 N | 103° 47' 42.568 W |
| 12,941.00 | 89.80 | 180.34 | 5,561.93 | -7,547.21 | 241.47 | 1,535,119.05 | 3,472,056.34 | 40° 47' 23.385 N | 103° 47' 42.572 W |
| 13,023.00 | 89.10 | 179.75 | 5,562.72 | -7,629.20 | 241.40 | 1,535,037.06 | 3,472,057.85 | 40° 47' 22.575 N | 103° 47' 42.573 W |
| 13,061.00 | 89.10 | 179.75 | 5,563.31 | -7,667.20 | 241.57 | 1,534,999.08 | 3,472,058.74 | 40° 47' 22.199 N | 103° 47' 42.571 W |
| HL Crossing MD 13061' TVD 5563' | | | | | | | | | |
| 13,071.00 | 89.10 | 179.75 | 5,563.47 | -7,677.19 | 241.61 | 1,534,989.08 | 3,472,058.98 | 40° 47' 22.100 N | 103° 47' 42.571 W |
| Projection | | | | | | | | | |

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 | | | | | | | | | |
| SHL(30F-3107) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1,542,660.22 | 3,471,669.90 | 40° 48' 37.958 N | 103° 47' 45.712 W |
| - actual wellpath hits target center | | | | | | | | | |
| - Point | | | | | | | | | |
| BHL(30F-3107) | 0.00 | 0.00 | 5,563.47 | -7,677.19 | 241.61 | 1,534,989.09 | 3,472,058.98 | 40° 47' 22.100 N | 103° 47' 42.571 W |
| - actual wellpath hits target center | | | | | | | | | |
| - Point | | | | | | | | | |
| PBHL(30F-3107) | 0.00 | 180.85 | 5,585.00 | -7,667.11 | 244.79 | 1,534,999.22 | 3,472,061.96 | 40° 47' 22.200 N | 103° 47' 42.529 W |
| - actual wellpath misses target center by 21.92usft at 13061.00usft MD (5563.31 TVD, -7667.20 N, 241.57 E) | | | | | | | | | |
| - Rectangle (sides W400.00 H7,236.10 D0.00) | | | | | | | | | |

LEAM Drilling Systems LLC

Survey Report - Geographic

| | | | |
|------------------|-------------------------------|-------------------------------------|---|
| Company: | WHITING PETROLEUM CORPORATION | Local Co-ordinate Reference: | Well 3107 |
| Project: | Weld County, CO | TVD Reference: | GE 4780' + KB 17' @ 4797.00usft (Xtreme 18) |
| Site: | Horsetail #30F | MD Reference: | GE 4780' + KB 17' @ 4797.00usft (Xtreme 18) |
| Well: | 3107 | North Reference: | True |
| Wellbore: | OH | Survey Calculation Method: | Minimum Curvature |
| Design: | OH | Database: | EDM 5000.1 Multi User Db |

Casing Points

| Measured Depth (usft) | Vertical Depth (usft) | Name | Casing Diameter (") | Hole Diameter (") |
|-----------------------|-----------------------|------|---------------------|-------------------|
| 5,990.00 | 5,564.95 | 7" | 7 | 7-1/2 |

Design Annotations

| Measured Depth (usft) | Vertical Depth (usft) | Local Coordinates | | Comment |
|-----------------------|-----------------------|-------------------|--------------|---------------------------------|
| | | +N/-S (usft) | +E/-W (usft) | |
| 13,061.00 | 5,563.31 | -7,667.20 | 241.57 | HL Crossing MD 13061' TVD 5563' |
| 13,071.00 | 5,563.47 | -7,677.19 | 241.61 | Projection |