



Whiting Petroleum Corp.

**Weld County, CO
Sec 7-T10N-R57W
Horsetail #07H-1847**

Hz

Plan: Design #1

Standard Planning Report

27 March, 2015



WOG Planning Report

| | | | |
|------------------|-------------------------|-------------------------------------|--|
| Database: | LandmarkEDM | Local Co-ordinate Reference: | Well Horsetail #07H-1847 |
| Company: | Whiting Petroleum Corp. | TVD Reference: | KBE @ 4925.90usft (Original Well Elev) |
| Project: | Weld County, CO | MD Reference: | KBE @ 4925.90usft (Original Well Elev) |
| Site: | Sec 7-T10N-R57W | North Reference: | True |
| Well: | Horsetail #07H-1847 | Survey Calculation Method: | Minimum Curvature |
| Wellbore: | Hz | | |
| Design: | Design #1 | | |

| | | | |
|--------------------|---------------------------|----------------------|----------------|
| 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 | Sec 7-T10N-R57W | | | | |
| Site Position: | | Northing: | 1,558,450.14 usft | Latitude: | 40° 51' 14.300 N |
| From: | Lat/Long | Easting: | 3,469,810.15 usft | Longitude: | 103° 48' 5.960 W |
| Position Uncertainty: | 0.00 usft | Slot Radius: | 13.200 in | Grid Convergence: | 1.10 ° |

| | | | | | | |
|-----------------------------|---------------------|---------------|----------------------------|-------------------|----------------------|-------------------|
| Well | Horsetail #07H-1847 | | | | | |
| Well Position | +N/-S | -153.50 usft | Northing: | 1,558,372.53 usft | Latitude: | 40° 51' 12.780 N |
| | +E/-W | 3,961.43 usft | Easting: | 3,473,773.79 usft | Longitude: | 103° 47' 14.410 W |
| Position Uncertainty | | 0.00 usft | Wellhead Elevation: | | Ground Level: | 4,908.90 usft |

| | | | | | |
|------------------|-------------------|--------------------|------------------------|----------------------|----------------------------|
| Wellbore | Hz | | | | |
| Magnetics | Model Name | Sample Date | Declination (°) | Dip Angle (°) | Field Strength (nT) |
| | IGRF2010 | 1/6/2015 | 7.88 | 67.44 | 53,088 |

| | | | | |
|--------------------------|--------------------------------|---------------------|----------------------|----------------------|
| Design | Design #1 | | | |
| Audit Notes: | | | | |
| Version: | Phase: | PROTOTYPE | Tie On Depth: | 0.00 |
| Vertical Section: | Depth From (TVD) (usft) | +N/-S (usft) | +E/-W (usft) | Direction (°) |
| | 0.00 | 0.00 | 0.00 | 179.78 |

| Plan Sections | | | | | | | | | | |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|-----------------------|----------------------|---------------------|---------|------------|
| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Dogleg Rate (°/100ft) | Build Rate (°/100ft) | Turn Rate (°/100ft) | TFO (°) | Target |
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 300.00 | 0.00 | 0.00 | 300.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 525.00 | 4.50 | 5.00 | 524.77 | 8.80 | 0.77 | 2.00 | 2.00 | 0.00 | 5.00 | |
| 4,875.00 | 4.50 | 5.00 | 4,861.36 | 348.80 | 30.52 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 5,100.00 | 0.00 | 0.00 | 5,086.13 | 357.59 | 31.29 | 2.00 | -2.00 | 0.00 | 180.00 | |
| 5,448.00 | 0.00 | 0.00 | 5,434.13 | 357.59 | 31.29 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 6,266.18 | 90.00 | 180.00 | 5,955.00 | -163.28 | 31.25 | 11.00 | 11.00 | 0.00 | 180.00 | PBHL 1847C |
| 13,995.97 | 90.00 | 180.00 | 5,955.00 | -7,893.07 | 30.75 | 0.00 | 0.00 | 0.00 | 0.00 | PBHL 1847C |



WOG
Planning Report

| | | | |
|------------------|-------------------------|-------------------------------------|--|
| Database: | LandmarkEDM | Local Co-ordinate Reference: | Well Horsetail #07H-1847 |
| Company: | Whiting Petroleum Corp. | TVD Reference: | KBE @ 4925.90usft (Original Well Elev) |
| Project: | Weld County, CO | MD Reference: | KBE @ 4925.90usft (Original Well Elev) |
| Site: | Sec 7-T10N-R57W | North Reference: | True |
| Well: | Horsetail #07H-1847 | Survey Calculation Method: | Minimum Curvature |
| Wellbore: | Hz | | |
| Design: | Design #1 | | |

| Planned Survey | | | | | | | | | | |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-----------------------|----------------------|---------------------|--|
| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100ft) | Build Rate (°/100ft) | Turn Rate (°/100ft) | |
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 100.00 | 0.00 | 0.00 | 100.00 | 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 | 0.00 | |
| 300.00 | 0.00 | 0.00 | 300.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| Build 2°/100' | | | | | | | | | | |
| 400.00 | 2.00 | 5.00 | 399.98 | 1.74 | 0.15 | -1.74 | 2.00 | 2.00 | 0.00 | |
| 500.00 | 4.00 | 5.00 | 499.84 | 6.95 | 0.61 | -6.95 | 2.00 | 2.00 | 0.00 | |
| 525.00 | 4.50 | 5.00 | 524.77 | 8.80 | 0.77 | -8.79 | 2.00 | 2.00 | 0.00 | |
| Hold 4.50° Inc | | | | | | | | | | |
| 600.00 | 4.50 | 5.00 | 599.54 | 14.66 | 1.28 | -14.65 | 0.00 | 0.00 | 0.00 | |
| 700.00 | 4.50 | 5.00 | 699.23 | 22.48 | 1.97 | -22.47 | 0.00 | 0.00 | 0.00 | |
| 800.00 | 4.50 | 5.00 | 798.92 | 30.29 | 2.65 | -30.28 | 0.00 | 0.00 | 0.00 | |
| 900.00 | 4.50 | 5.00 | 898.61 | 38.11 | 3.33 | -38.09 | 0.00 | 0.00 | 0.00 | |
| 1,000.00 | 4.50 | 5.00 | 998.30 | 45.92 | 4.02 | -45.91 | 0.00 | 0.00 | 0.00 | |
| 1,100.00 | 4.50 | 5.00 | 1,098.00 | 53.74 | 4.70 | -53.72 | 0.00 | 0.00 | 0.00 | |
| 1,200.00 | 4.50 | 5.00 | 1,197.69 | 61.56 | 5.39 | -61.53 | 0.00 | 0.00 | 0.00 | |
| 1,300.00 | 4.50 | 5.00 | 1,297.38 | 69.37 | 6.07 | -69.35 | 0.00 | 0.00 | 0.00 | |
| 1,400.00 | 4.50 | 5.00 | 1,397.07 | 77.19 | 6.75 | -77.16 | 0.00 | 0.00 | 0.00 | |
| 1,500.00 | 4.50 | 5.00 | 1,496.76 | 85.00 | 7.44 | -84.97 | 0.00 | 0.00 | 0.00 | |
| 1,553.40 | 4.50 | 5.00 | 1,550.00 | 89.18 | 7.80 | -89.15 | 0.00 | 0.00 | 0.00 | |
| Upper Pierre | | | | | | | | | | |
| 1,600.00 | 4.50 | 5.00 | 1,596.45 | 92.82 | 8.12 | -92.79 | 0.00 | 0.00 | 0.00 | |
| 1,700.00 | 4.50 | 5.00 | 1,696.15 | 100.64 | 8.80 | -100.60 | 0.00 | 0.00 | 0.00 | |
| 1,800.00 | 4.50 | 5.00 | 1,795.84 | 108.45 | 9.49 | -108.41 | 0.00 | 0.00 | 0.00 | |
| 1,900.00 | 4.50 | 5.00 | 1,895.53 | 116.27 | 10.17 | -116.23 | 0.00 | 0.00 | 0.00 | |
| 2,000.00 | 4.50 | 5.00 | 1,995.22 | 124.08 | 10.86 | -124.04 | 0.00 | 0.00 | 0.00 | |
| 2,100.00 | 4.50 | 5.00 | 2,094.91 | 131.90 | 11.54 | -131.85 | 0.00 | 0.00 | 0.00 | |
| 2,200.00 | 4.50 | 5.00 | 2,194.61 | 139.72 | 12.22 | -139.67 | 0.00 | 0.00 | 0.00 | |
| 2,300.00 | 4.50 | 5.00 | 2,294.30 | 147.53 | 12.91 | -147.48 | 0.00 | 0.00 | 0.00 | |
| 2,400.00 | 4.50 | 5.00 | 2,393.99 | 155.35 | 13.59 | -155.29 | 0.00 | 0.00 | 0.00 | |
| 2,500.00 | 4.50 | 5.00 | 2,493.68 | 163.16 | 14.28 | -163.11 | 0.00 | 0.00 | 0.00 | |
| 2,600.00 | 4.50 | 5.00 | 2,593.37 | 170.98 | 14.96 | -170.92 | 0.00 | 0.00 | 0.00 | |
| 2,700.00 | 4.50 | 5.00 | 2,693.06 | 178.80 | 15.64 | -178.73 | 0.00 | 0.00 | 0.00 | |
| 2,800.00 | 4.50 | 5.00 | 2,792.76 | 186.61 | 16.33 | -186.55 | 0.00 | 0.00 | 0.00 | |
| 2,900.00 | 4.50 | 5.00 | 2,892.45 | 194.43 | 17.01 | -194.36 | 0.00 | 0.00 | 0.00 | |
| 3,000.00 | 4.50 | 5.00 | 2,992.14 | 202.24 | 17.69 | -202.17 | 0.00 | 0.00 | 0.00 | |
| 3,100.00 | 4.50 | 5.00 | 3,091.83 | 210.06 | 18.38 | -209.99 | 0.00 | 0.00 | 0.00 | |
| 3,200.00 | 4.50 | 5.00 | 3,191.52 | 217.88 | 19.06 | -217.80 | 0.00 | 0.00 | 0.00 | |
| 3,300.00 | 4.50 | 5.00 | 3,291.21 | 225.69 | 19.75 | -225.61 | 0.00 | 0.00 | 0.00 | |
| 3,400.00 | 4.50 | 5.00 | 3,390.91 | 233.51 | 20.43 | -233.43 | 0.00 | 0.00 | 0.00 | |
| 3,500.00 | 4.50 | 5.00 | 3,490.60 | 241.33 | 21.11 | -241.24 | 0.00 | 0.00 | 0.00 | |
| 3,509.43 | 4.50 | 5.00 | 3,500.00 | 242.06 | 21.18 | -241.98 | 0.00 | 0.00 | 0.00 | |
| Hygiene | | | | | | | | | | |
| 3,600.00 | 4.50 | 5.00 | 3,590.29 | 249.14 | 21.80 | -249.05 | 0.00 | 0.00 | 0.00 | |
| 3,659.90 | 4.50 | 5.00 | 3,650.00 | 253.82 | 22.21 | -253.73 | 0.00 | 0.00 | 0.00 | |
| Lower Pierre | | | | | | | | | | |
| 3,700.00 | 4.50 | 5.00 | 3,689.98 | 256.96 | 22.48 | -256.87 | 0.00 | 0.00 | 0.00 | |
| 3,800.00 | 4.50 | 5.00 | 3,789.67 | 264.77 | 23.16 | -264.68 | 0.00 | 0.00 | 0.00 | |
| 3,900.00 | 4.50 | 5.00 | 3,889.36 | 272.59 | 23.85 | -272.49 | 0.00 | 0.00 | 0.00 | |
| 4,000.00 | 4.50 | 5.00 | 3,989.06 | 280.41 | 24.53 | -280.31 | 0.00 | 0.00 | 0.00 | |
| 4,100.00 | 4.50 | 5.00 | 4,088.75 | 288.22 | 25.22 | -288.12 | 0.00 | 0.00 | 0.00 | |
| 4,200.00 | 4.50 | 5.00 | 4,188.44 | 296.04 | 25.90 | -295.93 | 0.00 | 0.00 | 0.00 | |
| 4,300.00 | 4.50 | 5.00 | 4,288.13 | 303.85 | 26.58 | -303.75 | 0.00 | 0.00 | 0.00 | |
| 4,400.00 | 4.50 | 5.00 | 4,387.82 | 311.67 | 27.27 | -311.56 | 0.00 | 0.00 | 0.00 | |



WOG
Planning Report

| | | | |
|------------------|-------------------------|-------------------------------------|--|
| Database: | LandmarkEDM | Local Co-ordinate Reference: | Well Horsetail #07H-1847 |
| Company: | Whiting Petroleum Corp. | TVD Reference: | KBE @ 4925.90usft (Original Well Elev) |
| Project: | Weld County, CO | MD Reference: | KBE @ 4925.90usft (Original Well Elev) |
| Site: | Sec 7-T10N-R57W | North Reference: | True |
| Well: | Horsetail #07H-1847 | Survey Calculation Method: | Minimum Curvature |
| Wellbore: | Hz | | |
| Design: | Design #1 | | |

| Planned Survey | | | | | | | | | | |
|----------------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-----------------------|----------------------|---------------------|--|
| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100ft) | Build Rate (°/100ft) | Turn Rate (°/100ft) | |
| 4,500.00 | 4.50 | 5.00 | 4,487.52 | 319.49 | 27.95 | -319.37 | 0.00 | 0.00 | 0.00 | |
| 4,600.00 | 4.50 | 5.00 | 4,587.21 | 327.30 | 28.64 | -327.19 | 0.00 | 0.00 | 0.00 | |
| 4,700.00 | 4.50 | 5.00 | 4,686.90 | 335.12 | 29.32 | -335.00 | 0.00 | 0.00 | 0.00 | |
| 4,800.00 | 4.50 | 5.00 | 4,786.59 | 342.93 | 30.00 | -342.81 | 0.00 | 0.00 | 0.00 | |
| 4,875.00 | 4.50 | 5.00 | 4,861.36 | 348.80 | 30.52 | -348.67 | 0.00 | 0.00 | 0.00 | |
| Drop 2°/100' | | | | | | | | | | |
| 4,900.00 | 4.00 | 5.00 | 4,886.29 | 350.64 | 30.68 | -350.52 | 2.00 | -2.00 | 0.00 | |
| 5,000.00 | 2.00 | 5.00 | 4,986.15 | 355.85 | 31.13 | -355.73 | 2.00 | -2.00 | 0.00 | |
| 5,100.00 | 0.00 | 0.00 | 5,086.13 | 357.59 | 31.29 | -357.47 | 2.00 | -2.00 | 0.00 | |
| Hold Vertical | | | | | | | | | | |
| 5,200.00 | 0.00 | 0.00 | 5,186.13 | 357.59 | 31.29 | -357.47 | 0.00 | 0.00 | 0.00 | |
| 5,300.00 | 0.00 | 0.00 | 5,286.13 | 357.59 | 31.29 | -357.47 | 0.00 | 0.00 | 0.00 | |
| 5,400.00 | 0.00 | 0.00 | 5,386.13 | 357.59 | 31.29 | -357.47 | 0.00 | 0.00 | 0.00 | |
| 5,448.00 | 0.00 | 0.00 | 5,434.13 | 357.59 | 31.29 | -357.47 | 0.00 | 0.00 | 0.00 | |
| KOP, Build 11°/100' | | | | | | | | | | |
| 5,450.00 | 0.22 | 180.00 | 5,436.13 | 357.59 | 31.29 | -357.47 | 11.00 | 11.00 | 0.00 | |
| 5,500.00 | 5.72 | 180.00 | 5,486.04 | 355.00 | 31.29 | -354.88 | 11.00 | 11.00 | 0.00 | |
| 5,529.20 | 8.93 | 180.00 | 5,515.00 | 351.28 | 31.28 | -351.15 | 11.00 | 11.00 | 0.00 | |
| P200 Marker | | | | | | | | | | |
| 5,544.42 | 10.61 | 180.00 | 5,530.00 | 348.69 | 31.28 | -348.57 | 11.00 | 11.00 | 0.00 | |
| P300 Marker | | | | | | | | | | |
| 5,550.00 | 11.22 | 180.00 | 5,535.48 | 347.64 | 31.28 | -347.51 | 11.00 | 11.00 | 0.00 | |
| 5,564.85 | 12.85 | 180.00 | 5,550.00 | 344.54 | 31.28 | -344.42 | 11.00 | 11.00 | 0.00 | |
| P350 Marker | | | | | | | | | | |
| 5,600.00 | 16.72 | 180.00 | 5,583.98 | 335.57 | 31.28 | -335.45 | 11.00 | 11.00 | 0.00 | |
| 5,650.00 | 22.22 | 180.00 | 5,631.10 | 318.91 | 31.28 | -318.79 | 11.00 | 11.00 | 0.00 | |
| 5,700.00 | 27.72 | 180.00 | 5,676.41 | 297.81 | 31.28 | -297.69 | 11.00 | 11.00 | 0.00 | |
| 5,729.36 | 30.95 | 180.00 | 5,702.00 | 283.43 | 31.28 | -283.31 | 11.00 | 11.00 | 0.00 | |
| Sharon Springs | | | | | | | | | | |
| 5,735.21 | 31.59 | 180.00 | 5,707.00 | 280.40 | 31.28 | -280.27 | 11.00 | 11.00 | 0.00 | |
| Niobrara | | | | | | | | | | |
| 5,750.00 | 33.22 | 180.00 | 5,719.49 | 272.47 | 31.28 | -272.34 | 11.00 | 11.00 | 0.00 | |
| 5,759.03 | 34.21 | 180.00 | 5,727.00 | 267.46 | 31.28 | -267.33 | 11.00 | 11.00 | 0.00 | |
| Top A Chalk | | | | | | | | | | |
| 5,800.00 | 38.72 | 180.00 | 5,759.94 | 243.11 | 31.28 | -242.99 | 11.00 | 11.00 | 0.00 | |
| 5,805.22 | 39.29 | 180.00 | 5,764.00 | 239.82 | 31.28 | -239.70 | 11.00 | 11.00 | 0.00 | |
| Top A Marl | | | | | | | | | | |
| 5,830.28 | 42.05 | 180.00 | 5,783.00 | 223.50 | 31.28 | -223.37 | 11.00 | 11.00 | 0.00 | |
| A Marl | | | | | | | | | | |
| 5,842.53 | 43.40 | 180.00 | 5,792.00 | 215.18 | 31.28 | -215.06 | 11.00 | 11.00 | 0.00 | |
| Top Upper B | | | | | | | | | | |
| 5,850.00 | 44.22 | 180.00 | 5,797.39 | 210.01 | 31.28 | -209.89 | 11.00 | 11.00 | 0.00 | |
| 5,882.56 | 47.80 | 180.00 | 5,820.00 | 186.59 | 31.27 | -186.47 | 11.00 | 11.00 | 0.00 | |
| Base Upper B | | | | | | | | | | |
| 5,900.00 | 49.72 | 180.00 | 5,831.50 | 173.48 | 31.27 | -173.35 | 11.00 | 11.00 | 0.00 | |
| 5,908.60 | 50.67 | 180.00 | 5,837.00 | 166.87 | 31.27 | -166.75 | 11.00 | 11.00 | 0.00 | |
| Top Lower B | | | | | | | | | | |
| 5,941.43 | 54.28 | 180.00 | 5,857.00 | 140.84 | 31.27 | -140.71 | 11.00 | 11.00 | 0.00 | |
| Base Lower B | | | | | | | | | | |
| 5,950.00 | 55.22 | 180.00 | 5,861.94 | 133.84 | 31.27 | -133.72 | 11.00 | 11.00 | 0.00 | |
| 5,953.62 | 55.62 | 180.00 | 5,864.00 | 130.86 | 31.27 | -130.73 | 11.00 | 11.00 | 0.00 | |
| Top B Marl | | | | | | | | | | |



WOG
Planning Report

| | | | |
|------------------|-------------------------|-------------------------------------|--|
| Database: | LandmarkEDM | Local Co-ordinate Reference: | Well Horsetail #07H-1847 |
| Company: | Whiting Petroleum Corp. | TVD Reference: | KBE @ 4925.90usft (Original Well Elev) |
| Project: | Weld County, CO | MD Reference: | KBE @ 4925.90usft (Original Well Elev) |
| Site: | Sec 7-T10N-R57W | North Reference: | True |
| Well: | Horsetail #07H-1847 | Survey Calculation Method: | Minimum Curvature |
| Wellbore: | Hz | | |
| Design: | Design #1 | | |

| Planned Survey | | | | | | | | | | |
|--|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-----------------------|----------------------|---------------------|--|
| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100ft) | Build Rate (°/100ft) | Turn Rate (°/100ft) | |
| 6,000.00 | 60.72 | 180.00 | 5,888.45 | 91.47 | 31.27 | -91.35 | 11.00 | 11.00 | 0.00 | |
| 6,050.00 | 66.22 | 180.00 | 5,910.78 | 46.75 | 31.27 | -46.63 | 11.00 | 11.00 | 0.00 | |
| 6,058.14 | 67.12 | 180.00 | 5,914.00 | 39.28 | 31.26 | -39.15 | 11.00 | 11.00 | 0.00 | |
| Top C Chalk | | | | | | | | | | |
| 6,079.78 | 69.50 | 180.00 | 5,922.00 | 19.17 | 31.26 | -19.04 | 11.00 | 11.00 | 0.00 | |
| Middle C Chalk | | | | | | | | | | |
| 6,100.00 | 71.72 | 180.00 | 5,928.71 | 0.10 | 31.26 | 0.02 | 11.00 | 11.00 | 0.00 | |
| 6,125.07 | 74.48 | 180.00 | 5,936.00 | -23.89 | 31.26 | 24.01 | 11.00 | 11.00 | 0.00 | |
| Middle C Marl | | | | | | | | | | |
| 6,150.00 | 77.22 | 180.00 | 5,942.09 | -48.06 | 31.26 | 48.18 | 11.00 | 11.00 | 0.00 | |
| 6,200.00 | 82.72 | 180.00 | 5,950.80 | -97.27 | 31.26 | 97.40 | 11.00 | 11.00 | 0.00 | |
| 6,250.00 | 88.22 | 180.00 | 5,954.75 | -147.10 | 31.25 | 147.22 | 11.00 | 11.00 | 0.00 | |
| 6,266.18 | 90.00 | 180.00 | 5,955.00 | -163.28 | 31.25 | 163.40 | 11.00 | 11.00 | 0.00 | |
| LP @ 90° Inc, Hold - Lower C Chalk - 7" | | | | | | | | | | |
| 6,300.00 | 90.00 | 180.00 | 5,955.00 | -197.10 | 31.25 | 197.22 | 0.00 | 0.00 | 0.00 | |
| 6,400.00 | 90.00 | 180.00 | 5,955.00 | -297.10 | 31.24 | 297.22 | 0.00 | 0.00 | 0.00 | |
| 6,500.00 | 90.00 | 180.00 | 5,955.00 | -397.10 | 31.24 | 397.22 | 0.00 | 0.00 | 0.00 | |
| 6,600.00 | 90.00 | 180.00 | 5,955.00 | -497.10 | 31.23 | 497.21 | 0.00 | 0.00 | 0.00 | |
| 6,700.00 | 90.00 | 180.00 | 5,955.00 | -597.10 | 31.22 | 597.21 | 0.00 | 0.00 | 0.00 | |
| 6,800.00 | 90.00 | 180.00 | 5,955.00 | -697.10 | 31.22 | 697.21 | 0.00 | 0.00 | 0.00 | |
| 6,900.00 | 90.00 | 180.00 | 5,955.00 | -797.10 | 31.21 | 797.21 | 0.00 | 0.00 | 0.00 | |
| 7,000.00 | 90.00 | 180.00 | 5,955.00 | -897.10 | 31.20 | 897.21 | 0.00 | 0.00 | 0.00 | |
| 7,100.00 | 90.00 | 180.00 | 5,955.00 | -997.10 | 31.20 | 997.21 | 0.00 | 0.00 | 0.00 | |
| 7,200.00 | 90.00 | 180.00 | 5,955.00 | -1,097.10 | 31.19 | 1,097.21 | 0.00 | 0.00 | 0.00 | |
| 7,300.00 | 90.00 | 180.00 | 5,955.00 | -1,197.10 | 31.18 | 1,197.21 | 0.00 | 0.00 | 0.00 | |
| 7,400.00 | 90.00 | 180.00 | 5,955.00 | -1,297.10 | 31.18 | 1,297.21 | 0.00 | 0.00 | 0.00 | |
| 7,500.00 | 90.00 | 180.00 | 5,955.00 | -1,397.10 | 31.17 | 1,397.21 | 0.00 | 0.00 | 0.00 | |
| 7,600.00 | 90.00 | 180.00 | 5,955.00 | -1,497.10 | 31.16 | 1,497.21 | 0.00 | 0.00 | 0.00 | |
| 7,700.00 | 90.00 | 180.00 | 5,955.00 | -1,597.10 | 31.16 | 1,597.21 | 0.00 | 0.00 | 0.00 | |
| 7,800.00 | 90.00 | 180.00 | 5,955.00 | -1,697.10 | 31.15 | 1,697.21 | 0.00 | 0.00 | 0.00 | |
| 7,900.00 | 90.00 | 180.00 | 5,955.00 | -1,797.10 | 31.15 | 1,797.20 | 0.00 | 0.00 | 0.00 | |
| 8,000.00 | 90.00 | 180.00 | 5,955.00 | -1,897.10 | 31.14 | 1,897.20 | 0.00 | 0.00 | 0.00 | |
| 8,100.00 | 90.00 | 180.00 | 5,955.00 | -1,997.10 | 31.13 | 1,997.20 | 0.00 | 0.00 | 0.00 | |
| 8,200.00 | 90.00 | 180.00 | 5,955.00 | -2,097.10 | 31.13 | 2,097.20 | 0.00 | 0.00 | 0.00 | |
| 8,300.00 | 90.00 | 180.00 | 5,955.00 | -2,197.10 | 31.12 | 2,197.20 | 0.00 | 0.00 | 0.00 | |
| 8,400.00 | 90.00 | 180.00 | 5,955.00 | -2,297.10 | 31.11 | 2,297.20 | 0.00 | 0.00 | 0.00 | |
| 8,500.00 | 90.00 | 180.00 | 5,955.00 | -2,397.10 | 31.11 | 2,397.20 | 0.00 | 0.00 | 0.00 | |
| 8,600.00 | 90.00 | 180.00 | 5,955.00 | -2,497.10 | 31.10 | 2,497.20 | 0.00 | 0.00 | 0.00 | |
| 8,700.00 | 90.00 | 180.00 | 5,955.00 | -2,597.10 | 31.09 | 2,597.20 | 0.00 | 0.00 | 0.00 | |
| 8,800.00 | 90.00 | 180.00 | 5,955.00 | -2,697.10 | 31.09 | 2,697.20 | 0.00 | 0.00 | 0.00 | |
| 8,900.00 | 90.00 | 180.00 | 5,955.00 | -2,797.10 | 31.08 | 2,797.20 | 0.00 | 0.00 | 0.00 | |
| 9,000.00 | 90.00 | 180.00 | 5,955.00 | -2,897.10 | 31.07 | 2,897.20 | 0.00 | 0.00 | 0.00 | |
| 9,100.00 | 90.00 | 180.00 | 5,955.00 | -2,997.10 | 31.07 | 2,997.20 | 0.00 | 0.00 | 0.00 | |
| 9,200.00 | 90.00 | 180.00 | 5,955.00 | -3,097.10 | 31.06 | 3,097.19 | 0.00 | 0.00 | 0.00 | |
| 9,300.00 | 90.00 | 180.00 | 5,955.00 | -3,197.10 | 31.05 | 3,197.19 | 0.00 | 0.00 | 0.00 | |
| 9,400.00 | 90.00 | 180.00 | 5,955.00 | -3,297.10 | 31.05 | 3,297.19 | 0.00 | 0.00 | 0.00 | |
| 9,500.00 | 90.00 | 180.00 | 5,955.00 | -3,397.10 | 31.04 | 3,397.19 | 0.00 | 0.00 | 0.00 | |
| 9,600.00 | 90.00 | 180.00 | 5,955.00 | -3,497.10 | 31.03 | 3,497.19 | 0.00 | 0.00 | 0.00 | |
| 9,700.00 | 90.00 | 180.00 | 5,955.00 | -3,597.10 | 31.03 | 3,597.19 | 0.00 | 0.00 | 0.00 | |
| 9,800.00 | 90.00 | 180.00 | 5,955.00 | -3,697.10 | 31.02 | 3,697.19 | 0.00 | 0.00 | 0.00 | |
| 9,900.00 | 90.00 | 180.00 | 5,955.00 | -3,797.10 | 31.01 | 3,797.19 | 0.00 | 0.00 | 0.00 | |
| 10,000.00 | 90.00 | 180.00 | 5,955.00 | -3,897.10 | 31.01 | 3,897.19 | 0.00 | 0.00 | 0.00 | |
| 10,100.00 | 90.00 | 180.00 | 5,955.00 | -3,997.10 | 31.00 | 3,997.19 | 0.00 | 0.00 | 0.00 | |
| 10,200.00 | 90.00 | 180.00 | 5,955.00 | -4,097.10 | 31.00 | 4,097.19 | 0.00 | 0.00 | 0.00 | |



WOG
Planning Report

| | | | |
|------------------|-------------------------|-------------------------------------|--|
| Database: | LandmarkEDM | Local Co-ordinate Reference: | Well Horsetail #07H-1847 |
| Company: | Whiting Petroleum Corp. | TVD Reference: | KBE @ 4925.90usft (Original Well Elev) |
| Project: | Weld County, CO | MD Reference: | KBE @ 4925.90usft (Original Well Elev) |
| Site: | Sec 7-T10N-R57W | North Reference: | True |
| Well: | Horsetail #07H-1847 | Survey Calculation Method: | Minimum Curvature |
| Wellbore: | Hz | | |
| Design: | Design #1 | | |

| Planned Survey | | | | | | | | | |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-----------------------|----------------------|---------------------|
| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100ft) | Build Rate (°/100ft) | Turn Rate (°/100ft) |
| 10,300.00 | 90.00 | 180.00 | 5,955.00 | -4,197.10 | 30.99 | 4,197.19 | 0.00 | 0.00 | 0.00 |
| 10,400.00 | 90.00 | 180.00 | 5,955.00 | -4,297.10 | 30.98 | 4,297.19 | 0.00 | 0.00 | 0.00 |
| 10,500.00 | 90.00 | 180.00 | 5,955.00 | -4,397.10 | 30.98 | 4,397.18 | 0.00 | 0.00 | 0.00 |
| 10,600.00 | 90.00 | 180.00 | 5,955.00 | -4,497.10 | 30.97 | 4,497.18 | 0.00 | 0.00 | 0.00 |
| 10,700.00 | 90.00 | 180.00 | 5,955.00 | -4,597.10 | 30.96 | 4,597.18 | 0.00 | 0.00 | 0.00 |
| 10,800.00 | 90.00 | 180.00 | 5,955.00 | -4,697.10 | 30.96 | 4,697.18 | 0.00 | 0.00 | 0.00 |
| 10,900.00 | 90.00 | 180.00 | 5,955.00 | -4,797.10 | 30.95 | 4,797.18 | 0.00 | 0.00 | 0.00 |
| 11,000.00 | 90.00 | 180.00 | 5,955.00 | -4,897.10 | 30.94 | 4,897.18 | 0.00 | 0.00 | 0.00 |
| 11,100.00 | 90.00 | 180.00 | 5,955.00 | -4,997.10 | 30.94 | 4,997.18 | 0.00 | 0.00 | 0.00 |
| 11,200.00 | 90.00 | 180.00 | 5,955.00 | -5,097.10 | 30.93 | 5,097.18 | 0.00 | 0.00 | 0.00 |
| 11,300.00 | 90.00 | 180.00 | 5,955.00 | -5,197.10 | 30.92 | 5,197.18 | 0.00 | 0.00 | 0.00 |
| 11,400.00 | 90.00 | 180.00 | 5,955.00 | -5,297.10 | 30.92 | 5,297.18 | 0.00 | 0.00 | 0.00 |
| 11,500.00 | 90.00 | 180.00 | 5,955.00 | -5,397.10 | 30.91 | 5,397.18 | 0.00 | 0.00 | 0.00 |
| 11,600.00 | 90.00 | 180.00 | 5,955.00 | -5,497.10 | 30.90 | 5,497.18 | 0.00 | 0.00 | 0.00 |
| 11,700.00 | 90.00 | 180.00 | 5,955.00 | -5,597.10 | 30.90 | 5,597.17 | 0.00 | 0.00 | 0.00 |
| 11,800.00 | 90.00 | 180.00 | 5,955.00 | -5,697.10 | 30.89 | 5,697.17 | 0.00 | 0.00 | 0.00 |
| 11,900.00 | 90.00 | 180.00 | 5,955.00 | -5,797.10 | 30.88 | 5,797.17 | 0.00 | 0.00 | 0.00 |
| 12,000.00 | 90.00 | 180.00 | 5,955.00 | -5,897.10 | 30.88 | 5,897.17 | 0.00 | 0.00 | 0.00 |
| 12,100.00 | 90.00 | 180.00 | 5,955.00 | -5,997.10 | 30.87 | 5,997.17 | 0.00 | 0.00 | 0.00 |
| 12,200.00 | 90.00 | 180.00 | 5,955.00 | -6,097.10 | 30.87 | 6,097.17 | 0.00 | 0.00 | 0.00 |
| 12,300.00 | 90.00 | 180.00 | 5,955.00 | -6,197.10 | 30.86 | 6,197.17 | 0.00 | 0.00 | 0.00 |
| 12,400.00 | 90.00 | 180.00 | 5,955.00 | -6,297.10 | 30.85 | 6,297.17 | 0.00 | 0.00 | 0.00 |
| 12,500.00 | 90.00 | 180.00 | 5,955.00 | -6,397.10 | 30.85 | 6,397.17 | 0.00 | 0.00 | 0.00 |
| 12,600.00 | 90.00 | 180.00 | 5,955.00 | -6,497.10 | 30.84 | 6,497.17 | 0.00 | 0.00 | 0.00 |
| 12,700.00 | 90.00 | 180.00 | 5,955.00 | -6,597.10 | 30.83 | 6,597.17 | 0.00 | 0.00 | 0.00 |
| 12,800.00 | 90.00 | 180.00 | 5,955.00 | -6,697.10 | 30.83 | 6,697.17 | 0.00 | 0.00 | 0.00 |
| 12,900.00 | 90.00 | 180.00 | 5,955.00 | -6,797.10 | 30.82 | 6,797.17 | 0.00 | 0.00 | 0.00 |
| 13,000.00 | 90.00 | 180.00 | 5,955.00 | -6,897.10 | 30.81 | 6,897.16 | 0.00 | 0.00 | 0.00 |
| 13,100.00 | 90.00 | 180.00 | 5,955.00 | -6,997.10 | 30.81 | 6,997.16 | 0.00 | 0.00 | 0.00 |
| 13,200.00 | 90.00 | 180.00 | 5,955.00 | -7,097.10 | 30.80 | 7,097.16 | 0.00 | 0.00 | 0.00 |
| 13,300.00 | 90.00 | 180.00 | 5,955.00 | -7,197.10 | 30.79 | 7,197.16 | 0.00 | 0.00 | 0.00 |
| 13,400.00 | 90.00 | 180.00 | 5,955.00 | -7,297.10 | 30.79 | 7,297.16 | 0.00 | 0.00 | 0.00 |
| 13,500.00 | 90.00 | 180.00 | 5,955.00 | -7,397.10 | 30.78 | 7,397.16 | 0.00 | 0.00 | 0.00 |
| 13,600.00 | 90.00 | 180.00 | 5,955.00 | -7,497.10 | 30.77 | 7,497.16 | 0.00 | 0.00 | 0.00 |
| 13,700.00 | 90.00 | 180.00 | 5,955.00 | -7,597.10 | 30.77 | 7,597.16 | 0.00 | 0.00 | 0.00 |
| 13,800.00 | 90.00 | 180.00 | 5,955.00 | -7,697.10 | 30.76 | 7,697.16 | 0.00 | 0.00 | 0.00 |
| 13,900.00 | 90.00 | 180.00 | 5,955.00 | -7,797.10 | 30.75 | 7,797.16 | 0.00 | 0.00 | 0.00 |
| 13,995.97 | 90.00 | 180.00 | 5,955.00 | -7,893.07 | 30.75 | 7,893.13 | 0.00 | 0.00 | 0.00 |
| TD at 13995.97' MD | | | | | | | | | |

| Design Targets | | | | | | | | | |
|---|---------------|--------------|------------|--------------|--------------|-----------------|----------------|------------------|-------------------|
| Target Name | Dip Angle (°) | Dip Dir. (°) | TVD (usft) | +N/-S (usft) | +E/-W (usft) | Northing (usft) | Easting (usft) | Latitude | Longitude |
| PBHL 1847C - hit/miss target - Shape - Point | 0.00 | 0.00 | 5,955.00 | -7,893.07 | 30.75 | 1,550,481.53 | 3,473,956.97 | 40° 49' 54.790 N | 103° 47' 14.010 W |



WOG
Planning Report

| | | | |
|------------------|-------------------------|-------------------------------------|--|
| Database: | LandmarkEDM | Local Co-ordinate Reference: | Well Horsetail #07H-1847 |
| Company: | Whiting Petroleum Corp. | TVD Reference: | KBE @ 4925.90usft (Original Well Elev) |
| Project: | Weld County, CO | MD Reference: | KBE @ 4925.90usft (Original Well Elev) |
| Site: | Sec 7-T10N-R57W | North Reference: | True |
| Well: | Horsetail #07H-1847 | Survey Calculation Method: | Minimum Curvature |
| Wellbore: | Hz | | |
| Design: | Design #1 | | |

| Casing Points | | | | | |
|-----------------------|-----------------------|------|----------------------|--------------------|--|
| Measured Depth (usft) | Vertical Depth (usft) | Name | Casing Diameter (in) | Hole Diameter (in) | |
| 6,266.18 | 5,955.00 | 7" | 7.000 | 8.750 | |

| Formations | | | | | |
|-----------------------|-----------------------|----------------|-----------|---------|-------------------|
| Measured Depth (usft) | Vertical Depth (usft) | Name | Lithology | Dip (°) | Dip Direction (°) |
| 1,553.40 | 1,550.00 | Upper Pierre | | | |
| 3,509.43 | 3,500.00 | Hygiene | | | |
| 3,659.90 | 3,650.00 | Lower Pierre | | | |
| 5,529.20 | 5,515.00 | P200 Marker | | | |
| 5,544.42 | 5,530.00 | P300 Marker | | | |
| 5,564.85 | 5,550.00 | P350 Marker | | | |
| 5,729.36 | 5,702.00 | Sharon Springs | | | |
| 5,735.21 | 5,707.00 | Niobrara | | | |
| 5,759.03 | 5,727.00 | Top A Chalk | | | |
| 5,805.22 | 5,764.00 | Top A Marl | | | |
| 5,830.28 | 5,783.00 | A Marl | | | |
| 5,842.53 | 5,792.00 | Top Upper B | | | |
| 5,882.56 | 5,820.00 | Base Upper B | | | |
| 5,908.60 | 5,837.00 | Top Lower B | | | |
| 5,941.43 | 5,857.00 | Base Lower B | | | |
| 5,953.62 | 5,864.00 | Top B Marl | | | |
| 6,058.14 | 5,914.00 | Top C Chalk | | | |
| 6,079.78 | 5,922.00 | Middle C Chalk | | | |
| 6,125.07 | 5,936.00 | Middle C Marl | | | |
| 6,266.18 | 5,955.00 | Lower C Chalk | | | |

| Plan Annotations | | | | | |
|-----------------------|-----------------------|-------------------|--------------|---------------------|--|
| Measured Depth (usft) | Vertical Depth (usft) | Local Coordinates | | Comment | |
| | | +N/-S (usft) | +E/-W (usft) | | |
| 300.00 | 300.00 | 0.00 | 0.00 | Build 2°/100' | |
| 525.00 | 524.77 | 8.80 | 0.77 | Hold 4.50° Inc | |
| 4,875.00 | 4,861.36 | 348.80 | 30.52 | Drop 2°/100' | |
| 5,100.00 | 5,086.13 | 357.59 | 31.29 | Hold Vertical | |
| 5,448.00 | 5,434.13 | 357.59 | 31.29 | KOP, Build 11°/100' | |
| 6,266.18 | 5,955.00 | -163.28 | 31.25 | LP @ 90° Inc, Hold | |
| 13,995.97 | 5,955.00 | -7,893.07 | 30.75 | TD at 13995.97' MD | |