

Whiting Petroleum Corp.

Weld County, CO

Sec 7-T10N-R57W

Horsetail #07E-1834D

Hz

Plan: Plan #1

Standard Planning Report

29 January, 2015



WOG
Planning Report



| | | | |
|------------------|-------------------------|-------------------------------------|--|
| Database: | LandmarkEDM | Local Co-ordinate Reference: | Well Horsetail #07E-1834D |
| Company: | Whiting Petroleum Corp. | TVD Reference: | KBE @ 4942.70usft (Original Well Elev) |
| Project: | Weld County, CO | MD Reference: | KBE @ 4942.70usft (Original Well Elev) |
| Site: | Sec 7-T10N-R57W | North Reference: | True |
| Well: | Horsetail #07E-1834D | Survey Calculation Method: | Minimum Curvature |
| Wellbore: | Hz | | |
| Design: | Plan #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 #07E-1834D | | | | | |
|----------------------|----------------------|-------------|---------------------|-------------------|---------------|------------------|
| Well Position | +N/-S | -4.03 usft | Northing: | 1,558,448.22 usft | Latitude: | 40° 51' 14.260 N |
| | +E/-W | 109.89 usft | Easting: | 3,469,920.09 usft | Longitude: | 103° 48' 4.530 W |
| Position Uncertainty | | 0.00 usft | Wellhead Elevation: | | Ground Level: | 4,925.70 usft |

| | | | | | |
|------------------|-------------------|--------------------|------------------------|----------------------|----------------------------|
| Wellbore | Hz | | | | |
| Magnetics | Model Name | Sample Date | Declination (°) | Dip Angle (°) | Field Strength (nT) |
| | IGRF2010 | 1/5/2015 | 7.89 | 67.44 | 53,087 |

| | | | | |
|--------------------------|--------------------------------|---------------------|----------------------|----------------------|
| Design | Plan #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 | 182.43 |

| 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 | |
| 800.00 | 10.00 | 297.00 | 797.46 | 19.76 | -38.78 | 2.00 | 2.00 | 0.00 | 297.00 | |
| 3,000.00 | 10.00 | 297.00 | 2,964.04 | 193.19 | -379.17 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 3,500.00 | 0.00 | 0.00 | 3,461.51 | 212.95 | -417.95 | 2.00 | -2.00 | 0.00 | 180.00 | |
| 5,566.40 | 0.00 | 0.00 | 5,527.91 | 212.95 | -417.95 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 6,384.58 | 90.00 | 179.47 | 6,048.78 | -307.89 | -413.09 | 11.00 | 11.00 | 0.00 | 179.47 | PBHL 1834D |
| 6,413.17 | 90.00 | 179.47 | 6,048.78 | -336.48 | -412.83 | 0.01 | -0.01 | 0.00 | 180.00 | |
| 14,122.92 | 90.00 | 179.47 | 6,049.00 | -8,045.89 | -341.00 | 0.00 | 0.00 | 0.00 | 0.00 | PBHL 1834D |



| | | | |
|------------------|-------------------------|-------------------------------------|--|
| Database: | LandmarkEDM | Local Co-ordinate Reference: | Well Horsetail #07E-1834D |
| Company: | Whiting Petroleum Corp. | TVD Reference: | KBE @ 4942.70usft (Original Well Elev) |
| Project: | Weld County, CO | MD Reference: | KBE @ 4942.70usft (Original Well Elev) |
| Site: | Sec 7-T10N-R57W | North Reference: | True |
| Well: | Horsetail #07E-1834D | Survey Calculation Method: | Minimum Curvature |
| Wellbore: | Hz | | |
| Design: | Plan #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 | 297.00 | 399.98 | 0.79 | -1.55 | -0.73 | 2.00 | 2.00 | 0.00 |
| 500.00 | 4.00 | 297.00 | 499.84 | 3.17 | -6.22 | -2.90 | 2.00 | 2.00 | 0.00 |
| 600.00 | 6.00 | 297.00 | 599.45 | 7.12 | -13.98 | -6.53 | 2.00 | 2.00 | 0.00 |
| 700.00 | 8.00 | 297.00 | 698.70 | 12.66 | -24.84 | -11.59 | 2.00 | 2.00 | 0.00 |
| 800.00 | 10.00 | 297.00 | 797.46 | 19.76 | -38.78 | -18.10 | 2.00 | 2.00 | 0.00 |
| Hold 10° Inc, 297° Azm | | | | | | | | | |
| 900.00 | 10.00 | 297.00 | 895.95 | 27.64 | -54.25 | -25.32 | 0.00 | 0.00 | 0.00 |
| 1,000.00 | 10.00 | 297.00 | 994.43 | 35.53 | -69.72 | -32.54 | 0.00 | 0.00 | 0.00 |
| 1,100.00 | 10.00 | 297.00 | 1,092.91 | 43.41 | -85.20 | -39.76 | 0.00 | 0.00 | 0.00 |
| 1,200.00 | 10.00 | 297.00 | 1,191.39 | 51.29 | -100.67 | -46.98 | 0.00 | 0.00 | 0.00 |
| 1,300.00 | 10.00 | 297.00 | 1,289.87 | 59.18 | -116.14 | -54.21 | 0.00 | 0.00 | 0.00 |
| 1,400.00 | 10.00 | 297.00 | 1,388.35 | 67.06 | -131.61 | -61.43 | 0.00 | 0.00 | 0.00 |
| 1,500.00 | 10.00 | 297.00 | 1,486.83 | 74.94 | -147.08 | -68.65 | 0.00 | 0.00 | 0.00 |
| 1,564.14 | 10.00 | 297.00 | 1,550.00 | 80.00 | -157.01 | -73.28 | 0.00 | 0.00 | 0.00 |
| Upper Pierre | | | | | | | | | |
| 1,600.00 | 10.00 | 297.00 | 1,585.31 | 82.83 | -162.56 | -75.87 | 0.00 | 0.00 | 0.00 |
| 1,700.00 | 10.00 | 297.00 | 1,683.79 | 90.71 | -178.03 | -83.09 | 0.00 | 0.00 | 0.00 |
| 1,800.00 | 10.00 | 297.00 | 1,782.27 | 98.59 | -193.50 | -90.31 | 0.00 | 0.00 | 0.00 |
| 1,900.00 | 10.00 | 297.00 | 1,880.75 | 106.48 | -208.97 | -97.53 | 0.00 | 0.00 | 0.00 |
| 2,000.00 | 10.00 | 297.00 | 1,979.23 | 114.36 | -224.44 | -104.75 | 0.00 | 0.00 | 0.00 |
| 2,100.00 | 10.00 | 297.00 | 2,077.72 | 122.24 | -239.92 | -111.98 | 0.00 | 0.00 | 0.00 |
| 2,200.00 | 10.00 | 297.00 | 2,176.20 | 130.13 | -255.39 | -119.20 | 0.00 | 0.00 | 0.00 |
| 2,300.00 | 10.00 | 297.00 | 2,274.68 | 138.01 | -270.86 | -126.42 | 0.00 | 0.00 | 0.00 |
| 2,400.00 | 10.00 | 297.00 | 2,373.16 | 145.89 | -286.33 | -133.64 | 0.00 | 0.00 | 0.00 |
| 2,500.00 | 10.00 | 297.00 | 2,471.64 | 153.78 | -301.81 | -140.86 | 0.00 | 0.00 | 0.00 |
| 2,600.00 | 10.00 | 297.00 | 2,570.12 | 161.66 | -317.28 | -148.08 | 0.00 | 0.00 | 0.00 |
| 2,700.00 | 10.00 | 297.00 | 2,668.60 | 169.54 | -332.75 | -155.30 | 0.00 | 0.00 | 0.00 |
| 2,800.00 | 10.00 | 297.00 | 2,767.08 | 177.43 | -348.22 | -162.52 | 0.00 | 0.00 | 0.00 |
| 2,900.00 | 10.00 | 297.00 | 2,865.56 | 185.31 | -363.69 | -169.75 | 0.00 | 0.00 | 0.00 |
| 3,000.00 | 10.00 | 297.00 | 2,964.04 | 193.19 | -379.17 | -176.97 | 0.00 | 0.00 | 0.00 |
| Drop 2°/100' | | | | | | | | | |
| 3,100.00 | 8.00 | 297.00 | 3,062.81 | 200.30 | -393.10 | -183.47 | 2.00 | -2.00 | 0.00 |
| 3,200.00 | 6.00 | 297.00 | 3,162.06 | 205.83 | -403.96 | -188.54 | 2.00 | -2.00 | 0.00 |
| 3,300.00 | 4.00 | 297.00 | 3,261.67 | 209.79 | -411.73 | -192.16 | 2.00 | -2.00 | 0.00 |
| 3,400.00 | 2.00 | 297.00 | 3,361.53 | 212.16 | -416.39 | -194.34 | 2.00 | -2.00 | 0.00 |
| 3,500.00 | 0.00 | 0.00 | 3,461.51 | 212.95 | -417.95 | -195.07 | 2.00 | -2.00 | 0.00 |
| Hold Vertical | | | | | | | | | |
| 3,538.49 | 0.00 | 0.00 | 3,500.00 | 212.95 | -417.95 | -195.07 | 0.00 | 0.00 | 0.00 |
| Hygiene | | | | | | | | | |
| 3,600.00 | 0.00 | 0.00 | 3,561.51 | 212.95 | -417.95 | -195.07 | 0.00 | 0.00 | 0.00 |
| 3,688.49 | 0.00 | 0.00 | 3,650.00 | 212.95 | -417.95 | -195.07 | 0.00 | 0.00 | 0.00 |
| Lower Pierre | | | | | | | | | |
| 3,700.00 | 0.00 | 0.00 | 3,661.51 | 212.95 | -417.95 | -195.07 | 0.00 | 0.00 | 0.00 |
| 3,800.00 | 0.00 | 0.00 | 3,761.51 | 212.95 | -417.95 | -195.07 | 0.00 | 0.00 | 0.00 |
| 3,900.00 | 0.00 | 0.00 | 3,861.51 | 212.95 | -417.95 | -195.07 | 0.00 | 0.00 | 0.00 |
| 4,000.00 | 0.00 | 0.00 | 3,961.51 | 212.95 | -417.95 | -195.07 | 0.00 | 0.00 | 0.00 |
| 4,100.00 | 0.00 | 0.00 | 4,061.51 | 212.95 | -417.95 | -195.07 | 0.00 | 0.00 | 0.00 |
| 4,200.00 | 0.00 | 0.00 | 4,161.51 | 212.95 | -417.95 | -195.07 | 0.00 | 0.00 | 0.00 |



| | | | |
|------------------|-------------------------|-------------------------------------|--|
| Database: | LandmarkEDM | Local Co-ordinate Reference: | Well Horsetail #07E-1834D |
| Company: | Whiting Petroleum Corp. | TVD Reference: | KBE @ 4942.70usft (Original Well Elev) |
| Project: | Weld County, CO | MD Reference: | KBE @ 4942.70usft (Original Well Elev) |
| Site: | Sec 7-T10N-R57W | North Reference: | True |
| Well: | Horsetail #07E-1834D | Survey Calculation Method: | Minimum Curvature |
| Wellbore: | H2 | | |
| Design: | Plan #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) | |
| 4,300.00 | 0.00 | 0.00 | 4,261.51 | 212.95 | -417.95 | -195.07 | 0.00 | 0.00 | 0.00 | |
| 4,400.00 | 0.00 | 0.00 | 4,361.51 | 212.95 | -417.95 | -195.07 | 0.00 | 0.00 | 0.00 | |
| 4,500.00 | 0.00 | 0.00 | 4,461.51 | 212.95 | -417.95 | -195.07 | 0.00 | 0.00 | 0.00 | |
| 4,600.00 | 0.00 | 0.00 | 4,561.51 | 212.95 | -417.95 | -195.07 | 0.00 | 0.00 | 0.00 | |
| 4,700.00 | 0.00 | 0.00 | 4,661.51 | 212.95 | -417.95 | -195.07 | 0.00 | 0.00 | 0.00 | |
| 4,800.00 | 0.00 | 0.00 | 4,761.51 | 212.95 | -417.95 | -195.07 | 0.00 | 0.00 | 0.00 | |
| 4,900.00 | 0.00 | 0.00 | 4,861.51 | 212.95 | -417.95 | -195.07 | 0.00 | 0.00 | 0.00 | |
| 5,000.00 | 0.00 | 0.00 | 4,961.51 | 212.95 | -417.95 | -195.07 | 0.00 | 0.00 | 0.00 | |
| 5,100.00 | 0.00 | 0.00 | 5,061.51 | 212.95 | -417.95 | -195.07 | 0.00 | 0.00 | 0.00 | |
| 5,200.00 | 0.00 | 0.00 | 5,161.51 | 212.95 | -417.95 | -195.07 | 0.00 | 0.00 | 0.00 | |
| 5,300.00 | 0.00 | 0.00 | 5,261.51 | 212.95 | -417.95 | -195.07 | 0.00 | 0.00 | 0.00 | |
| 5,400.00 | 0.00 | 0.00 | 5,361.51 | 212.95 | -417.95 | -195.07 | 0.00 | 0.00 | 0.00 | |
| 5,500.00 | 0.00 | 0.00 | 5,461.51 | 212.95 | -417.95 | -195.07 | 0.00 | 0.00 | 0.00 | |
| 5,553.49 | 0.00 | 0.00 | 5,515.00 | 212.95 | -417.95 | -195.07 | 0.00 | 0.00 | 0.00 | |
| P200 Marker | | | | | | | | | | |
| 5,566.40 | 0.00 | 0.00 | 5,527.91 | 212.95 | -417.95 | -195.07 | 0.00 | 0.00 | 0.00 | |
| KOP, Build 11°/100' | | | | | | | | | | |
| 5,568.49 | 0.23 | 179.47 | 5,530.00 | 212.95 | -417.95 | -195.06 | 11.00 | 11.00 | 0.00 | |
| P300 Marker | | | | | | | | | | |
| 5,588.50 | 2.43 | 179.47 | 5,550.00 | 212.49 | -417.94 | -194.60 | 11.00 | 11.00 | 0.00 | |
| P350 Marker | | | | | | | | | | |
| 5,600.00 | 3.70 | 179.47 | 5,561.48 | 211.87 | -417.94 | -193.98 | 11.00 | 11.00 | 0.00 | |
| 5,650.00 | 9.20 | 179.47 | 5,611.15 | 206.26 | -417.88 | -188.38 | 11.00 | 11.00 | 0.00 | |
| 5,700.00 | 14.70 | 179.47 | 5,660.05 | 195.91 | -417.79 | -178.05 | 11.00 | 11.00 | 0.00 | |
| 5,743.91 | 19.53 | 179.47 | 5,702.00 | 183.00 | -417.67 | -165.15 | 11.00 | 11.00 | 0.00 | |
| Sharon Springs | | | | | | | | | | |
| 5,749.22 | 20.11 | 179.47 | 5,707.00 | 181.20 | -417.65 | -163.35 | 11.00 | 11.00 | 0.00 | |
| Niobrara | | | | | | | | | | |
| 5,750.00 | 20.20 | 179.47 | 5,707.73 | 180.93 | -417.65 | -163.08 | 11.00 | 11.00 | 0.00 | |
| 5,770.69 | 22.47 | 179.47 | 5,727.00 | 173.40 | -417.58 | -155.57 | 11.00 | 11.00 | 0.00 | |
| Top A Chalk | | | | | | | | | | |
| 5,800.00 | 25.70 | 179.47 | 5,753.76 | 161.45 | -417.47 | -143.62 | 11.00 | 11.00 | 0.00 | |
| 5,811.43 | 26.95 | 179.47 | 5,764.00 | 156.38 | -417.42 | -138.56 | 11.00 | 11.00 | 0.00 | |
| Top A Marl | | | | | | | | | | |
| 5,832.98 | 29.32 | 179.47 | 5,783.00 | 146.22 | -417.32 | -128.41 | 11.00 | 11.00 | 0.00 | |
| A Marl | | | | | | | | | | |
| 5,843.36 | 30.47 | 179.47 | 5,792.00 | 141.04 | -417.28 | -123.25 | 11.00 | 11.00 | 0.00 | |
| Top Upper B | | | | | | | | | | |
| 5,850.00 | 31.20 | 179.47 | 5,797.70 | 137.64 | -417.24 | -119.85 | 11.00 | 11.00 | 0.00 | |
| 5,876.49 | 34.11 | 179.47 | 5,820.00 | 123.35 | -417.11 | -105.58 | 11.00 | 11.00 | 0.00 | |
| Base Upper B | | | | | | | | | | |
| 5,897.31 | 36.40 | 179.47 | 5,837.00 | 111.33 | -417.00 | -93.58 | 11.00 | 11.00 | 0.00 | |
| Top Lower B | | | | | | | | | | |
| 5,900.00 | 36.70 | 179.47 | 5,839.16 | 109.73 | -416.98 | -91.98 | 11.00 | 11.00 | 0.00 | |
| 5,922.62 | 39.18 | 179.47 | 5,857.00 | 95.83 | -416.85 | -78.09 | 11.00 | 11.00 | 0.00 | |
| Base Lower B | | | | | | | | | | |
| 5,931.71 | 40.18 | 179.47 | 5,864.00 | 90.02 | -416.80 | -72.29 | 11.00 | 11.00 | 0.00 | |
| Top B Marl | | | | | | | | | | |
| 5,950.00 | 42.20 | 179.47 | 5,877.76 | 77.98 | -416.69 | -60.26 | 11.00 | 11.00 | 0.00 | |
| 6,000.00 | 47.70 | 179.47 | 5,913.14 | 42.67 | -416.36 | -25.00 | 11.00 | 11.00 | 0.00 | |
| 6,001.29 | 47.84 | 179.47 | 5,914.00 | 41.72 | -416.35 | -24.05 | 11.00 | 11.00 | 0.00 | |
| Top C Chalk | | | | | | | | | | |



| | | | |
|------------------|-------------------------|-------------------------------------|--|
| Database: | LandmarkEDM | Local Co-ordinate Reference: | Well Horsetail #07E-1834D |
| Company: | Whiting Petroleum Corp. | TVD Reference: | KBE @ 4942.70usft (Original Well Elev) |
| Project: | Weld County, CO | MD Reference: | KBE @ 4942.70usft (Original Well Elev) |
| Site: | Sec 7-T10N-R57W | North Reference: | True |
| Well: | Horsetail #07E-1834D | Survey Calculation Method: | Minimum Curvature |
| Wellbore: | Hz | | |
| Design: | Plan #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) | |
| 6,013.36 | 49.17 | 179.47 | 5,922.00 | 32.67 | -416.27 | -15.02 | 11.00 | 11.00 | 0.00 | |
| Middle C Chalk | | | | | | | | | | |
| 6,035.31 | 51.58 | 179.47 | 5,936.00 | 15.77 | -416.11 | 1.87 | 11.00 | 11.00 | 0.00 | |
| Middle C Marl | | | | | | | | | | |
| 6,050.00 | 53.20 | 179.47 | 5,944.96 | 4.13 | -416.00 | 13.48 | 11.00 | 11.00 | 0.00 | |
| 6,067.13 | 55.08 | 179.47 | 5,955.00 | -9.75 | -415.87 | 27.35 | 11.00 | 11.00 | 0.00 | |
| Lower C Chalk | | | | | | | | | | |
| 6,100.00 | 58.70 | 179.47 | 5,972.95 | -37.27 | -415.61 | 54.84 | 11.00 | 11.00 | 0.00 | |
| 6,100.09 | 58.70 | 179.47 | 5,973.00 | -37.35 | -415.61 | 54.92 | 0.00 | 0.00 | 0.00 | |
| Lower C Marl | | | | | | | | | | |
| 6,150.00 | 64.20 | 179.47 | 5,996.84 | -81.17 | -415.21 | 98.68 | 11.02 | 11.02 | 0.00 | |
| 6,167.02 | 66.07 | 179.47 | 6,004.00 | -96.62 | -415.06 | 114.11 | 11.00 | 11.00 | 0.00 | |
| Lower C Marker | | | | | | | | | | |
| 6,179.70 | 67.46 | 179.47 | 6,009.00 | -108.26 | -414.95 | 125.74 | 11.00 | 11.00 | 0.00 | |
| Top Ft. Hays | | | | | | | | | | |
| 6,200.00 | 69.70 | 179.47 | 6,016.41 | -127.16 | -414.78 | 144.61 | 11.00 | 11.00 | 0.00 | |
| 6,240.58 | 74.16 | 179.47 | 6,029.00 | -165.73 | -414.42 | 183.13 | 11.00 | 11.00 | 0.00 | |
| Ft. Hays Marker | | | | | | | | | | |
| 6,250.00 | 75.20 | 179.47 | 6,031.49 | -174.81 | -414.33 | 192.20 | 11.00 | 11.00 | 0.00 | |
| 6,300.00 | 80.70 | 179.47 | 6,041.93 | -223.69 | -413.88 | 241.01 | 11.00 | 11.00 | 0.00 | |
| 6,350.00 | 86.20 | 179.47 | 6,047.63 | -273.34 | -413.41 | 290.60 | 11.00 | 11.00 | 0.00 | |
| 6,384.58 | 90.00 | 179.47 | 6,048.78 | -307.89 | -413.09 | 325.11 | 11.00 | 11.00 | 0.00 | |
| LP @ 90° Inc, Hold - 7" | | | | | | | | | | |
| 6,400.00 | 90.00 | 179.47 | 6,048.78 | -323.31 | -412.95 | 340.51 | 0.01 | -0.01 | 0.00 | |
| 6,413.17 | 90.00 | 179.47 | 6,048.78 | -336.48 | -412.83 | 353.66 | 0.01 | -0.01 | 0.00 | |
| 6,500.00 | 90.00 | 179.47 | 6,048.78 | -423.31 | -412.02 | 440.37 | 0.00 | 0.00 | 0.00 | |
| 6,600.00 | 90.00 | 179.47 | 6,048.78 | -523.30 | -411.09 | 540.24 | 0.00 | 0.00 | 0.00 | |
| 6,700.00 | 90.00 | 179.47 | 6,048.79 | -623.30 | -410.15 | 640.11 | 0.00 | 0.00 | 0.00 | |
| 6,800.00 | 90.00 | 179.47 | 6,048.79 | -723.30 | -409.22 | 739.97 | 0.00 | 0.00 | 0.00 | |
| 6,900.00 | 90.00 | 179.47 | 6,048.79 | -823.29 | -408.29 | 839.84 | 0.00 | 0.00 | 0.00 | |
| 7,000.00 | 90.00 | 179.47 | 6,048.79 | -923.29 | -407.36 | 939.71 | 0.00 | 0.00 | 0.00 | |
| 7,100.00 | 90.00 | 179.47 | 6,048.80 | -1,023.28 | -406.43 | 1,039.57 | 0.00 | 0.00 | 0.00 | |
| 7,200.00 | 90.00 | 179.47 | 6,048.80 | -1,123.28 | -405.50 | 1,139.44 | 0.00 | 0.00 | 0.00 | |
| 7,300.00 | 90.00 | 179.47 | 6,048.80 | -1,223.27 | -404.56 | 1,239.31 | 0.00 | 0.00 | 0.00 | |
| 7,400.00 | 90.00 | 179.47 | 6,048.81 | -1,323.27 | -403.63 | 1,339.17 | 0.00 | 0.00 | 0.00 | |
| 7,500.00 | 90.00 | 179.47 | 6,048.81 | -1,423.26 | -402.70 | 1,439.04 | 0.00 | 0.00 | 0.00 | |
| 7,600.00 | 90.00 | 179.47 | 6,048.81 | -1,523.26 | -401.77 | 1,538.91 | 0.00 | 0.00 | 0.00 | |
| 7,700.00 | 90.00 | 179.47 | 6,048.82 | -1,623.26 | -400.84 | 1,638.77 | 0.00 | 0.00 | 0.00 | |
| 7,800.00 | 90.00 | 179.47 | 6,048.82 | -1,723.25 | -399.91 | 1,738.64 | 0.00 | 0.00 | 0.00 | |
| 7,900.00 | 90.00 | 179.47 | 6,048.82 | -1,823.25 | -398.97 | 1,838.51 | 0.00 | 0.00 | 0.00 | |
| 8,000.00 | 90.00 | 179.47 | 6,048.82 | -1,923.24 | -398.04 | 1,938.37 | 0.00 | 0.00 | 0.00 | |
| 8,100.00 | 90.00 | 179.47 | 6,048.83 | -2,023.24 | -397.11 | 2,038.24 | 0.00 | 0.00 | 0.00 | |
| 8,200.00 | 90.00 | 179.47 | 6,048.83 | -2,123.23 | -396.18 | 2,138.11 | 0.00 | 0.00 | 0.00 | |
| 8,300.00 | 90.00 | 179.47 | 6,048.83 | -2,223.23 | -395.25 | 2,237.97 | 0.00 | 0.00 | 0.00 | |
| 8,400.00 | 90.00 | 179.47 | 6,048.84 | -2,323.23 | -394.32 | 2,337.84 | 0.00 | 0.00 | 0.00 | |
| 8,500.00 | 90.00 | 179.47 | 6,048.84 | -2,423.22 | -393.38 | 2,437.71 | 0.00 | 0.00 | 0.00 | |
| 8,600.00 | 90.00 | 179.47 | 6,048.84 | -2,523.22 | -392.45 | 2,537.57 | 0.00 | 0.00 | 0.00 | |
| 8,700.00 | 90.00 | 179.47 | 6,048.84 | -2,623.21 | -391.52 | 2,637.44 | 0.00 | 0.00 | 0.00 | |
| 8,800.00 | 90.00 | 179.47 | 6,048.85 | -2,723.21 | -390.59 | 2,737.30 | 0.00 | 0.00 | 0.00 | |
| 8,900.00 | 90.00 | 179.47 | 6,048.85 | -2,823.20 | -389.66 | 2,837.17 | 0.00 | 0.00 | 0.00 | |
| 9,000.00 | 90.00 | 179.47 | 6,048.85 | -2,923.20 | -388.73 | 2,937.04 | 0.00 | 0.00 | 0.00 | |
| 9,100.00 | 90.00 | 179.47 | 6,048.86 | -3,023.20 | -387.80 | 3,036.90 | 0.00 | 0.00 | 0.00 | |
| 9,200.00 | 90.00 | 179.47 | 6,048.86 | -3,123.19 | -386.86 | 3,136.77 | 0.00 | 0.00 | 0.00 | |

WOG
Planning Report



| | | | |
|------------------|-------------------------|-------------------------------------|--|
| Database: | LandmarkEDM | Local Co-ordinate Reference: | Well Horsetail #07E-1834D |
| Company: | Whiting Petroleum Corp. | TVD Reference: | KBE @ 4942.70usft (Original Well Elev) |
| Project: | Weld County, CO | MD Reference: | KBE @ 4942.70usft (Original Well Elev) |
| Site: | Sec 7-T10N-R57W | North Reference: | True |
| Well: | Horsetail #07E-1834D | Survey Calculation Method: | Minimum Curvature |
| Wellbore: | Hz | | |
| Design: | Plan #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) | |
| 9,300.00 | 90.00 | 179.47 | 6,048.86 | -3,223.19 | -385.93 | 3,236.64 | 0.00 | 0.00 | 0.00 | |
| 9,400.00 | 90.00 | 179.47 | 6,048.86 | -3,323.18 | -385.00 | 3,336.50 | 0.00 | 0.00 | 0.00 | |
| 9,500.00 | 90.00 | 179.47 | 6,048.87 | -3,423.18 | -384.07 | 3,436.37 | 0.00 | 0.00 | 0.00 | |
| 9,600.00 | 90.00 | 179.47 | 6,048.87 | -3,523.17 | -383.14 | 3,536.24 | 0.00 | 0.00 | 0.00 | |
| 9,700.00 | 90.00 | 179.47 | 6,048.87 | -3,623.17 | -382.21 | 3,636.10 | 0.00 | 0.00 | 0.00 | |
| 9,800.00 | 90.00 | 179.47 | 6,048.88 | -3,723.16 | -381.27 | 3,735.97 | 0.00 | 0.00 | 0.00 | |
| 9,900.00 | 90.00 | 179.47 | 6,048.88 | -3,823.16 | -380.34 | 3,835.84 | 0.00 | 0.00 | 0.00 | |
| 10,000.00 | 90.00 | 179.47 | 6,048.88 | -3,923.16 | -379.41 | 3,935.70 | 0.00 | 0.00 | 0.00 | |
| 10,100.00 | 90.00 | 179.47 | 6,048.88 | -4,023.15 | -378.48 | 4,035.57 | 0.00 | 0.00 | 0.00 | |
| 10,200.00 | 90.00 | 179.47 | 6,048.89 | -4,123.15 | -377.55 | 4,135.44 | 0.00 | 0.00 | 0.00 | |
| 10,300.00 | 90.00 | 179.47 | 6,048.89 | -4,223.14 | -376.62 | 4,235.30 | 0.00 | 0.00 | 0.00 | |
| 10,400.00 | 90.00 | 179.47 | 6,048.89 | -4,323.14 | -375.68 | 4,335.17 | 0.00 | 0.00 | 0.00 | |
| 10,500.00 | 90.00 | 179.47 | 6,048.90 | -4,423.13 | -374.75 | 4,435.04 | 0.00 | 0.00 | 0.00 | |
| 10,600.00 | 90.00 | 179.47 | 6,048.90 | -4,523.13 | -373.82 | 4,534.90 | 0.00 | 0.00 | 0.00 | |
| 10,700.00 | 90.00 | 179.47 | 6,048.90 | -4,623.13 | -372.89 | 4,634.77 | 0.00 | 0.00 | 0.00 | |
| 10,800.00 | 90.00 | 179.47 | 6,048.90 | -4,723.12 | -371.96 | 4,734.64 | 0.00 | 0.00 | 0.00 | |
| 10,900.00 | 90.00 | 179.47 | 6,048.91 | -4,823.12 | -371.03 | 4,834.50 | 0.00 | 0.00 | 0.00 | |
| 11,000.00 | 90.00 | 179.47 | 6,048.91 | -4,923.11 | -370.09 | 4,934.37 | 0.00 | 0.00 | 0.00 | |
| 11,100.00 | 90.00 | 179.47 | 6,048.91 | -5,023.11 | -369.16 | 5,034.24 | 0.00 | 0.00 | 0.00 | |
| 11,200.00 | 90.00 | 179.47 | 6,048.92 | -5,123.10 | -368.23 | 5,134.10 | 0.00 | 0.00 | 0.00 | |
| 11,300.00 | 90.00 | 179.47 | 6,048.92 | -5,223.10 | -367.30 | 5,233.97 | 0.00 | 0.00 | 0.00 | |
| 11,400.00 | 90.00 | 179.47 | 6,048.92 | -5,323.10 | -366.37 | 5,333.83 | 0.00 | 0.00 | 0.00 | |
| 11,500.00 | 90.00 | 179.47 | 6,048.92 | -5,423.09 | -365.44 | 5,433.70 | 0.00 | 0.00 | 0.00 | |
| 11,600.00 | 90.00 | 179.47 | 6,048.93 | -5,523.09 | -364.50 | 5,533.57 | 0.00 | 0.00 | 0.00 | |
| 11,700.00 | 90.00 | 179.47 | 6,048.93 | -5,623.08 | -363.57 | 5,633.43 | 0.00 | 0.00 | 0.00 | |
| 11,800.00 | 90.00 | 179.47 | 6,048.93 | -5,723.08 | -362.64 | 5,733.30 | 0.00 | 0.00 | 0.00 | |
| 11,900.00 | 90.00 | 179.47 | 6,048.94 | -5,823.07 | -361.71 | 5,833.17 | 0.00 | 0.00 | 0.00 | |
| 12,000.00 | 90.00 | 179.47 | 6,048.94 | -5,923.07 | -360.78 | 5,933.03 | 0.00 | 0.00 | 0.00 | |
| 12,100.00 | 90.00 | 179.47 | 6,048.94 | -6,023.07 | -359.85 | 6,032.90 | 0.00 | 0.00 | 0.00 | |
| 12,200.00 | 90.00 | 179.47 | 6,048.94 | -6,123.06 | -358.91 | 6,132.77 | 0.00 | 0.00 | 0.00 | |
| 12,300.00 | 90.00 | 179.47 | 6,048.95 | -6,223.06 | -357.98 | 6,232.63 | 0.00 | 0.00 | 0.00 | |
| 12,400.00 | 90.00 | 179.47 | 6,048.95 | -6,323.05 | -357.05 | 6,332.50 | 0.00 | 0.00 | 0.00 | |
| 12,500.00 | 90.00 | 179.47 | 6,048.95 | -6,423.05 | -356.12 | 6,432.37 | 0.00 | 0.00 | 0.00 | |
| 12,600.00 | 90.00 | 179.47 | 6,048.96 | -6,523.04 | -355.19 | 6,532.23 | 0.00 | 0.00 | 0.00 | |
| 12,700.00 | 90.00 | 179.47 | 6,048.96 | -6,623.04 | -354.26 | 6,632.10 | 0.00 | 0.00 | 0.00 | |
| 12,800.00 | 90.00 | 179.47 | 6,048.96 | -6,723.03 | -353.32 | 6,731.97 | 0.00 | 0.00 | 0.00 | |
| 12,900.00 | 90.00 | 179.47 | 6,048.96 | -6,823.03 | -352.39 | 6,831.83 | 0.00 | 0.00 | 0.00 | |
| 13,000.00 | 90.00 | 179.47 | 6,048.97 | -6,923.03 | -351.46 | 6,931.70 | 0.00 | 0.00 | 0.00 | |
| 13,100.00 | 90.00 | 179.47 | 6,048.97 | -7,023.02 | -350.53 | 7,031.57 | 0.00 | 0.00 | 0.00 | |
| 13,200.00 | 90.00 | 179.47 | 6,048.97 | -7,123.02 | -349.60 | 7,131.43 | 0.00 | 0.00 | 0.00 | |
| 13,300.00 | 90.00 | 179.47 | 6,048.98 | -7,223.01 | -348.67 | 7,231.30 | 0.00 | 0.00 | 0.00 | |
| 13,400.00 | 90.00 | 179.47 | 6,048.98 | -7,323.01 | -347.73 | 7,331.17 | 0.00 | 0.00 | 0.00 | |
| 13,500.00 | 90.00 | 179.47 | 6,048.98 | -7,423.00 | -346.80 | 7,431.03 | 0.00 | 0.00 | 0.00 | |
| 13,600.00 | 90.00 | 179.47 | 6,048.99 | -7,523.00 | -345.87 | 7,530.90 | 0.00 | 0.00 | 0.00 | |
| 13,700.00 | 90.00 | 179.47 | 6,048.99 | -7,623.00 | -344.94 | 7,630.76 | 0.00 | 0.00 | 0.00 | |
| 13,800.00 | 90.00 | 179.47 | 6,048.99 | -7,722.99 | -344.01 | 7,730.63 | 0.00 | 0.00 | 0.00 | |
| 13,900.00 | 90.00 | 179.47 | 6,048.99 | -7,822.99 | -343.08 | 7,830.50 | 0.00 | 0.00 | 0.00 | |
| 14,000.00 | 90.00 | 179.47 | 6,049.00 | -7,922.98 | -342.15 | 7,930.36 | 0.00 | 0.00 | 0.00 | |
| 14,100.00 | 90.00 | 179.47 | 6,049.00 | -8,022.98 | -341.21 | 8,030.23 | 0.00 | 0.00 | 0.00 | |
| 14,122.92 | 90.00 | 179.47 | 6,049.00 | -8,045.89 | -341.00 | 8,053.12 | 0.00 | 0.00 | 0.00 | |
| TD at 14122.99' MD - Top Codell - PBHL 1834D | | | | | | | | | | |



| | | | |
|------------------|-------------------------|-------------------------------------|--|
| Database: | LandmarkEDM | Local Co-ordinate Reference: | Well Horsetail #07E-1834D |
| Company: | Whiting Petroleum Corp. | TVD Reference: | KBE @ 4942.70usft (Original Well Elev) |
| Project: | Weld County, CO | MD Reference: | KBE @ 4942.70usft (Original Well Elev) |
| Site: | Sec 7-T10N-R57W | North Reference: | True |
| Well: | Horsetail #07E-1834D | Survey Calculation Method: | Minimum Curvature |
| Wellbore: | Hz | | |
| Design: | Plan #1 | | |

| Design Targets | | | | | | | | | |
|---------------------------|-----------|----------|----------|-----------|---------|--------------|--------------|------------------|------------------|
| Target Name | Dip Angle | Dip Dir. | TVD | +N/-S | +E/-W | Northing | Easting | Latitude | Longitude |
| - hit/miss target | (°) | (°) | (usft) | (usft) | (usft) | (usft) | (usft) | | |
| - Shape | | | | | | | | | |
| PBHL 1834D | 0.00 | 0.00 | 6,049.00 | -8,045.89 | -341.00 | 1,550,397.27 | 3,469,733.28 | 40° 49' 54.760 N | 103° 48' 8.966 W |
| - plan hits target center | | | | | | | | | |
| - Point | | | | | | | | | |

| Casing Points | | | | | |
|----------------|----------------|------|--|-----------------|---------------|
| Measured Depth | Vertical Depth | Name | | Casing Diameter | Hole Diameter |
| (usft) | (usft) | | | (in) | (in) |
| 6,384.58 | 6,048.78 | 7" | | 7.000 | 7.500 |

| Formations | | | | | | |
|----------------|----------------|-----------------|-----------|-----|---------------|--|
| Measured Depth | Vertical Depth | Name | Lithology | Dip | Dip Direction | |
| (usft) | (usft) | | | (°) | (°) | |
| 1,564.14 | 1,550.00 | Upper Pierre | | | | |
| 3,538.49 | 3,500.00 | Hygiene | | | | |
| 3,688.49 | 3,650.00 | Lower Pierre | | | | |
| 5,553.49 | 5,515.00 | P200 Marker | | | | |
| 5,568.49 | 5,530.00 | P300 Marker | | | | |
| 5,588.50 | 5,550.00 | P350 Marker | | | | |
| 5,743.91 | 5,702.00 | Sharon Springs | | | | |
| 5,749.22 | 5,707.00 | Niobrara | | | | |
| 5,770.69 | 5,727.00 | Top A Chalk | | | | |
| 5,811.43 | 5,764.00 | Top A Marl | | | | |
| 5,832.98 | 5,783.00 | A Marl | | | | |
| 5,843.36 | 5,792.00 | Top Upper B | | | | |
| 5,876.49 | 5,820.00 | Base Upper B | | | | |
| 5,897.31 | 5,837.00 | Top Lower B | | | | |
| 5,922.62 | 5,857.00 | Base Lower B | | | | |
| 5,931.71 | 5,864.00 | Top B Marl | | | | |
| 6,001.29 | 5,914.00 | Top C Chalk | | | | |
| 6,013.36 | 5,922.00 | Middle C Chalk | | | | |
| 6,035.31 | 5,936.00 | Middle C Marl | | | | |
| 6,067.13 | 5,955.00 | Lower C Chalk | | | | |
| 6,100.09 | 5,973.00 | Lower C Marl | | | | |
| 6,167.02 | 6,004.00 | Lower C Marker | | | | |
| 6,179.70 | 6,009.00 | Top Ft. Hays | | | | |
| 6,240.58 | 6,029.00 | Ft. Hays Marker | | | | |
| 14,122.92 | 6,049.00 | Top Codell | | | | |



| | | | |
|------------------|-------------------------|-------------------------------------|--|
| Database: | LandmarkEDM | Local Co-ordinate Reference: | Well Horsetail #07E-1834D |
| Company: | Whiting Petroleum Corp. | TVD Reference: | KBE @ 4942.70usft (Original Well Elev) |
| Project: | Weld County, CO | MD Reference: | KBE @ 4942.70usft (Original Well Elev) |
| Site: | Sec 7-T10N-R57W | North Reference: | True |
| Well: | Horsetail #07E-1834D | Survey Calculation Method: | Minimum Curvature |
| Wellbore: | Hz | | |
| Design: | Plan #1 | | |

| 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' |
| 800.00 | 797.46 | 19.76 | -38.78 | Hold 10° Inc, 297° Azm |
| 3,000.00 | 2,964.04 | 193.19 | -379.17 | Drop 2°/100' |
| 3,500.00 | 3,461.51 | 212.95 | -417.95 | Hold Vertical |
| 5,566.40 | 5,527.91 | 212.95 | -417.95 | KOP, Build 11°/100' |
| 6,384.58 | 6,048.78 | -307.89 | -412.64 | LP @ 90° Inc, Hold |
| 14,122.99 | 6,049.00 | -8,045.89 | -333.79 | TD at 14122.99' MD |