

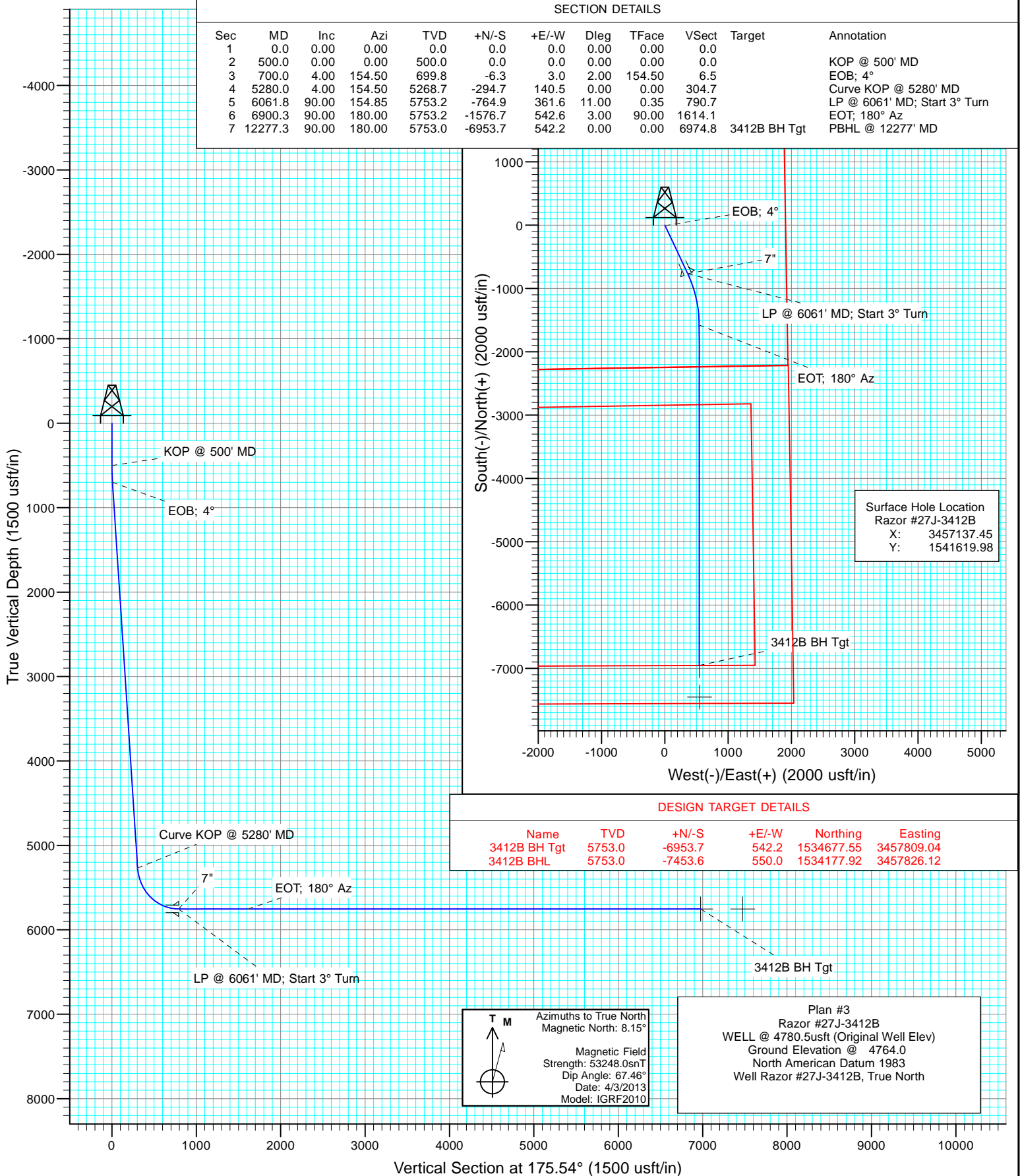


Project: Weld County, CO
Site: S27-T10N-R58W
Well: Razor #27J-3412B
Wellbore: HZ
Design: Plan #3



SECTION DETAILS

| Sec | MD | Inc | Azi | TVD | +N/-S | +E/-W | Dleg | TFace | VSect | Target | Annotation |
|-----|---------|-------|--------|--------|---------|-------|-------|--------|--------|--------------|------------------------------|
| 1 | 0.0 | 0.00 | 0.00 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.0 | | |
| 2 | 500.0 | 0.00 | 0.00 | 500.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.0 | | KOP @ 500' MD |
| 3 | 700.0 | 4.00 | 154.50 | 699.8 | -6.3 | 3.0 | 2.00 | 154.50 | 6.5 | | EOB; 4° |
| 4 | 5280.0 | 4.00 | 154.50 | 5268.7 | -294.7 | 140.5 | 0.00 | 0.00 | 304.7 | | Curve KOP @ 5280' MD |
| 5 | 6061.8 | 90.00 | 154.85 | 5753.2 | -764.9 | 361.6 | 11.00 | 0.35 | 790.7 | | LP @ 6061' MD; Start 3° Turn |
| 6 | 6900.3 | 90.00 | 180.00 | 5753.2 | -1576.7 | 542.6 | 3.00 | 90.00 | 1614.1 | | EOT; 180° Az |
| 7 | 12277.3 | 90.00 | 180.00 | 5753.0 | -6953.7 | 542.2 | 0.00 | 0.00 | 6974.8 | 3412B BH Tgt | PBHL @ 12277' MD |



Cathedral Energy Services

Planning Report

| | | | |
|------------------|-------------------------------|-------------------------------------|----------------------------------------|
| Database: | USA EDM 5000 Multi Users DB | Local Co-ordinate Reference: | Well Razor #27J-3412B |
| Company: | Whiting Petroleum Corporation | TVD Reference: | WELL @ 4780.5usft (Original Well Elev) |
| Project: | Weld County, CO | MD Reference: | WELL @ 4780.5usft (Original Well Elev) |
| Site: | S27-T10N-R58W | North Reference: | True |
| Well: | Razor #27J-3412B | Survey Calculation Method: | Minimum Curvature |
| Wellbore: | HZ | | |
| Design: | Plan #3 | | |

| | | | |
|--------------------|---------------------------|----------------------|----------------|
| 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 | | S27-T10N-R58W | | | |
| Site Position: | | Northing: | 1,541,647.64 usft | Latitude: | 40° 48' 30.94 N |
| From: | Lat/Long | Easting: | 3,455,684.98 usft | Longitude: | 103° 51' 13.80 W |
| Position Uncertainty: | 0.0 usft | Slot Radius: | 13-3/16 " | Grid Convergence: | 1.06 ° |

| | | | | | | |
|----------------------|------------------|----------|---------------------|-------------------|---------------|------------------|
| Well | Razor #27J-3412B | | | | | |
| Well Position | +N/-S | 0.0 usft | Northing: | 1,541,619.98 usft | Latitude: | 40° 48' 30.40 N |
| | +E/-W | 0.0 usft | Easting: | 3,457,137.45 usft | Longitude: | 103° 50' 54.92 W |
| Position Uncertainty | | 0.0 usft | Wellhead Elevation: | usft | Ground Level: | 4,764.0 usft |

| | | | | | |
|------------------|-------------------|--------------------|------------------------|----------------------|----------------------------|
| Wellbore | HZ | | | | |
| Magnetics | Model Name | Sample Date | Declination (°) | Dip Angle (°) | Field Strength (nT) |
| | IGRF2010 | 4/3/2013 | 8.15 | 67.46 | 53,248 |

| | | | | | |
|--------------------------|--------------------------------|---------------------|----------------------|----------------------|--|
| Design | Plan #3 | | | | |
| Audit Notes: | | | | | |
| Version: | Phase: | PLAN | Tie On Depth: | 0.0 | |
| Vertical Section: | Depth From (TVD) (usft) | +N/-S (usft) | +E/-W (usft) | Direction (°) | |
| | 0.0 | 0.0 | 0.0 | 175.54 | |

| Plan Sections | | | | | | | | | | |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|------------------------|-----------------------|---------|--------------|
| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) | TFO (°) | Target |
| 0.0 | 0.00 | 0.00 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 500.0 | 0.00 | 0.00 | 500.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 700.0 | 4.00 | 154.50 | 699.8 | -6.3 | 3.0 | 2.00 | 2.00 | 0.00 | 154.50 | |
| 5,280.0 | 4.00 | 154.50 | 5,268.7 | -294.7 | 140.5 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 6,061.8 | 90.00 | 154.85 | 5,753.2 | -764.9 | 361.6 | 11.00 | 11.00 | 0.04 | 0.35 | |
| 6,900.3 | 90.00 | 180.00 | 5,753.2 | -1,576.7 | 542.6 | 3.00 | 0.00 | 3.00 | 90.00 | |
| 12,277.3 | 90.00 | 180.00 | 5,753.0 | -6,953.7 | 542.2 | 0.00 | 0.00 | 0.00 | 0.00 | 3412B BH Tgt |

Cathedral Energy Services

Planning Report

| | | | |
|------------------|-------------------------------|-------------------------------------|----------------------------------------|
| Database: | USA EDM 5000 Multi Users DB | Local Co-ordinate Reference: | Well Razor #27J-3412B |
| Company: | Whiting Petroleum Corporation | TVD Reference: | WELL @ 4780.5usft (Original Well Elev) |
| Project: | Weld County, CO | MD Reference: | WELL @ 4780.5usft (Original Well Elev) |
| Site: | S27-T10N-R58W | North Reference: | True |
| Well: | Razor #27J-3412B | Survey Calculation Method: | Minimum Curvature |
| Wellbore: | HZ | | |
| Design: | Plan #3 | | |

Planned Survey

| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100u) | Comments / Formations |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|---------------------|-----------------------|
| 0.0 | 0.00 | 0.00 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | |
| 100.0 | 0.00 | 0.00 | 100.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | |
| 200.0 | 0.00 | 0.00 | 200.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | |
| 300.0 | 0.00 | 0.00 | 300.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | |
| 400.0 | 0.00 | 0.00 | 400.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | |
| 500.0 | 0.00 | 0.00 | 500.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | KOP @ 500' MD |
| 600.0 | 2.00 | 154.50 | 600.0 | -1.6 | 0.8 | 1.6 | 2.00 | 2.00 | |
| 700.0 | 4.00 | 154.50 | 699.8 | -6.3 | 3.0 | 6.5 | 2.00 | 2.00 | EOB; 4° |
| 800.0 | 4.00 | 154.50 | 799.6 | -12.6 | 6.0 | 13.0 | 0.00 | 0.00 | |
| 900.0 | 4.00 | 154.50 | 899.3 | -18.9 | 9.0 | 19.5 | 0.00 | 0.00 | |
| 1,000.0 | 4.00 | 154.50 | 999.1 | -25.2 | 12.0 | 26.0 | 0.00 | 0.00 | |
| 1,100.0 | 4.00 | 154.50 | 1,098.9 | -31.5 | 15.0 | 32.6 | 0.00 | 0.00 | |
| 1,200.0 | 4.00 | 154.50 | 1,198.6 | -37.8 | 18.0 | 39.1 | 0.00 | 0.00 | |
| 1,300.0 | 4.00 | 154.50 | 1,298.4 | -44.1 | 21.0 | 45.6 | 0.00 | 0.00 | |
| 1,400.0 | 4.00 | 154.50 | 1,398.1 | -50.4 | 24.0 | 52.1 | 0.00 | 0.00 | |
| 1,500.0 | 4.00 | 154.50 | 1,497.9 | -56.7 | 27.0 | 58.6 | 0.00 | 0.00 | |
| 1,600.0 | 4.00 | 154.50 | 1,597.6 | -63.0 | 30.0 | 65.1 | 0.00 | 0.00 | |
| 1,700.0 | 4.00 | 154.50 | 1,697.4 | -69.3 | 33.0 | 71.6 | 0.00 | 0.00 | |
| 1,800.0 | 4.00 | 154.50 | 1,797.2 | -75.6 | 36.0 | 78.1 | 0.00 | 0.00 | |
| 1,900.0 | 4.00 | 154.50 | 1,896.9 | -81.9 | 39.0 | 84.6 | 0.00 | 0.00 | |
| 2,000.0 | 4.00 | 154.50 | 1,996.7 | -88.1 | 42.0 | 91.1 | 0.00 | 0.00 | |
| 2,100.0 | 4.00 | 154.50 | 2,096.4 | -94.4 | 45.0 | 97.7 | 0.00 | 0.00 | |
| 2,200.0 | 4.00 | 154.50 | 2,196.2 | -100.7 | 48.1 | 104.2 | 0.00 | 0.00 | |
| 2,300.0 | 4.00 | 154.50 | 2,295.9 | -107.0 | 51.1 | 110.7 | 0.00 | 0.00 | |
| 2,400.0 | 4.00 | 154.50 | 2,395.7 | -113.3 | 54.1 | 117.2 | 0.00 | 0.00 | |
| 2,500.0 | 4.00 | 154.50 | 2,495.4 | -119.6 | 57.1 | 123.7 | 0.00 | 0.00 | |
| 2,600.0 | 4.00 | 154.50 | 2,595.2 | -125.9 | 60.1 | 130.2 | 0.00 | 0.00 | |
| 2,700.0 | 4.00 | 154.50 | 2,695.0 | -132.2 | 63.1 | 136.7 | 0.00 | 0.00 | |
| 2,800.0 | 4.00 | 154.50 | 2,794.7 | -138.5 | 66.1 | 143.2 | 0.00 | 0.00 | |
| 2,900.0 | 4.00 | 154.50 | 2,894.5 | -144.8 | 69.1 | 149.7 | 0.00 | 0.00 | |
| 3,000.0 | 4.00 | 154.50 | 2,994.2 | -151.1 | 72.1 | 156.3 | 0.00 | 0.00 | |
| 3,100.0 | 4.00 | 154.50 | 3,094.0 | -157.4 | 75.1 | 162.8 | 0.00 | 0.00 | |
| 3,200.0 | 4.00 | 154.50 | 3,193.7 | -163.7 | 78.1 | 169.3 | 0.00 | 0.00 | |
| 3,300.0 | 4.00 | 154.50 | 3,293.5 | -170.0 | 81.1 | 175.8 | 0.00 | 0.00 | |
| 3,400.0 | 4.00 | 154.50 | 3,393.3 | -176.3 | 84.1 | 182.3 | 0.00 | 0.00 | |
| 3,500.0 | 4.00 | 154.50 | 3,493.0 | -182.6 | 87.1 | 188.8 | 0.00 | 0.00 | |
| 3,600.0 | 4.00 | 154.50 | 3,592.8 | -188.9 | 90.1 | 195.3 | 0.00 | 0.00 | |
| 3,700.0 | 4.00 | 154.50 | 3,692.5 | -195.2 | 93.1 | 201.8 | 0.00 | 0.00 | |
| 3,800.0 | 4.00 | 154.50 | 3,792.3 | -201.5 | 96.1 | 208.3 | 0.00 | 0.00 | |
| 3,900.0 | 4.00 | 154.50 | 3,892.0 | -207.8 | 99.1 | 214.8 | 0.00 | 0.00 | |
| 4,000.0 | 4.00 | 154.50 | 3,991.8 | -214.1 | 102.1 | 221.4 | 0.00 | 0.00 | |
| 4,100.0 | 4.00 | 154.50 | 4,091.5 | -220.4 | 105.1 | 227.9 | 0.00 | 0.00 | |
| 4,200.0 | 4.00 | 154.50 | 4,191.3 | -226.7 | 108.1 | 234.4 | 0.00 | 0.00 | |
| 4,300.0 | 4.00 | 154.50 | 4,291.1 | -233.0 | 111.1 | 240.9 | 0.00 | 0.00 | |
| 4,400.0 | 4.00 | 154.50 | 4,390.8 | -239.3 | 114.1 | 247.4 | 0.00 | 0.00 | |
| 4,500.0 | 4.00 | 154.50 | 4,490.6 | -245.6 | 117.1 | 253.9 | 0.00 | 0.00 | |
| 4,600.0 | 4.00 | 154.50 | 4,590.3 | -251.8 | 120.1 | 260.4 | 0.00 | 0.00 | |
| 4,700.0 | 4.00 | 154.50 | 4,690.1 | -258.1 | 123.1 | 266.9 | 0.00 | 0.00 | |
| 4,800.0 | 4.00 | 154.50 | 4,789.8 | -264.4 | 126.1 | 273.4 | 0.00 | 0.00 | |
| 4,900.0 | 4.00 | 154.50 | 4,889.6 | -270.7 | 129.1 | 280.0 | 0.00 | 0.00 | |
| 5,000.0 | 4.00 | 154.50 | 4,989.4 | -277.0 | 132.1 | 286.5 | 0.00 | 0.00 | |
| 5,100.0 | 4.00 | 154.50 | 5,089.1 | -283.3 | 135.1 | 293.0 | 0.00 | 0.00 | |

Cathedral Energy Services

Planning Report

| | | | |
|------------------|-------------------------------|-------------------------------------|----------------------------------------|
| Database: | USA EDM 5000 Multi Users DB | Local Co-ordinate Reference: | Well Razor #27J-3412B |
| Company: | Whiting Petroleum Corporation | TVD Reference: | WELL @ 4780.5usft (Original Well Elev) |
| Project: | Weld County, CO | MD Reference: | WELL @ 4780.5usft (Original Well Elev) |
| Site: | S27-T10N-R58W | North Reference: | True |
| Well: | Razor #27J-3412B | Survey Calculation Method: | Minimum Curvature |
| Wellbore: | HZ | | |
| Design: | Plan #3 | | |

| Planned Survey | | | | | | | | | |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|---------------------|-----------------------------------|
| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100u) | Comments / Formations |
| 5,200.0 | 4.00 | 154.50 | 5,188.9 | -289.6 | 138.1 | 299.5 | 0.00 | 0.00 | |
| 5,280.0 | 4.00 | 154.50 | 5,268.7 | -294.7 | 140.5 | 304.7 | 0.00 | 0.00 | Curve KOP @ 5280' MD |
| 5,300.0 | 6.20 | 154.62 | 5,288.6 | -296.3 | 141.3 | 306.4 | 11.00 | 11.00 | |
| 5,400.0 | 17.20 | 154.77 | 5,386.4 | -314.6 | 150.0 | 325.3 | 11.00 | 11.00 | |
| 5,500.0 | 28.20 | 154.80 | 5,478.5 | -349.4 | 166.4 | 361.3 | 11.00 | 11.00 | |
| 5,600.0 | 39.20 | 154.82 | 5,561.5 | -399.6 | 189.9 | 413.1 | 11.00 | 11.00 | |
| 5,700.0 | 50.20 | 154.83 | 5,632.5 | -463.1 | 219.8 | 478.8 | 11.00 | 11.00 | |
| 5,800.0 | 61.20 | 154.84 | 5,688.8 | -537.8 | 254.9 | 556.0 | 11.00 | 11.00 | |
| 5,900.0 | 72.20 | 154.84 | 5,728.3 | -620.8 | 293.9 | 641.8 | 11.00 | 11.00 | |
| 6,000.0 | 83.20 | 154.85 | 5,749.5 | -709.1 | 335.3 | 733.0 | 11.00 | 11.00 | |
| 6,061.8 | 90.00 | 154.85 | 5,753.2 | -764.9 | 361.6 | 790.7 | 11.00 | 11.00 | LP @ 6061' MD; Start 3° Turn - 7" |
| 6,100.0 | 90.00 | 156.00 | 5,753.2 | -799.6 | 377.4 | 826.6 | 3.00 | 0.00 | |
| 6,200.0 | 90.00 | 159.00 | 5,753.2 | -892.0 | 415.7 | 921.6 | 3.00 | 0.00 | |
| 6,300.0 | 90.00 | 162.00 | 5,753.2 | -986.3 | 449.1 | 1,018.2 | 3.00 | 0.00 | |
| 6,400.0 | 90.00 | 165.00 | 5,753.2 | -1,082.1 | 477.5 | 1,116.0 | 3.00 | 0.00 | |
| 6,500.0 | 90.00 | 168.00 | 5,753.2 | -1,179.4 | 500.8 | 1,214.7 | 3.00 | 0.00 | |
| 6,600.0 | 90.00 | 171.00 | 5,753.2 | -1,277.7 | 519.1 | 1,314.1 | 3.00 | 0.00 | |
| 6,700.0 | 90.00 | 174.00 | 5,753.2 | -1,376.8 | 532.1 | 1,414.0 | 3.00 | 0.00 | |
| 6,800.0 | 90.00 | 177.00 | 5,753.2 | -1,476.5 | 540.0 | 1,514.0 | 3.00 | 0.00 | |
| 6,900.0 | 90.00 | 180.00 | 5,753.2 | -1,576.4 | 542.6 | 1,613.8 | 3.00 | 0.00 | |
| 6,900.3 | 90.00 | 180.00 | 5,753.2 | -1,576.7 | 542.6 | 1,614.2 | 2.91 | 0.00 | EOT; 180° Az |
| 7,000.0 | 90.00 | 180.00 | 5,753.2 | -1,676.4 | 542.6 | 1,713.5 | 0.00 | 0.00 | |
| 7,100.0 | 90.00 | 180.00 | 5,753.2 | -1,776.4 | 542.6 | 1,813.2 | 0.00 | 0.00 | |
| 7,200.0 | 90.00 | 180.00 | 5,753.2 | -1,876.4 | 542.6 | 1,912.9 | 0.00 | 0.00 | |
| 7,300.0 | 90.00 | 180.00 | 5,753.2 | -1,976.4 | 542.6 | 2,012.6 | 0.00 | 0.00 | |
| 7,400.0 | 90.00 | 180.00 | 5,753.2 | -2,076.4 | 542.6 | 2,112.3 | 0.00 | 0.00 | |
| 7,500.0 | 90.00 | 180.00 | 5,753.2 | -2,176.4 | 542.6 | 2,212.0 | 0.00 | 0.00 | |
| 7,600.0 | 90.00 | 180.00 | 5,753.2 | -2,276.4 | 542.6 | 2,311.7 | 0.00 | 0.00 | |
| 7,700.0 | 90.00 | 180.00 | 5,753.2 | -2,376.4 | 542.6 | 2,411.4 | 0.00 | 0.00 | |
| 7,800.0 | 90.00 | 180.00 | 5,753.2 | -2,476.4 | 542.5 | 2,511.1 | 0.00 | 0.00 | |
| 7,900.0 | 90.00 | 180.00 | 5,753.2 | -2,576.4 | 542.5 | 2,610.8 | 0.00 | 0.00 | |
| 8,000.0 | 90.00 | 180.00 | 5,753.2 | -2,676.4 | 542.5 | 2,710.5 | 0.00 | 0.00 | |
| 8,100.0 | 90.00 | 180.00 | 5,753.1 | -2,776.4 | 542.5 | 2,810.2 | 0.00 | 0.00 | |
| 8,200.0 | 90.00 | 180.00 | 5,753.1 | -2,876.4 | 542.5 | 2,909.9 | 0.00 | 0.00 | |
| 8,300.0 | 90.00 | 180.00 | 5,753.1 | -2,976.4 | 542.5 | 3,009.6 | 0.00 | 0.00 | |
| 8,400.0 | 90.00 | 180.00 | 5,753.1 | -3,076.4 | 542.5 | 3,109.3 | 0.00 | 0.00 | |
| 8,500.0 | 90.00 | 180.00 | 5,753.1 | -3,176.4 | 542.5 | 3,209.0 | 0.00 | 0.00 | |
| 8,600.0 | 90.00 | 180.00 | 5,753.1 | -3,276.4 | 542.5 | 3,308.7 | 0.00 | 0.00 | |
| 8,700.0 | 90.00 | 180.00 | 5,753.1 | -3,376.4 | 542.5 | 3,408.4 | 0.00 | 0.00 | |
| 8,800.0 | 90.00 | 180.00 | 5,753.1 | -3,476.4 | 542.5 | 3,508.1 | 0.00 | 0.00 | |
| 8,900.0 | 90.00 | 180.00 | 5,753.1 | -3,576.4 | 542.5 | 3,607.8 | 0.00 | 0.00 | |
| 9,000.0 | 90.00 | 180.00 | 5,753.1 | -3,676.4 | 542.4 | 3,707.5 | 0.00 | 0.00 | |
| 9,100.0 | 90.00 | 180.00 | 5,753.1 | -3,776.4 | 542.4 | 3,807.2 | 0.00 | 0.00 | |
| 9,200.0 | 90.00 | 180.00 | 5,753.1 | -3,876.4 | 542.4 | 3,906.9 | 0.00 | 0.00 | |
| 9,300.0 | 90.00 | 180.00 | 5,753.1 | -3,976.4 | 542.4 | 4,006.6 | 0.00 | 0.00 | |
| 9,400.0 | 90.00 | 180.00 | 5,753.1 | -4,076.4 | 542.4 | 4,106.3 | 0.00 | 0.00 | |
| 9,500.0 | 90.00 | 180.00 | 5,753.1 | -4,176.4 | 542.4 | 4,206.0 | 0.00 | 0.00 | |
| 9,600.0 | 90.00 | 180.00 | 5,753.1 | -4,276.4 | 542.4 | 4,305.6 | 0.00 | 0.00 | |
| 9,700.0 | 90.00 | 180.00 | 5,753.1 | -4,376.4 | 542.4 | 4,405.3 | 0.00 | 0.00 | |
| 9,800.0 | 90.00 | 180.00 | 5,753.1 | -4,476.4 | 542.4 | 4,505.0 | 0.00 | 0.00 | |
| 9,900.0 | 90.00 | 180.00 | 5,753.1 | -4,576.4 | 542.4 | 4,604.7 | 0.00 | 0.00 | |
| 10,000.0 | 90.00 | 180.00 | 5,753.1 | -4,676.4 | 542.4 | 4,704.4 | 0.00 | 0.00 | |

Cathedral Energy Services

Planning Report

| | | | |
|------------------|-------------------------------|-------------------------------------|----------------------------------------|
| Database: | USA EDM 5000 Multi Users DB | Local Co-ordinate Reference: | Well Razor #27J-3412B |
| Company: | Whiting Petroleum Corporation | TVD Reference: | WELL @ 4780.5usft (Original Well Elev) |
| Project: | Weld County, CO | MD Reference: | WELL @ 4780.5usft (Original Well Elev) |
| Site: | S27-T10N-R58W | North Reference: | True |
| Well: | Razor #27J-3412B | Survey Calculation Method: | Minimum Curvature |
| Wellbore: | HZ | | |
| Design: | Plan #3 | | |

| Planned Survey | | | | | | | | | |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|---------------------|-----------------------|
| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100u) | Comments / Formations |
| 10,100.0 | 90.00 | 180.00 | 5,753.1 | -4,776.4 | 542.4 | 4,804.1 | 0.00 | 0.00 | |
| 10,200.0 | 90.00 | 180.00 | 5,753.1 | -4,876.4 | 542.4 | 4,903.8 | 0.00 | 0.00 | |
| 10,300.0 | 90.00 | 180.00 | 5,753.1 | -4,976.4 | 542.3 | 5,003.5 | 0.00 | 0.00 | |
| 10,400.0 | 90.00 | 180.00 | 5,753.1 | -5,076.4 | 542.3 | 5,103.2 | 0.00 | 0.00 | |
| 10,500.0 | 90.00 | 180.00 | 5,753.1 | -5,176.4 | 542.3 | 5,202.9 | 0.00 | 0.00 | |
| 10,600.0 | 90.00 | 180.00 | 5,753.1 | -5,276.4 | 542.3 | 5,302.6 | 0.00 | 0.00 | |
| 10,700.0 | 90.00 | 180.00 | 5,753.1 | -5,376.4 | 542.3 | 5,402.3 | 0.00 | 0.00 | |
| 10,800.0 | 90.00 | 180.00 | 5,753.1 | -5,476.4 | 542.3 | 5,502.0 | 0.00 | 0.00 | |
| 10,900.0 | 90.00 | 180.00 | 5,753.0 | -5,576.4 | 542.3 | 5,601.7 | 0.00 | 0.00 | |
| 11,000.0 | 90.00 | 180.00 | 5,753.0 | -5,676.4 | 542.3 | 5,701.4 | 0.00 | 0.00 | |
| 11,100.0 | 90.00 | 180.00 | 5,753.0 | -5,776.4 | 542.3 | 5,801.1 | 0.00 | 0.00 | |
| 11,200.0 | 90.00 | 180.00 | 5,753.0 | -5,876.4 | 542.3 | 5,900.8 | 0.00 | 0.00 | |
| 11,300.0 | 90.00 | 180.00 | 5,753.0 | -5,976.4 | 542.3 | 6,000.5 | 0.00 | 0.00 | |
| 11,400.0 | 90.00 | 180.00 | 5,753.0 | -6,076.4 | 542.3 | 6,100.2 | 0.00 | 0.00 | |
| 11,500.0 | 90.00 | 180.00 | 5,753.0 | -6,176.4 | 542.3 | 6,199.9 | 0.00 | 0.00 | |
| 11,600.0 | 90.00 | 180.00 | 5,753.0 | -6,276.4 | 542.2 | 6,299.6 | 0.00 | 0.00 | |
| 11,700.0 | 90.00 | 180.00 | 5,753.0 | -6,376.4 | 542.2 | 6,399.3 | 0.00 | 0.00 | |
| 11,800.0 | 90.00 | 180.00 | 5,753.0 | -6,476.4 | 542.2 | 6,499.0 | 0.00 | 0.00 | |
| 11,900.0 | 90.00 | 180.00 | 5,753.0 | -6,576.4 | 542.2 | 6,598.7 | 0.00 | 0.00 | |
| 12,000.0 | 90.00 | 180.00 | 5,753.0 | -6,676.4 | 542.2 | 6,698.4 | 0.00 | 0.00 | |
| 12,100.0 | 90.00 | 180.00 | 5,753.0 | -6,776.4 | 542.2 | 6,798.1 | 0.00 | 0.00 | |
| 12,200.0 | 90.00 | 180.00 | 5,753.0 | -6,876.4 | 542.2 | 6,897.8 | 0.00 | 0.00 | |
| 12,277.3 | 90.00 | 180.00 | 5,753.0 | -6,953.7 | 542.2 | 6,974.8 | 0.00 | 0.00 | PBHL @ 12277' MD |

| Targets | | | | | | | | | |
|---------------------------------------------------------------------------------------------------------------------|---------------|--------------|------------|--------------|--------------|-----------------|----------------|-----------------|------------------|
| Target Name | Dip Angle (°) | Dip Dir. (°) | TVD (usft) | +N/-S (usft) | +E/-W (usft) | Northing (usft) | Easting (usft) | Latitude | Longitude |
| 3412B BH Tgt - hit/miss target - Shape | 0.00 | 1.07 | 5,753.0 | -6,953.7 | 542.2 | 1,534,677.55 | 3,457,809.04 | 40° 47' 21.69 N | 103° 50' 47.87 W |
| 3412B BHL - plan misses target center by 499.9usft at 12277.3usft MD (5753.0 TVD, -6953.7 N, 542.2 E) - Point | 0.00 | 1.07 | 5,753.0 | -7,453.6 | 550.0 | 1,534,177.92 | 3,457,826.12 | 40° 47' 16.75 N | 103° 50' 47.77 W |

| Casing Points | | | | | |
|-----------------------|-----------------------|------|---------------------|-------------------|--|
| Measured Depth (usft) | Vertical Depth (usft) | Name | Casing Diameter (") | Hole Diameter (") | |
| 6,061.8 | 5,753.2 | 7" | 0 | 0 | |

Cathedral Energy Services

Planning Report

| | | | |
|------------------|-------------------------------|-------------------------------------|----------------------------------------|
| Database: | USA EDM 5000 Multi Users DB | Local Co-ordinate Reference: | Well Razor #27J-3412B |
| Company: | Whiting Petroleum Corporation | TVD Reference: | WELL @ 4780.5usft (Original Well Elev) |
| Project: | Weld County, CO | MD Reference: | WELL @ 4780.5usft (Original Well Elev) |
| Site: | S27-T10N-R58W | North Reference: | True |
| Well: | Razor #27J-3412B | Survey Calculation Method: | Minimum Curvature |
| Wellbore: | HZ | | |
| Design: | Plan #3 | | |

| Plan Annotations | | | | |
|-----------------------------|-----------------------------|-------------------|-----------------|------------------------------|
| Measured Depth (usft) | Vertical Depth (usft) | Local Coordinates | | Comment |
| | | +N/-S (usft) | +E/-W (usft) | |
| 500.0 | 500.0 | 0.0 | 0.0 | KOP @ 500' MD |
| 700.0 | 699.8 | -6.3 | 3.0 | EOB; 4° |
| 5,280.0 | 5,268.7 | -294.7 | 140.5 | Curve KOP @ 5280' MD |
| 6,061.8 | 5,753.2 | -764.9 | 361.6 | LP @ 6061' MD; Start 3° Turn |
| 6,900.3 | 5,753.2 | -1,576.7 | 542.6 | EOT; 180° Az |
| 12,277.3 | 5,753.0 | -6,953.7 | 542.2 | PBHL @ 12277' MD |

Whiting Petroleum Corporation

Weld County, CO

S27-T10N-R58W

Razor #27J-3412B

HZ

Plan #3

Anticollision Report

17 June, 2013

Cathedral Energy Services

Anticollision Report

| | | | |
|---------------------------|-------------------------------|-------------------------------------|----------------------------------------|
| Company: | Whiting Petroleum Corporation | Local Co-ordinate Reference: | Well Razor #27J-3412B |
| Project: | Weld County, CO | TVD Reference: | WELL @ 4780.5usft (Original Well Elev) |
| Reference Site: | S27-T10N-R58W | MD Reference: | WELL @ 4780.5usft (Original Well Elev) |
| Site Error: | 0.0usft | North Reference: | True |
| Reference Well: | Razor #27J-3412B | Survey Calculation Method: | Minimum Curvature |
| Well Error: | 0.0usft | Output errors are at | 2.00 sigma |
| Reference Wellbore | HZ | Database: | USA EDM 5000 Multi Users DB |
| Reference Design: | Plan #3 | Offset TVD Reference: | Offset Datum |

| Reference | Plan #3 | | |
|------------------------------|---------------------------------------------------------------------|----------------|---------------------|
| Filter type: | NO GLOBAL FILTER: Using user defined selection & filtering criteria | | |
| Interpolation Method: | Stations | Error Model: | Systematic Ellipse |
| Depth Range: | Unlimited | Scan Method: | Closest Approach 3D |
| Results Limited by: | Maximum center-center distance of 10,000.0usft | Error Surface: | Elliptical Conic |
| Warning Levels Evaluated at: | 2.00 Sigma | | |

| Survey Tool Program | | Date | 6/17/2013 | | |
|---------------------|--------------|-------------------|------------|--------------|--|
| From (usft) | To (usft) | Survey (Wellbore) | Tool Name | Description | |
| 0.0 | 12,276.9 | Plan #3 (HZ) | ISCWSA MWD | MWD - ISCWSA | |

| Summary | | | | | | |
|---------------------------------|---------------------------------|------------------------------|------------------------|-------------------------|-------------------|-----------------|
| Site Name | Reference Measured Depth (usft) | Offset Measured Depth (usft) | Distance | | Separation Factor | Warning |
| Offset Well - Wellbore - Design | | | Between Centres (usft) | Between Ellipses (usft) | | |
| S27-T10N-R58W | | | | | | |
| Razor #27I-3413A - HZ - Plan #1 | 6,900.0 | 7,212.3 | 350.5 | 285.9 | 5.430 | CC |
| Razor #27I-3413A - HZ - Plan #1 | 12,277.6 | 12,589.9 | 351.3 | 92.3 | 1.356 | Level 3, ES, SF |
| Razor #27I-3414B - HZ - Plan #1 | 6,900.0 | 7,184.6 | 667.1 | 600.6 | 10.033 | CC |
| Razor #27I-3414B - HZ - Plan #1 | 12,277.6 | 12,562.2 | 668.0 | 399.9 | 2.491 | ES, SF |
| Razor #27I-3415A - HZ - Plan #1 | 6,900.1 | 7,223.6 | 1,001.9 | 934.2 | 14.799 | CC |
| Razor #27I-3415A - HZ - Plan #1 | 12,277.6 | 12,601.1 | 1,002.4 | 734.5 | 3.742 | ES, SF |
| Razor #27I-3416B - HZ - Plan #2 | 500.0 | 492.5 | 1,257.9 | 1,256.0 | 638.893 | CC |
| Razor #27I-3416B - HZ - Plan #2 | 12,277.6 | 12,441.3 | 1,323.5 | 1,056.0 | 4.948 | ES, SF |
| Razor #27J-2209A - HZ - Plan #2 | 465.6 | 468.6 | 100.0 | 98.2 | 54.432 | CC |
| Razor #27J-2209A - HZ - Plan #2 | 500.0 | 502.9 | 100.1 | 98.1 | 50.219 | ES |
| Razor #27J-2209A - HZ - Plan #2 | 5,200.0 | 5,151.5 | 736.9 | 713.8 | 31.886 | SF |
| Razor #27J-2210B - HZ - Plan #2 | 500.0 | 500.0 | 98.3 | 96.3 | 49.489 | CC, ES |
| Razor #27J-2210B - HZ - Plan #2 | 5,200.0 | 5,188.9 | 373.9 | 350.7 | 16.152 | SF |
| Razor #27J-2211A - HZ - Plan #2 | 500.0 | 503.0 | 75.1 | 73.1 | 37.668 | CC, ES |
| Razor #27J-2211A - HZ - Plan #2 | 5,100.0 | 5,092.1 | 383.0 | 360.4 | 16.954 | SF |
| Razor #27J-2212B - HZ - Plan #2 | 500.0 | 500.0 | 32.9 | 31.0 | 16.589 | CC, ES |
| Razor #27J-2212B - HZ - Plan #2 | 900.0 | 899.4 | 46.0 | 42.3 | 12.486 | SF |
| Razor #27J-3409A - Hz - Plan #3 | 501.8 | 504.9 | 123.7 | 121.7 | 61.851 | CC, ES |
| Razor #27J-3409A - Hz - Plan #3 | 12,277.6 | 12,214.1 | 993.9 | 726.1 | 3.711 | SF |
| Razor #27J-3410B - HZ - Plan #3 | 500.0 | 500.0 | 65.3 | 63.3 | 32.900 | CC, ES |
| Razor #27J-3410B - HZ - Plan #3 | 12,277.6 | 12,484.5 | 659.9 | 392.4 | 2.467 | SF |
| Razor #27J-3411A - HZ - Plan #3 | 700.0 | 708.6 | 81.7 | 78.9 | 29.497 | CC |
| Razor #27J-3411A - HZ - Plan #3 | 5,450.0 | 5,482.9 | 95.1 | 67.3 | 3.423 | ES |
| Razor #27J-3411A - HZ - Plan #3 | 12,277.6 | 12,191.5 | 341.6 | 82.0 | 1.316 | Level 3, SF |

Cathedral Energy Services

Anticollision Report

| | | | |
|---------------------------|-------------------------------|-------------------------------------|----------------------------------------|
| Company: | Whiting Petroleum Corporation | Local Co-ordinate Reference: | Well Razor #27J-3412B |
| Project: | Weld County, CO | TVD Reference: | WELL @ 4780.5usft (Original Well Elev) |
| Reference Site: | S27-T10N-R58W | MD Reference: | WELL @ 4780.5usft (Original Well Elev) |
| Site Error: | 0.0usft | North Reference: | True |
| Reference Well: | Razor #27J-3412B | Survey Calculation Method: | Minimum Curvature |
| Well Error: | 0.0usft | Output errors are at | 2.00 sigma |
| Reference Wellbore | HZ | Database: | USA EDM 5000 Multi Users DB |
| Reference Design: | Plan #3 | Offset TVD Reference: | Offset Datum |

| Offset Design S27-T10N-R58W - Razor #27J-3413A - HZ - Plan #1 | | | | | | | | | | | | | Offset Site Error: | 0.0 usft |
|---------------------------------------------------------------|-----------------------|-----------------------|-----------------------|------------------|---------------|-----------------------|-------------------------------------|--------------|------------------------|-------------------------|------------------|------------|--------------------|----------|
| Survey Program: 0-ISCSWA MWD | | | | | | | | | | | | | Offset Well Error: | 0.0 usft |
| Reference | | Offset | | Semi Major Axis | | | Distance | | | | Total | Separation | Warning | |
| Measured Depth (usft) | Vertical Depth (usft) | Measured Depth (usft) | Vertical Depth (usft) | Reference (usft) | Offset (usft) | Highside Toolface (°) | Offset Wellbore Centre +N/-S (usft) | +E/-W (usft) | Between Centres (usft) | Between Ellipses (usft) | Uncertainty Axis | Factor | | |
| 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 81.62 | 170.2 | 1,154.9 | 1,167.4 | | | | | |
| 100.0 | 100.0 | 92.5 | 92.5 | 0.1 | 0.1 | 81.62 | 170.2 | 1,154.9 | 1,167.4 | 1,167.2 | 0.18 | 6,462.542 | | |
| 200.0 | 200.0 | 192.5 | 192.5 | 0.3 | 0.3 | 81.62 | 170.2 | 1,154.9 | 1,167.4 | 1,166.8 | 0.62 | 1,881.835 | | |
| 300.0 | 300.0 | 292.5 | 292.5 | 0.5 | 0.5 | 81.62 | 170.2 | 1,154.9 | 1,167.4 | 1,166.3 | 1.07 | 1,091.149 | | |
| 400.0 | 400.0 | 392.5 | 392.5 | 0.8 | 0.8 | 81.62 | 170.2 | 1,154.9 | 1,167.4 | 1,165.9 | 1.52 | 768.324 | | |
| 500.0 | 500.0 | 492.5 | 492.5 | 1.0 | 1.0 | 81.62 | 170.2 | 1,154.9 | 1,167.4 | 1,165.4 | 1.97 | 592.907 | | |
| 600.0 | 600.0 | 592.5 | 592.5 | 1.2 | 1.2 | -72.97 | 170.2 | 1,154.9 | 1,166.9 | 1,164.5 | 2.39 | 487.730 | | |
| 700.0 | 699.8 | 692.3 | 692.3 | 1.4 | 1.4 | -73.25 | 170.2 | 1,154.9 | 1,165.4 | 1,162.6 | 2.81 | 415.325 | | |
| 800.0 | 799.6 | 792.1 | 792.1 | 1.6 | 1.6 | -73.58 | 170.2 | 1,154.9 | 1,163.4 | 1,160.1 | 3.24 | 359.122 | | |
| 900.0 | 899.4 | 891.9 | 891.9 | 1.8 | 1.9 | -73.91 | 170.2 | 1,154.9 | 1,161.4 | 1,157.7 | 3.69 | 314.991 | | |
| 1,000.0 | 999.1 | 991.6 | 991.6 | 2.1 | 2.1 | -74.24 | 170.2 | 1,154.9 | 1,159.5 | 1,155.4 | 4.14 | 279.780 | | |
| 1,100.0 | 1,098.9 | 1,091.4 | 1,091.4 | 2.3 | 2.3 | -74.57 | 170.2 | 1,154.9 | 1,157.6 | 1,153.0 | 4.61 | 251.210 | | |
| 1,200.0 | 1,198.6 | 1,191.1 | 1,191.1 | 2.5 | 2.5 | -74.90 | 170.2 | 1,154.9 | 1,155.8 | 1,150.7 | 5.08 | 227.656 | | |
| 1,300.0 | 1,298.4 | 1,290.9 | 1,290.9 | 2.8 | 2.8 | -75.23 | 170.2 | 1,154.9 | 1,154.0 | 1,148.4 | 5.55 | 207.956 | | |
| 1,400.0 | 1,398.1 | 1,390.6 | 1,390.6 | 3.0 | 3.0 | -75.57 | 170.2 | 1,154.9 | 1,152.2 | 1,146.2 | 6.02 | 191.265 | | |
| 1,500.0 | 1,497.9 | 1,490.4 | 1,490.4 | 3.3 | 3.2 | -75.90 | 170.2 | 1,154.9 | 1,150.5 | 1,144.0 | 6.50 | 176.962 | | |
| 1,600.0 | 1,597.6 | 1,590.1 | 1,590.1 | 3.5 | 3.4 | -76.24 | 170.2 | 1,154.9 | 1,148.8 | 1,141.8 | 6.98 | 164.580 | | |
| 1,700.0 | 1,697.4 | 1,689.9 | 1,689.9 | 3.8 | 3.7 | -76.58 | 170.2 | 1,154.9 | 1,147.2 | 1,139.7 | 7.46 | 153.764 | | |
| 1,800.0 | 1,797.2 | 1,789.7 | 1,789.7 | 4.1 | 3.9 | -76.92 | 170.2 | 1,154.9 | 1,145.6 | 1,137.6 | 7.94 | 144.241 | | |
| 1,900.0 | 1,896.9 | 1,889.4 | 1,889.4 | 4.3 | 4.1 | -77.26 | 170.2 | 1,154.9 | 1,144.0 | 1,135.6 | 8.42 | 135.795 | | |
| 2,000.0 | 1,896.7 | 1,889.2 | 1,889.2 | 4.6 | 4.3 | -77.60 | 170.2 | 1,154.9 | 1,142.5 | 1,133.6 | 8.91 | 128.258 | | |
| 2,100.0 | 2,096.4 | 2,088.9 | 2,088.9 | 4.8 | 4.6 | -77.94 | 170.2 | 1,154.9 | 1,141.0 | 1,131.6 | 9.39 | 121.491 | | |
| 2,200.0 | 2,196.2 | 2,188.7 | 2,188.7 | 5.1 | 4.8 | -78.28 | 170.2 | 1,154.9 | 1,139.6 | 1,129.7 | 9.88 | 115.384 | | |
| 2,300.0 | 2,295.9 | 2,288.4 | 2,288.4 | 5.4 | 5.0 | -78.62 | 170.2 | 1,154.9 | 1,138.2 | 1,127.8 | 10.36 | 109.847 | | |
| 2,400.0 | 2,395.7 | 2,388.2 | 2,388.2 | 5.6 | 5.2 | -78.97 | 170.2 | 1,154.9 | 1,136.8 | 1,126.0 | 10.85 | 104.805 | | |
| 2,500.0 | 2,495.5 | 2,488.0 | 2,488.0 | 5.9 | 5.5 | -79.31 | 170.2 | 1,154.9 | 1,135.5 | 1,124.1 | 11.33 | 100.194 | | |
| 2,600.0 | 2,595.2 | 2,587.7 | 2,587.7 | 6.1 | 5.7 | -79.66 | 170.2 | 1,154.9 | 1,134.2 | 1,122.4 | 11.82 | 95.964 | | |
| 2,700.0 | 2,695.0 | 2,687.5 | 2,687.5 | 6.4 | 5.9 | -80.00 | 170.2 | 1,154.9 | 1,133.0 | 1,120.7 | 12.31 | 92.069 | | |
| 2,800.0 | 2,794.7 | 2,787.2 | 2,787.2 | 6.7 | 6.1 | -80.35 | 170.2 | 1,154.9 | 1,131.8 | 1,119.0 | 12.79 | 88.471 | | |
| 2,900.0 | 2,894.5 | 2,887.0 | 2,887.0 | 6.9 | 6.4 | -80.70 | 170.2 | 1,154.9 | 1,130.6 | 1,117.3 | 13.28 | 85.139 | | |
| 3,000.0 | 2,894.2 | 2,886.7 | 2,886.7 | 7.2 | 6.6 | -81.05 | 170.2 | 1,154.9 | 1,129.5 | 1,115.7 | 13.77 | 82.044 | | |
| 3,100.0 | 3,094.0 | 3,086.5 | 3,086.5 | 7.5 | 6.8 | -81.40 | 170.2 | 1,154.9 | 1,128.4 | 1,114.2 | 14.25 | 79.163 | | |
| 3,200.0 | 3,193.7 | 3,186.2 | 3,186.2 | 7.7 | 7.0 | -81.75 | 170.2 | 1,154.9 | 1,127.4 | 1,112.7 | 14.74 | 76.474 | | |
| 3,300.0 | 3,293.5 | 3,286.0 | 3,286.0 | 8.0 | 7.3 | -82.10 | 170.2 | 1,154.9 | 1,126.4 | 1,111.2 | 15.23 | 73.960 | | |
| 3,400.0 | 3,393.3 | 3,385.8 | 3,385.8 | 8.2 | 7.5 | -82.45 | 170.2 | 1,154.9 | 1,125.5 | 1,109.8 | 15.72 | 71.603 | | |
| 3,500.0 | 3,493.0 | 3,485.5 | 3,485.5 | 8.5 | 7.7 | -82.80 | 170.2 | 1,154.9 | 1,124.6 | 1,108.4 | 16.21 | 69.391 | | |
| 3,600.0 | 3,592.8 | 3,585.3 | 3,585.3 | 8.8 | 7.9 | -83.15 | 170.2 | 1,154.9 | 1,123.7 | 1,107.1 | 16.69 | 67.310 | | |
| 3,700.0 | 3,692.5 | 3,685.0 | 3,685.0 | 9.0 | 8.2 | -83.50 | 170.2 | 1,154.9 | 1,122.9 | 1,105.8 | 17.18 | 65.350 | | |
| 3,800.0 | 3,792.3 | 3,784.8 | 3,784.8 | 9.3 | 8.4 | -83.86 | 170.2 | 1,154.9 | 1,122.2 | 1,104.5 | 17.67 | 63.500 | | |
| 3,900.0 | 3,892.0 | 3,884.5 | 3,884.5 | 9.6 | 8.6 | -84.21 | 170.2 | 1,154.9 | 1,121.4 | 1,103.3 | 18.16 | 61.752 | | |
| 4,000.0 | 3,991.8 | 3,984.3 | 3,984.3 | 9.8 | 8.8 | -84.56 | 170.2 | 1,154.9 | 1,120.8 | 1,102.1 | 18.65 | 60.098 | | |
| 4,100.0 | 4,091.6 | 4,084.1 | 4,084.1 | 10.1 | 9.0 | -84.92 | 170.2 | 1,154.9 | 1,120.1 | 1,101.0 | 19.14 | 58.530 | | |
| 4,200.0 | 4,191.3 | 4,183.8 | 4,183.8 | 10.4 | 9.3 | -85.27 | 170.2 | 1,154.9 | 1,119.5 | 1,099.9 | 19.63 | 57.043 | | |
| 4,300.0 | 4,291.1 | 4,283.6 | 4,283.6 | 10.6 | 9.5 | -85.63 | 170.2 | 1,154.9 | 1,119.0 | 1,098.8 | 20.11 | 55.629 | | |
| 4,400.0 | 4,390.8 | 4,383.3 | 4,383.3 | 10.9 | 9.7 | -85.98 | 170.2 | 1,154.9 | 1,118.4 | 1,097.8 | 20.60 | 54.285 | | |
| 4,500.0 | 4,490.6 | 4,483.1 | 4,483.1 | 11.1 | 9.9 | -86.34 | 170.2 | 1,154.9 | 1,118.0 | 1,096.9 | 21.09 | 53.006 | | |
| 4,600.0 | 4,590.3 | 4,582.8 | 4,582.8 | 11.4 | 10.2 | -86.69 | 170.2 | 1,154.9 | 1,117.6 | 1,096.0 | 21.58 | 51.786 | | |
| 4,700.0 | 4,690.1 | 4,682.6 | 4,682.6 | 11.7 | 10.4 | -87.05 | 170.2 | 1,154.9 | 1,117.2 | 1,095.1 | 22.07 | 50.622 | | |
| 4,800.0 | 4,789.9 | 4,782.4 | 4,782.4 | 11.9 | 10.6 | -87.41 | 170.2 | 1,154.9 | 1,116.8 | 1,094.3 | 22.56 | 49.511 | | |
| 4,900.0 | 4,889.6 | 4,882.1 | 4,882.1 | 12.2 | 10.8 | -87.76 | 170.2 | 1,154.9 | 1,116.5 | 1,093.5 | 23.05 | 48.449 | | |
| 5,000.0 | 4,989.4 | 6,100.0 | 5,648.9 | 12.5 | 17.4 | -53.78 | -469.2 | 940.1 | 1,065.2 | 1,035.8 | 29.36 | 36.283 | | |
| 5,100.0 | 5,089.1 | 6,100.0 | 5,648.9 | 12.7 | 17.4 | -53.78 | -469.2 | 940.1 | 1,002.2 | 972.5 | 29.61 | 33.843 | | |

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Cathedral Energy Services

Anticollision Report

| | | | |
|---------------------------|-------------------------------|-------------------------------------|----------------------------------------|
| Company: | Whiting Petroleum Corporation | Local Co-ordinate Reference: | Well Razor #27J-3412B |
| Project: | Weld County, CO | TVD Reference: | WELL @ 4780.5usft (Original Well Elev) |
| Reference Site: | S27-T10N-R58W | MD Reference: | WELL @ 4780.5usft (Original Well Elev) |
| Site Error: | 0.0usft | North Reference: | True |
| Reference Well: | Razor #27J-3412B | Survey Calculation Method: | Minimum Curvature |
| Well Error: | 0.0usft | Output errors are at | 2.00 sigma |
| Reference Wellbore | HZ | Database: | USA EDM 5000 Multi Users DB |
| Reference Design: | Plan #3 | Offset TVD Reference: | Offset Datum |

| Offset Design S27-T10N-R58W - Razor #27J-3413A - HZ - Plan #1 | | | | | | | | | | | | Offset Site Error: | 0.0 usft |
|---------------------------------------------------------------|-----------------------|-----------------------|-----------------------|------------------|---------------|-----------------------|-------------------------------------|--------------|------------------------|-------------------------|------------------------|--------------------|----------|
| Survey Program: 0-ISCWSA MWD | | | | | | | | | | | | Offset Well Error: | 0.0 usft |
| Reference | | Offset | | Semi Major Axis | | Distance | | | | | | | |
| Measured Depth (usft) | Vertical Depth (usft) | Measured Depth (usft) | Vertical Depth (usft) | Reference (usft) | Offset (usft) | Highside Toolface (°) | Offset Wellbore Centre +N/-S (usft) | +E/-W (usft) | Between Centres (usft) | Between Ellipses (usft) | Total Uncertainty Axis | Separation Factor | Warning |
| 5,200.0 | 5,188.9 | 6,118.6 | 5,648.9 | 13.0 | 17.7 | -52.45 | -487.3 | 935.5 | 945.2 | 915.1 | 30.10 | 31.403 | |
| 5,280.0 | 5,268.7 | 6,121.6 | 5,648.9 | 13.2 | 17.7 | -52.23 | -490.2 | 934.8 | 905.2 | 874.9 | 30.34 | 29.836 | |
| 5,300.0 | 5,288.6 | 6,122.6 | 5,648.9 | 13.3 | 17.7 | -53.22 | -491.2 | 934.6 | 895.8 | 865.5 | 30.38 | 29.485 | |
| 5,350.0 | 5,338.0 | 6,126.8 | 5,648.9 | 13.4 | 17.8 | -55.43 | -495.3 | 933.6 | 872.2 | 841.7 | 30.47 | 28.620 | |
| 5,400.0 | 5,386.4 | 6,133.7 | 5,648.9 | 13.7 | 17.9 | -57.46 | -501.9 | 932.0 | 848.3 | 817.7 | 30.56 | 27.754 | |
| 5,450.0 | 5,433.4 | 6,143.1 | 5,648.9 | 13.9 | 18.0 | -59.34 | -511.1 | 929.8 | 824.3 | 793.6 | 30.68 | 26.869 | |
| 5,500.0 | 5,478.5 | 6,155.0 | 5,648.9 | 14.2 | 18.1 | -61.08 | -522.7 | 927.1 | 800.3 | 769.4 | 30.83 | 25.955 | |
| 5,550.0 | 5,521.3 | 6,169.5 | 5,648.9 | 14.6 | 18.3 | -62.68 | -536.8 | 924.0 | 776.3 | 745.3 | 31.05 | 25.005 | |
| 5,600.0 | 5,561.6 | 6,200.0 | 5,648.9 | 15.0 | 18.7 | -63.17 | -566.7 | 917.6 | 752.6 | 721.2 | 31.44 | 23.939 | |
| 5,650.0 | 5,598.7 | 6,200.0 | 5,648.9 | 15.5 | 18.7 | -65.87 | -566.7 | 917.6 | 728.8 | 697.1 | 31.65 | 23.023 | |
| 5,700.0 | 5,632.5 | 6,227.3 | 5,648.9 | 16.0 | 19.1 | -66.73 | -593.5 | 912.4 | 705.1 | 673.0 | 32.17 | 21.916 | |
| 5,750.0 | 5,662.6 | 6,251.2 | 5,648.9 | 16.6 | 19.4 | -67.93 | -617.0 | 908.1 | 681.6 | 648.9 | 32.74 | 20.819 | |
| 5,800.0 | 5,688.8 | 6,277.1 | 5,648.9 | 17.2 | 19.8 | -69.13 | -642.5 | 903.8 | 658.1 | 624.7 | 33.40 | 19.701 | |
| 5,850.0 | 5,710.7 | 6,300.0 | 5,648.9 | 17.9 | 20.1 | -70.63 | -665.2 | 900.3 | 634.6 | 600.5 | 34.15 | 18.584 | |
| 5,900.0 | 5,728.3 | 6,334.6 | 5,648.9 | 18.6 | 20.6 | -71.77 | -699.4 | 895.5 | 611.0 | 575.9 | 35.08 | 17.415 | |
| 5,950.0 | 5,741.3 | 6,365.8 | 5,648.9 | 19.3 | 21.0 | -73.35 | -730.4 | 891.7 | 587.2 | 551.1 | 36.11 | 16.263 | |
| 6,000.0 | 5,749.5 | 6,400.0 | 5,648.9 | 20.1 | 21.5 | -75.17 | -764.4 | 888.1 | 563.3 | 526.1 | 37.27 | 15.116 | |
| 6,050.0 | 5,753.1 | 6,431.8 | 5,648.9 | 20.9 | 22.0 | -77.45 | -796.1 | 885.4 | 539.2 | 500.7 | 38.55 | 13.988 | |
| 6,061.8 | 5,753.2 | 6,439.9 | 5,648.9 | 21.1 | 22.1 | -78.03 | -804.1 | 884.8 | 533.5 | 494.7 | 38.87 | 13.725 | |
| 6,100.0 | 5,753.2 | 6,466.3 | 5,648.9 | 21.7 | 22.5 | -77.84 | -830.5 | 883.0 | 515.6 | 475.7 | 39.92 | 12.918 | |
| 6,200.0 | 5,753.2 | 6,538.6 | 5,648.9 | 23.2 | 23.6 | -77.30 | -902.8 | 879.9 | 474.3 | 431.7 | 42.64 | 11.123 | |
| 6,300.0 | 5,753.2 | 6,622.1 | 5,648.9 | 24.7 | 24.8 | -76.69 | -986.2 | 879.4 | 441.1 | 395.5 | 45.59 | 9.675 | |
| 6,400.0 | 5,753.2 | 6,718.0 | 5,648.9 | 26.3 | 26.3 | -76.00 | -1,082.1 | 879.4 | 413.4 | 364.7 | 48.73 | 8.485 | |
| 6,500.0 | 5,753.2 | 6,815.2 | 5,648.9 | 27.9 | 27.9 | -75.35 | -1,179.3 | 879.4 | 390.8 | 338.9 | 51.91 | 7.527 | |
| 6,600.0 | 5,753.2 | 6,913.5 | 5,648.9 | 29.5 | 29.5 | -74.78 | -1,277.6 | 879.4 | 373.1 | 318.0 | 55.11 | 6.771 | |
| 6,700.0 | 5,753.2 | 7,012.6 | 5,648.9 | 31.1 | 31.1 | -74.34 | -1,376.8 | 879.5 | 360.6 | 302.3 | 58.30 | 6.185 | |
| 6,800.0 | 5,753.2 | 7,112.3 | 5,648.9 | 32.6 | 32.8 | -74.06 | -1,476.5 | 879.5 | 353.0 | 291.6 | 61.45 | 5.745 | |
| 6,900.0 | 5,753.2 | 7,212.3 | 5,648.9 | 34.2 | 34.5 | -73.97 | -1,576.4 | 879.5 | 350.5 | 285.9 | 64.54 | 5.430 CC | |
| 6,900.3 | 5,753.2 | 7,212.6 | 5,648.9 | 34.2 | 34.5 | -73.97 | -1,576.7 | 879.5 | 350.5 | 285.9 | 64.55 | 5.429 | |
| 7,000.0 | 5,753.2 | 7,312.3 | 5,648.9 | 35.8 | 36.2 | -73.97 | -1,676.4 | 879.5 | 350.5 | 282.6 | 67.87 | 5.165 | |
| 7,100.0 | 5,753.2 | 7,412.3 | 5,648.9 | 37.5 | 38.0 | -73.97 | -1,776.4 | 879.5 | 350.5 | 279.3 | 71.26 | 4.919 | |
| 7,200.0 | 5,753.2 | 7,512.3 | 5,648.9 | 39.2 | 39.7 | -73.97 | -1,876.4 | 879.5 | 350.5 | 275.9 | 74.67 | 4.694 | |
| 7,300.0 | 5,753.2 | 7,612.3 | 5,648.9 | 40.9 | 41.5 | -73.97 | -1,976.4 | 879.5 | 350.6 | 272.4 | 78.12 | 4.487 | |
| 7,400.0 | 5,753.2 | 7,712.3 | 5,648.9 | 42.6 | 43.3 | -73.97 | -2,076.4 | 879.5 | 350.6 | 269.0 | 81.59 | 4.297 | |
| 7,500.0 | 5,753.2 | 7,812.3 | 5,648.9 | 44.3 | 45.1 | -73.98 | -2,176.4 | 879.5 | 350.6 | 265.5 | 85.08 | 4.121 | |
| 7,600.0 | 5,753.2 | 7,912.3 | 5,648.9 | 46.1 | 46.9 | -73.98 | -2,276.4 | 879.5 | 350.6 | 262.0 | 88.59 | 3.958 | |
| 7,700.0 | 5,753.2 | 8,012.3 | 5,648.9 | 47.9 | 48.7 | -73.98 | -2,376.4 | 879.5 | 350.6 | 258.5 | 92.12 | 3.806 | |
| 7,800.0 | 5,753.2 | 8,112.3 | 5,648.9 | 49.6 | 50.6 | -73.98 | -2,476.4 | 879.6 | 350.6 | 255.0 | 95.66 | 3.666 | |
| 7,900.0 | 5,753.2 | 8,212.3 | 5,648.9 | 51.4 | 52.4 | -73.98 | -2,576.4 | 879.6 | 350.6 | 251.4 | 99.21 | 3.534 | |
| 8,000.0 | 5,753.2 | 8,312.3 | 5,648.9 | 53.2 | 54.2 | -73.98 | -2,676.4 | 879.6 | 350.7 | 247.9 | 102.77 | 3.412 | |
| 8,100.0 | 5,753.1 | 8,412.3 | 5,648.9 | 55.0 | 56.1 | -73.99 | -2,776.4 | 879.6 | 350.7 | 244.3 | 106.35 | 3.297 | |
| 8,200.0 | 5,753.1 | 8,512.3 | 5,648.9 | 56.9 | 57.9 | -73.99 | -2,876.4 | 879.6 | 350.7 | 240.8 | 109.93 | 3.190 | |
| 8,300.0 | 5,753.1 | 8,612.3 | 5,648.9 | 58.7 | 59.8 | -73.99 | -2,976.4 | 879.6 | 350.7 | 237.2 | 113.53 | 3.089 | |
| 8,400.0 | 5,753.1 | 8,712.3 | 5,648.9 | 60.5 | 61.6 | -73.99 | -3,076.4 | 879.6 | 350.7 | 233.6 | 117.13 | 2.994 | |
| 8,500.0 | 5,753.1 | 8,812.3 | 5,648.9 | 62.3 | 63.5 | -73.99 | -3,176.4 | 879.6 | 350.7 | 230.0 | 120.73 | 2.905 | |
| 8,600.0 | 5,753.1 | 8,912.3 | 5,648.9 | 64.2 | 65.4 | -73.99 | -3,276.4 | 879.6 | 350.8 | 226.4 | 124.35 | 2.821 | |
| 8,700.0 | 5,753.1 | 9,012.3 | 5,648.9 | 66.0 | 67.2 | -74.00 | -3,376.4 | 879.6 | 350.8 | 222.8 | 127.97 | 2.741 | |
| 8,800.0 | 5,753.1 | 9,112.3 | 5,648.9 | 67.9 | 69.1 | -74.00 | -3,476.4 | 879.7 | 350.8 | 219.2 | 131.59 | 2.666 | |
| 8,900.0 | 5,753.1 | 9,212.3 | 5,648.9 | 69.7 | 71.0 | -74.00 | -3,576.4 | 879.7 | 350.8 | 215.6 | 135.23 | 2.594 | |
| 9,000.0 | 5,753.1 | 9,312.3 | 5,648.9 | 71.6 | 72.9 | -74.00 | -3,676.4 | 879.7 | 350.8 | 212.0 | 138.86 | 2.526 | |
| 9,100.0 | 5,753.1 | 9,412.3 | 5,648.9 | 73.4 | 74.7 | -74.00 | -3,776.4 | 879.7 | 350.8 | 208.3 | 142.50 | 2.462 | |
| 9,200.0 | 5,753.1 | 9,512.3 | 5,648.9 | 75.3 | 76.6 | -74.00 | -3,876.4 | 879.7 | 350.8 | 204.7 | 146.14 | 2.401 | |

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Cathedral Energy Services

Anticollision Report

| | | | |
|---------------------------|-------------------------------|-------------------------------------|----------------------------------------|
| Company: | Whiting Petroleum Corporation | Local Co-ordinate Reference: | Well Razor #27J-3412B |
| Project: | Weld County, CO | TVD Reference: | WELL @ 4780.5usft (Original Well Elev) |
| Reference Site: | S27-T10N-R58W | MD Reference: | WELL @ 4780.5usft (Original Well Elev) |
| Site Error: | 0.0usft | North Reference: | True |
| Reference Well: | Razor #27J-3412B | Survey Calculation Method: | Minimum Curvature |
| Well Error: | 0.0usft | Output errors are at | 2.00 sigma |
| Reference Wellbore | HZ | Database: | USA EDM 5000 Multi Users DB |
| Reference Design: | Plan #3 | Offset TVD Reference: | Offset Datum |

| Offset Design S27-T10N-R58W - Razor #27I-3413A - HZ - Plan #1 | | | | | | | | | | | | Offset Site Error: | 0.0 usft |
|---------------------------------------------------------------|-----------------------------|-----------------------------|-----------------------------|---------------------|------------------|-----------------------------|-------------------------------------------|-----------------|------------------------------|-------------------------------|------------------------------|-----------------------|----------|
| Survey Program: 0-ISCWSA MWD | | | | | | | | | | | | Offset Well Error: | 0.0 usft |
| Reference | | Offset | | Semi Major Axis | | | Distance | | | | Total Uncertainty Axis | Separation Factor | Warning |
| Measured Depth (usft) | Vertical Depth (usft) | Measured Depth (usft) | Vertical Depth (usft) | Reference (usft) | Offset (usft) | Highside Toolface (°) | Offset Wellbore Centre +N/-S (usft) | +E/-W (usft) | Between Centres (usft) | Between Ellipses (usft) | | | |
| 9,300.0 | 5,753.1 | 9,612.3 | 5,648.9 | 77.2 | 78.5 | -74.01 | -3,976.4 | 879.7 | 350.9 | 201.1 | 149.79 | 2.342 | |
| 9,400.0 | 5,753.1 | 9,712.3 | 5,648.9 | 79.0 | 80.4 | -74.01 | -4,076.4 | 879.7 | 350.9 | 197.4 | 153.44 | 2.287 | |
| 9,500.0 | 5,753.1 | 9,812.3 | 5,648.9 | 80.9 | 82.3 | -74.01 | -4,176.4 | 879.7 | 350.9 | 193.8 | 157.09 | 2.234 | |
| 9,600.0 | 5,753.1 | 9,912.3 | 5,648.9 | 82.8 | 84.2 | -74.01 | -4,276.4 | 879.7 | 350.9 | 190.2 | 160.75 | 2.183 | |
| 9,700.0 | 5,753.1 | 10,012.3 | 5,648.9 | 84.6 | 86.1 | -74.01 | -4,376.4 | 879.7 | 350.9 | 186.5 | 164.41 | 2.134 | |
| 9,800.0 | 5,753.1 | 10,112.3 | 5,648.9 | 86.5 | 87.9 | -74.01 | -4,476.4 | 879.8 | 350.9 | 182.9 | 168.07 | 2.088 | |
| 9,900.0 | 5,753.1 | 10,212.3 | 5,648.9 | 88.4 | 89.8 | -74.02 | -4,576.4 | 879.8 | 351.0 | 179.2 | 171.74 | 2.044 | |
| 10,000.0 | 5,753.1 | 10,312.3 | 5,648.9 | 90.3 | 91.7 | -74.02 | -4,676.4 | 879.8 | 351.0 | 175.6 | 175.40 | 2.001 | |
| 10,100.0 | 5,753.1 | 10,412.3 | 5,648.9 | 92.1 | 93.6 | -74.02 | -4,776.4 | 879.8 | 351.0 | 171.9 | 179.07 | 1.960 | |
| 10,200.0 | 5,753.1 | 10,512.3 | 5,649.0 | 94.0 | 95.5 | -74.02 | -4,876.4 | 879.8 | 351.0 | 168.3 | 182.74 | 1.921 | |
| 10,300.0 | 5,753.1 | 10,612.3 | 5,649.0 | 95.9 | 97.4 | -74.02 | -4,976.4 | 879.8 | 351.0 | 164.6 | 186.42 | 1.883 | |
| 10,400.0 | 5,753.1 | 10,712.3 | 5,649.0 | 97.8 | 99.3 | -74.02 | -5,076.4 | 879.8 | 351.0 | 160.9 | 190.09 | 1.847 | |
| 10,500.0 | 5,753.1 | 10,812.3 | 5,649.0 | 99.7 | 101.2 | -74.03 | -5,176.4 | 879.8 | 351.0 | 157.3 | 193.77 | 1.812 | |
| 10,600.0 | 5,753.1 | 10,912.3 | 5,649.0 | 101.6 | 103.1 | -74.03 | -5,276.4 | 879.8 | 351.1 | 153.6 | 197.45 | 1.778 | |
| 10,700.0 | 5,753.1 | 11,012.3 | 5,649.0 | 103.5 | 105.0 | -74.03 | -5,376.4 | 879.8 | 351.1 | 149.9 | 201.12 | 1.746 | |
| 10,800.0 | 5,753.1 | 11,112.3 | 5,649.0 | 105.4 | 106.9 | -74.03 | -5,476.4 | 879.8 | 351.1 | 146.3 | 204.81 | 1.714 | |
| 10,900.0 | 5,753.0 | 11,212.3 | 5,649.0 | 107.3 | 108.8 | -74.03 | -5,576.4 | 879.9 | 351.1 | 142.6 | 208.49 | 1.684 | |
| 11,000.0 | 5,753.0 | 11,312.3 | 5,649.0 | 109.1 | 110.7 | -74.03 | -5,676.4 | 879.9 | 351.1 | 138.9 | 212.17 | 1.655 | |
| 11,100.0 | 5,753.0 | 11,412.3 | 5,649.0 | 111.0 | 112.6 | -74.04 | -5,776.4 | 879.9 | 351.1 | 135.3 | 215.86 | 1.627 | |
| 11,200.0 | 5,753.0 | 11,512.3 | 5,649.0 | 112.9 | 114.5 | -74.04 | -5,876.4 | 879.9 | 351.2 | 131.6 | 219.54 | 1.599 | |
| 11,300.0 | 5,753.0 | 11,612.3 | 5,649.0 | 114.8 | 116.4 | -74.04 | -5,976.4 | 879.9 | 351.2 | 127.9 | 223.23 | 1.573 | |
| 11,400.0 | 5,753.0 | 11,712.3 | 5,649.0 | 116.7 | 118.3 | -74.04 | -6,076.4 | 879.9 | 351.2 | 124.3 | 226.92 | 1.548 | |
| 11,500.0 | 5,753.0 | 11,812.3 | 5,649.0 | 118.6 | 120.2 | -74.04 | -6,176.4 | 879.9 | 351.2 | 120.6 | 230.61 | 1.523 | |
| 11,600.0 | 5,753.0 | 11,912.3 | 5,649.0 | 120.5 | 122.1 | -74.04 | -6,276.4 | 879.9 | 351.2 | 116.9 | 234.30 | 1.499 Level 3 | |
| 11,700.0 | 5,753.0 | 12,012.3 | 5,649.0 | 122.4 | 124.1 | -74.05 | -6,376.4 | 879.9 | 351.2 | 113.2 | 237.99 | 1.476 Level 3 | |
| 11,800.0 | 5,753.0 | 12,112.3 | 5,649.0 | 124.3 | 126.0 | -74.05 | -6,476.4 | 879.9 | 351.2 | 109.6 | 241.68 | 1.453 Level 3 | |
| 11,900.0 | 5,753.0 | 12,212.3 | 5,649.0 | 126.2 | 127.9 | -74.05 | -6,576.4 | 880.0 | 351.3 | 105.9 | 245.37 | 1.432 Level 3 | |
| 12,000.0 | 5,753.0 | 12,312.3 | 5,649.0 | 128.1 | 129.8 | -74.05 | -6,676.4 | 880.0 | 351.3 | 102.2 | 249.07 | 1.410 Level 3 | |
| 12,100.0 | 5,753.0 | 12,412.3 | 5,649.0 | 130.0 | 131.7 | -74.05 | -6,776.4 | 880.0 | 351.3 | 98.5 | 252.76 | 1.390 Level 3 | |
| 12,200.0 | 5,753.0 | 12,512.3 | 5,649.0 | 131.9 | 133.6 | -74.05 | -6,876.4 | 880.0 | 351.3 | 94.9 | 256.45 | 1.370 Level 3 | |
| 12,277.3 | 5,753.0 | 12,589.6 | 5,649.0 | 133.1 | 135.1 | -74.06 | -6,953.7 | 880.0 | 351.3 | 92.3 | 259.04 | 1.356 Level 3 | |
| 12,277.6 | 5,753.0 | 12,589.9 | 5,649.0 | 133.1 | 135.1 | -74.06 | -6,954.0 | 880.0 | 351.3 | 92.3 | 259.05 | 1.356 Level 3, ES, SF | |

Cathedral Energy Services

Anticollision Report

| | | | |
|---------------------------|-------------------------------|-------------------------------------|----------------------------------------|
| Company: | Whiting Petroleum Corporation | Local Co-ordinate Reference: | Well Razor #27J-3412B |
| Project: | Weld County, CO | TVD Reference: | WELL @ 4780.5usft (Original Well Elev) |
| Reference Site: | S27-T10N-R58W | MD Reference: | WELL @ 4780.5usft (Original Well Elev) |
| Site Error: | 0.0usft | North Reference: | True |
| Reference Well: | Razor #27J-3412B | Survey Calculation Method: | Minimum Curvature |
| Well Error: | 0.0usft | Output errors are at | 2.00 sigma |
| Reference Wellbore | HZ | Database: | USA EDM 5000 Multi Users DB |
| Reference Design: | Plan #3 | Offset TVD Reference: | Offset Datum |

| Offset Design S27-T10N-R58W - Razor #27I-3414B - HZ - Plan #1 | | | | | | | | | | | | Offset Site Error: | 0.0 usft |
|---------------------------------------------------------------|-----------------------------|-----------------------------|-----------------------------|---------------------|------------------|-----------------------------|-------------------------------------------|-----------------|------------------------------|----------------------|---------|--------------------|----------|
| Survey Program: 0-ISCWSA MWD | | | | | | | | | | | | Offset Well Error: | 0.0 usft |
| Reference | | Offset | | Semi Major Axis | | Highside Toolface (°) | Distance | | Total Uncertainty Axis | Separation Factor | Warning | | |
| Measured Depth (usft) | Vertical Depth (usft) | Measured Depth (usft) | Vertical Depth (usft) | Reference (usft) | Offset (usft) | | Offset Wellbore Centre +N/-S (usft) | +E/-W (usft) | | | | | |
| 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 85.41 | 95.5 | 1,188.2 | 1,192.0 | | | | |
| 100.0 | 100.0 | 92.5 | 92.5 | 0.1 | 0.1 | 85.41 | 95.5 | 1,188.2 | 1,192.0 | 1,191.8 | 0.18 | 6,598.637 | |
| 200.0 | 200.0 | 192.5 | 192.5 | 0.3 | 0.3 | 85.41 | 95.5 | 1,188.2 | 1,192.0 | 1,191.4 | 0.62 | 1,921.465 | |
| 300.0 | 300.0 | 292.5 | 292.5 | 0.5 | 0.5 | 85.41 | 95.5 | 1,188.2 | 1,192.0 | 1,190.9 | 1.07 | 1,114.127 | |
| 400.0 | 400.0 | 392.5 | 392.5 | 0.8 | 0.8 | 85.41 | 95.5 | 1,188.2 | 1,192.0 | 1,190.5 | 1.52 | 784.504 | |
| 500.0 | 500.0 | 492.5 | 492.5 | 1.0 | 1.0 | 85.41 | 95.5 | 1,188.2 | 1,192.0 | 1,190.0 | 1.97 | 605.393 | |
| 600.0 | 600.0 | 592.5 | 592.5 | 1.2 | 1.2 | -69.18 | 95.5 | 1,188.2 | 1,191.4 | 1,189.0 | 2.39 | 497.946 | |
| 700.0 | 699.8 | 692.3 | 692.3 | 1.4 | 1.4 | -69.45 | 95.5 | 1,188.2 | 1,189.5 | 1,186.7 | 2.81 | 423.940 | |
| 800.0 | 799.6 | 792.1 | 792.1 | 1.6 | 1.6 | -69.77 | 95.5 | 1,188.2 | 1,187.1 | 1,183.8 | 3.24 | 366.527 | |
| 900.0 | 899.4 | 891.9 | 891.9 | 1.8 | 1.9 | -70.08 | 95.5 | 1,188.2 | 1,184.7 | 1,181.0 | 3.69 | 321.442 | |
| 1,000.0 | 999.1 | 991.6 | 991.6 | 2.1 | 2.1 | -70.40 | 95.5 | 1,188.2 | 1,182.3 | 1,178.2 | 4.14 | 285.463 | |
| 1,100.0 | 1,098.9 | 1,091.4 | 1,091.4 | 2.3 | 2.3 | -70.72 | 95.5 | 1,188.2 | 1,180.0 | 1,175.4 | 4.60 | 256.261 | |
| 1,200.0 | 1,198.6 | 1,191.1 | 1,191.1 | 2.5 | 2.5 | -71.04 | 95.5 | 1,188.2 | 1,177.7 | 1,172.6 | 5.07 | 232.181 | |
| 1,300.0 | 1,298.4 | 1,290.9 | 1,290.9 | 2.8 | 2.8 | -71.36 | 95.5 | 1,188.2 | 1,175.5 | 1,169.9 | 5.54 | 212.035 | |
| 1,400.0 | 1,398.1 | 1,390.6 | 1,390.6 | 3.0 | 3.0 | -71.68 | 95.5 | 1,188.2 | 1,173.2 | 1,167.2 | 6.02 | 194.962 | |
| 1,500.0 | 1,497.9 | 1,490.4 | 1,490.4 | 3.3 | 3.2 | -72.01 | 95.5 | 1,188.2 | 1,171.1 | 1,164.6 | 6.49 | 180.328 | |
| 1,600.0 | 1,597.6 | 1,590.1 | 1,590.1 | 3.5 | 3.4 | -72.33 | 95.5 | 1,188.2 | 1,168.9 | 1,161.9 | 6.97 | 167.658 | |
| 1,700.0 | 1,697.4 | 1,689.9 | 1,689.9 | 3.8 | 3.7 | -72.66 | 95.5 | 1,188.2 | 1,166.8 | 1,159.4 | 7.45 | 156.588 | |
| 1,800.0 | 1,797.2 | 1,789.7 | 1,789.7 | 4.1 | 3.9 | -72.98 | 95.5 | 1,188.2 | 1,164.7 | 1,156.8 | 7.93 | 146.839 | |
| 1,900.0 | 1,896.9 | 1,889.4 | 1,889.4 | 4.3 | 4.1 | -73.31 | 95.5 | 1,188.2 | 1,162.7 | 1,154.3 | 8.41 | 138.192 | |
| 2,000.0 | 1,996.7 | 1,989.2 | 1,989.2 | 4.6 | 4.3 | -73.64 | 95.5 | 1,188.2 | 1,160.7 | 1,151.8 | 8.90 | 130.473 | |
| 2,100.0 | 2,096.4 | 2,088.9 | 2,088.9 | 4.8 | 4.6 | -73.97 | 95.5 | 1,188.2 | 1,158.8 | 1,149.4 | 9.38 | 123.543 | |
| 2,200.0 | 2,196.2 | 2,188.7 | 2,188.7 | 5.1 | 4.8 | -74.30 | 95.5 | 1,188.2 | 1,156.9 | 1,147.0 | 9.86 | 117.288 | |
| 2,300.0 | 2,295.9 | 2,288.4 | 2,288.4 | 5.4 | 5.0 | -74.63 | 95.5 | 1,188.2 | 1,155.0 | 1,144.7 | 10.35 | 111.616 | |
| 2,400.0 | 2,395.7 | 2,388.2 | 2,388.2 | 5.6 | 5.2 | -74.97 | 95.5 | 1,188.2 | 1,153.2 | 1,142.3 | 10.83 | 106.449 | |
| 2,500.0 | 2,495.5 | 2,488.0 | 2,488.0 | 5.9 | 5.5 | -75.30 | 95.5 | 1,188.2 | 1,151.4 | 1,140.1 | 11.32 | 101.725 | |
| 2,600.0 | 2,595.2 | 2,587.7 | 2,587.7 | 6.1 | 5.7 | -75.64 | 95.5 | 1,188.2 | 1,149.6 | 1,137.8 | 11.80 | 97.389 | |
| 2,700.0 | 2,695.0 | 2,687.5 | 2,687.5 | 6.4 | 5.9 | -75.97 | 95.5 | 1,188.2 | 1,147.9 | 1,135.6 | 12.29 | 93.397 | |
| 2,800.0 | 2,794.7 | 2,787.2 | 2,787.2 | 6.7 | 6.1 | -76.31 | 95.5 | 1,188.2 | 1,146.2 | 1,133.5 | 12.78 | 89.709 | |
| 2,900.0 | 2,894.5 | 2,887.0 | 2,887.0 | 6.9 | 6.4 | -76.65 | 95.5 | 1,188.2 | 1,144.6 | 1,131.3 | 13.26 | 86.293 | |
| 3,000.0 | 2,994.2 | 2,986.7 | 2,986.7 | 7.2 | 6.6 | -76.99 | 95.5 | 1,188.2 | 1,143.0 | 1,129.2 | 13.75 | 83.120 | |
| 3,100.0 | 3,094.0 | 3,086.5 | 3,086.5 | 7.5 | 6.8 | -77.33 | 95.5 | 1,188.2 | 1,141.4 | 1,127.2 | 14.24 | 80.165 | |
| 3,200.0 | 3,193.7 | 3,186.2 | 3,186.2 | 7.7 | 7.0 | -77.67 | 95.5 | 1,188.2 | 1,139.9 | 1,125.2 | 14.73 | 77.408 | |
| 3,300.0 | 3,293.5 | 3,286.0 | 3,286.0 | 8.0 | 7.3 | -78.01 | 95.5 | 1,188.2 | 1,138.5 | 1,123.2 | 15.21 | 74.829 | |
| 3,400.0 | 3,393.3 | 3,385.8 | 3,385.8 | 8.2 | 7.5 | -78.36 | 95.5 | 1,188.2 | 1,137.0 | 1,121.3 | 15.70 | 72.412 | |
| 3,500.0 | 3,493.0 | 3,485.5 | 3,485.5 | 8.5 | 7.7 | -78.70 | 95.5 | 1,188.2 | 1,135.6 | 1,119.4 | 16.19 | 70.142 | |
| 3,600.0 | 3,592.8 | 3,585.3 | 3,585.3 | 8.8 | 7.9 | -79.05 | 95.5 | 1,188.2 | 1,134.3 | 1,117.6 | 16.68 | 68.007 | |
| 3,700.0 | 3,692.5 | 3,685.0 | 3,685.0 | 9.0 | 8.2 | -79.39 | 95.5 | 1,188.2 | 1,133.0 | 1,115.8 | 17.17 | 65.996 | |
| 3,800.0 | 3,792.3 | 3,784.8 | 3,784.8 | 9.3 | 8.4 | -79.74 | 95.5 | 1,188.2 | 1,131.7 | 1,114.1 | 17.66 | 64.097 | |
| 3,900.0 | 3,892.0 | 3,884.5 | 3,884.5 | 9.6 | 8.6 | -80.08 | 95.5 | 1,188.2 | 1,130.5 | 1,112.3 | 18.15 | 62.303 | |
| 4,000.0 | 3,991.8 | 3,984.3 | 3,984.3 | 9.8 | 8.8 | -80.43 | 95.5 | 1,188.2 | 1,129.3 | 1,110.7 | 18.63 | 60.605 | |
| 4,100.0 | 4,091.6 | 4,084.1 | 4,084.1 | 10.1 | 9.0 | -80.78 | 95.5 | 1,188.2 | 1,128.2 | 1,109.0 | 19.12 | 58.995 | |
| 4,200.0 | 4,191.3 | 4,183.8 | 4,183.8 | 10.4 | 9.3 | -81.13 | 95.5 | 1,188.2 | 1,127.1 | 1,107.5 | 19.61 | 57.468 | |
| 4,300.0 | 4,291.1 | 4,283.6 | 4,283.6 | 10.6 | 9.5 | -81.48 | 95.5 | 1,188.2 | 1,126.0 | 1,105.9 | 20.10 | 56.017 | |
| 4,400.0 | 4,390.8 | 4,383.3 | 4,383.3 | 10.9 | 9.7 | -81.83 | 95.5 | 1,188.2 | 1,125.0 | 1,104.4 | 20.59 | 54.637 | |
| 4,500.0 | 4,490.6 | 4,483.1 | 4,483.1 | 11.1 | 9.9 | -82.18 | 95.5 | 1,188.2 | 1,124.0 | 1,102.9 | 21.08 | 53.322 | |
| 4,600.0 | 4,590.3 | 4,582.8 | 4,582.8 | 11.4 | 10.2 | -82.53 | 95.5 | 1,188.2 | 1,123.1 | 1,101.5 | 21.57 | 52.070 | |
| 4,700.0 | 4,690.1 | 4,682.6 | 4,682.6 | 11.7 | 10.4 | -82.89 | 95.5 | 1,188.2 | 1,122.2 | 1,100.1 | 22.06 | 50.874 | |
| 4,800.0 | 4,789.9 | 4,782.4 | 4,782.4 | 11.9 | 10.6 | -83.24 | 95.5 | 1,188.2 | 1,121.4 | 1,098.8 | 22.55 | 49.733 | |
| 4,900.0 | 4,889.6 | 4,882.1 | 4,882.1 | 12.2 | 10.8 | -83.59 | 95.5 | 1,188.2 | 1,120.6 | 1,097.5 | 23.04 | 48.641 | |
| 5,000.0 | 4,989.4 | 4,981.9 | 4,981.9 | 12.5 | 11.1 | -83.95 | 95.5 | 1,188.2 | 1,119.8 | 1,096.3 | 23.53 | 47.597 | |
| 5,100.0 | 5,089.1 | 5,081.6 | 5,081.6 | 12.7 | 11.3 | -84.30 | 95.5 | 1,188.2 | 1,119.1 | 1,095.1 | 24.02 | 46.598 | |

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Cathedral Energy Services

Anticollision Report

| | | | |
|---------------------------|-------------------------------|-------------------------------------|----------------------------------------|
| Company: | Whiting Petroleum Corporation | Local Co-ordinate Reference: | Well Razor #27J-3412B |
| Project: | Weld County, CO | TVD Reference: | WELL @ 4780.5usft (Original Well Elev) |
| Reference Site: | S27-T10N-R58W | MD Reference: | WELL @ 4780.5usft (Original Well Elev) |
| Site Error: | 0.0usft | North Reference: | True |
| Reference Well: | Razor #27J-3412B | Survey Calculation Method: | Minimum Curvature |
| Well Error: | 0.0usft | Output errors are at | 2.00 sigma |
| Reference Wellbore | HZ | Database: | USA EDM 5000 Multi Users DB |
| Reference Design: | Plan #3 | Offset TVD Reference: | Offset Datum |

| Offset Design S27-T10N-R58W - Razor #27J-3414B - HZ - Plan #1 | | | | | | | | | | | | Offset Site Error: | 0.0 usft |
|---------------------------------------------------------------|-----------------------|-----------------------|-----------------------|------------------|---------------|-----------------------|-------------------------------------|--------------|------------------------|-------------------------|------------------------|--------------------|----------|
| Survey Program: 0-ISCWSA MWD | | | | | | | | | | | | Offset Well Error: | 0.0 usft |
| Reference | | Offset | | Semi Major Axis | | Distance | | | | | | | |
| Measured Depth (usft) | Vertical Depth (usft) | Measured Depth (usft) | Vertical Depth (usft) | Reference (usft) | Offset (usft) | Highside Toolface (°) | Offset Wellbore Centre +N/-S (usft) | +E/-W (usft) | Between Centres (usft) | Between Ellipses (usft) | Total Uncertainty Axis | Separation Factor | Warning |
| 5,200.0 | 5,188.9 | 5,181.4 | 5,181.4 | 13.0 | 11.5 | -84.65 | 95.5 | 1,188.2 | 1,118.4 | 1,093.9 | 24.51 | 45.640 | |
| 5,280.0 | 5,268.7 | 5,352.1 | 5,350.6 | 13.2 | 11.8 | -84.38 | 77.5 | 1,188.8 | 1,116.0 | 1,091.0 | 25.02 | 44.600 | |
| 5,300.0 | 5,288.6 | 5,408.5 | 5,404.1 | 13.3 | 11.9 | -84.12 | 60.0 | 1,189.5 | 1,113.9 | 1,088.7 | 25.17 | 44.251 | |
| 5,350.0 | 5,338.0 | 5,536.8 | 5,516.7 | 13.4 | 12.2 | -83.01 | -0.7 | 1,191.9 | 1,105.9 | 1,080.2 | 25.65 | 43.117 | |
| 5,400.0 | 5,386.4 | 5,645.3 | 5,598.0 | 13.7 | 12.6 | -81.79 | -72.3 | 1,194.6 | 1,094.6 | 1,068.3 | 26.28 | 41.650 | |
| 5,450.0 | 5,433.4 | 5,736.0 | 5,653.4 | 13.9 | 13.0 | -80.78 | -143.9 | 1,197.4 | 1,080.9 | 1,053.8 | 27.04 | 39.979 | |
| 5,500.0 | 5,478.5 | 5,812.3 | 5,689.7 | 14.2 | 13.6 | -80.08 | -210.9 | 1,199.9 | 1,065.5 | 1,037.7 | 27.87 | 38.239 | |
| 5,550.0 | 5,521.3 | 5,877.8 | 5,712.9 | 14.6 | 14.1 | -79.68 | -272.0 | 1,202.3 | 1,049.0 | 1,020.2 | 28.74 | 36.501 | |
| 5,600.0 | 5,561.6 | 5,935.2 | 5,726.7 | 15.0 | 14.7 | -79.55 | -327.7 | 1,204.4 | 1,031.6 | 1,002.0 | 29.63 | 34.812 | |
| 5,650.0 | 5,598.7 | 5,986.5 | 5,733.8 | 15.5 | 15.2 | -79.65 | -378.5 | 1,206.4 | 1,013.6 | 983.1 | 30.55 | 33.183 | |
| 5,700.0 | 5,632.5 | 6,033.4 | 5,735.9 | 16.0 | 15.8 | -79.92 | -425.2 | 1,208.2 | 995.3 | 963.8 | 31.48 | 31.621 | |
| 5,750.0 | 5,662.6 | 6,107.4 | 5,735.9 | 16.6 | 16.6 | -79.30 | -499.2 | 1,209.6 | 976.2 | 943.4 | 32.71 | 29.843 | |
| 5,800.0 | 5,688.8 | 6,145.9 | 5,735.9 | 17.2 | 17.1 | -80.30 | -537.7 | 1,209.6 | 956.3 | 922.6 | 33.67 | 28.404 | |
| 5,850.0 | 5,710.7 | 6,186.6 | 5,735.9 | 17.9 | 17.6 | -81.45 | -578.4 | 1,209.6 | 936.2 | 901.5 | 34.70 | 26.982 | |
| 5,900.0 | 5,728.3 | 6,228.9 | 5,735.9 | 18.6 | 18.2 | -82.81 | -620.7 | 1,209.6 | 915.8 | 880.0 | 35.86 | 25.538 | |
| 5,950.0 | 5,741.3 | 6,272.6 | 5,735.9 | 19.3 | 18.8 | -84.43 | -664.4 | 1,209.6 | 895.2 | 858.0 | 37.19 | 24.072 | |
| 6,000.0 | 5,749.5 | 6,317.2 | 5,735.9 | 20.1 | 19.4 | -86.38 | -709.0 | 1,209.6 | 874.3 | 835.7 | 38.58 | 22.661 | |
| 6,050.0 | 5,753.1 | 6,362.4 | 5,735.9 | 20.9 | 20.1 | -88.67 | -754.2 | 1,209.6 | 853.1 | 813.1 | 40.02 | 21.318 | |
| 6,061.8 | 5,753.2 | 6,373.0 | 5,735.9 | 21.1 | 20.3 | -89.27 | -764.8 | 1,209.6 | 848.1 | 807.8 | 40.36 | 21.014 | |
| 6,100.0 | 5,753.2 | 6,407.8 | 5,735.9 | 21.7 | 20.8 | -89.26 | -799.6 | 1,209.6 | 832.2 | 790.7 | 41.50 | 20.054 | |
| 6,200.0 | 5,753.2 | 6,500.2 | 5,735.9 | 23.2 | 22.2 | -89.24 | -892.0 | 1,209.6 | 794.0 | 749.5 | 44.48 | 17.848 | |
| 6,300.0 | 5,753.2 | 6,594.4 | 5,735.9 | 24.7 | 23.7 | -89.22 | -986.2 | 1,209.6 | 760.6 | 713.0 | 47.60 | 15.978 | |
| 6,400.0 | 5,753.2 | 6,690.3 | 5,735.9 | 26.3 | 25.3 | -89.20 | -1,082.1 | 1,209.6 | 732.2 | 681.4 | 50.80 | 14.414 | |
| 6,500.0 | 5,753.2 | 6,787.5 | 5,735.9 | 27.9 | 27.0 | -89.19 | -1,179.3 | 1,209.6 | 708.9 | 654.8 | 54.03 | 13.120 | |
| 6,600.0 | 5,753.2 | 6,885.8 | 5,735.9 | 29.5 | 28.7 | -89.18 | -1,277.6 | 1,209.7 | 690.6 | 633.4 | 57.25 | 12.064 | |
| 6,700.0 | 5,753.2 | 6,985.0 | 5,735.9 | 31.1 | 30.4 | -89.17 | -1,376.8 | 1,209.7 | 677.6 | 617.2 | 60.42 | 11.214 | |
| 6,800.0 | 5,753.2 | 7,084.6 | 5,735.9 | 32.6 | 32.1 | -89.16 | -1,476.4 | 1,209.7 | 669.7 | 606.2 | 63.51 | 10.545 | |
| 6,900.0 | 5,753.2 | 7,184.6 | 5,735.9 | 34.2 | 33.9 | -89.16 | -1,576.4 | 1,209.7 | 667.1 | 600.6 | 66.49 | 10.033 CC | |
| 6,900.3 | 5,753.2 | 7,184.9 | 5,735.9 | 34.2 | 33.9 | -89.16 | -1,576.7 | 1,209.7 | 667.1 | 600.6 | 66.50 | 10.032 | |
| 7,000.0 | 5,753.2 | 7,284.6 | 5,735.9 | 35.8 | 35.7 | -89.16 | -1,676.4 | 1,209.7 | 667.1 | 597.2 | 69.97 | 9.535 | |
| 7,100.0 | 5,753.2 | 7,384.6 | 5,735.9 | 37.5 | 37.5 | -89.16 | -1,776.4 | 1,209.7 | 667.2 | 593.7 | 73.50 | 9.077 | |
| 7,200.0 | 5,753.2 | 7,484.6 | 5,735.9 | 39.2 | 39.3 | -89.16 | -1,876.4 | 1,209.7 | 667.2 | 590.1 | 77.07 | 8.657 | |
| 7,300.0 | 5,753.2 | 7,584.6 | 5,735.9 | 40.9 | 41.1 | -89.16 | -1,976.4 | 1,209.7 | 667.2 | 586.5 | 80.66 | 8.271 | |
| 7,400.0 | 5,753.2 | 7,684.6 | 5,735.9 | 42.6 | 43.0 | -89.16 | -2,076.4 | 1,209.7 | 667.2 | 582.9 | 84.28 | 7.917 | |
| 7,500.0 | 5,753.2 | 7,784.6 | 5,735.9 | 44.3 | 44.8 | -89.16 | -2,176.4 | 1,209.7 | 667.2 | 579.3 | 87.91 | 7.590 | |
| 7,600.0 | 5,753.2 | 7,884.6 | 5,735.9 | 46.1 | 46.7 | -89.16 | -2,276.4 | 1,209.7 | 667.2 | 575.7 | 91.56 | 7.287 | |
| 7,700.0 | 5,753.2 | 7,984.6 | 5,735.9 | 47.9 | 48.5 | -89.16 | -2,376.4 | 1,209.7 | 667.3 | 572.0 | 95.23 | 7.007 | |
| 7,800.0 | 5,753.2 | 8,084.6 | 5,735.9 | 49.6 | 50.4 | -89.16 | -2,476.4 | 1,209.7 | 667.3 | 568.4 | 98.91 | 6.746 | |
| 7,900.0 | 5,753.2 | 8,184.6 | 5,735.9 | 51.4 | 52.2 | -89.16 | -2,576.4 | 1,209.8 | 667.3 | 564.7 | 102.60 | 6.504 | |
| 8,000.0 | 5,753.2 | 8,284.6 | 5,735.9 | 53.2 | 54.1 | -89.16 | -2,676.4 | 1,209.8 | 667.3 | 561.0 | 106.30 | 6.277 | |
| 8,100.0 | 5,753.1 | 8,384.6 | 5,735.9 | 55.0 | 56.0 | -89.16 | -2,776.4 | 1,209.8 | 667.3 | 557.3 | 110.01 | 6.066 | |
| 8,200.0 | 5,753.1 | 8,484.6 | 5,735.9 | 56.9 | 57.8 | -89.16 | -2,876.4 | 1,209.8 | 667.3 | 553.6 | 113.73 | 5.867 | |
| 8,300.0 | 5,753.1 | 8,584.6 | 5,735.9 | 58.7 | 59.7 | -89.17 | -2,976.4 | 1,209.8 | 667.3 | 549.9 | 117.46 | 5.681 | |
| 8,400.0 | 5,753.1 | 8,684.6 | 5,735.9 | 60.5 | 61.6 | -89.17 | -3,076.4 | 1,209.8 | 667.4 | 546.2 | 121.20 | 5.506 | |
| 8,500.0 | 5,753.1 | 8,784.6 | 5,735.9 | 62.3 | 63.5 | -89.17 | -3,176.4 | 1,209.8 | 667.4 | 542.4 | 124.94 | 5.342 | |
| 8,600.0 | 5,753.1 | 8,884.6 | 5,735.9 | 64.2 | 65.4 | -89.17 | -3,276.4 | 1,209.8 | 667.4 | 538.7 | 128.69 | 5.186 | |
| 8,700.0 | 5,753.1 | 8,984.6 | 5,735.9 | 66.0 | 67.3 | -89.17 | -3,376.4 | 1,209.8 | 667.4 | 535.0 | 132.44 | 5.039 | |
| 8,800.0 | 5,753.1 | 9,084.6 | 5,735.9 | 67.9 | 69.1 | -89.17 | -3,476.4 | 1,209.8 | 667.4 | 531.2 | 136.20 | 4.900 | |
| 8,900.0 | 5,753.1 | 9,184.6 | 5,735.9 | 69.7 | 71.0 | -89.17 | -3,576.4 | 1,209.8 | 667.4 | 527.5 | 139.96 | 4.769 | |
| 9,000.0 | 5,753.1 | 9,284.6 | 5,735.9 | 71.6 | 72.9 | -89.17 | -3,676.4 | 1,209.8 | 667.5 | 523.7 | 143.73 | 4.644 | |
| 9,100.0 | 5,753.1 | 9,384.6 | 5,735.9 | 73.4 | 74.8 | -89.17 | -3,776.4 | 1,209.8 | 667.5 | 520.0 | 147.50 | 4.525 | |
| 9,200.0 | 5,753.1 | 9,484.6 | 5,735.9 | 75.3 | 76.7 | -89.17 | -3,876.4 | 1,209.9 | 667.5 | 516.2 | 151.27 | 4.412 | |

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Cathedral Energy Services

Anticollision Report

| | | | |
|---------------------------|-------------------------------|-------------------------------------|----------------------------------------|
| Company: | Whiting Petroleum Corporation | Local Co-ordinate Reference: | Well Razor #27J-3412B |
| Project: | Weld County, CO | TVD Reference: | WELL @ 4780.5usft (Original Well Elev) |
| Reference Site: | S27-T10N-R58W | MD Reference: | WELL @ 4780.5usft (Original Well Elev) |
| Site Error: | 0.0usft | North Reference: | True |
| Reference Well: | Razor #27J-3412B | Survey Calculation Method: | Minimum Curvature |
| Well Error: | 0.0usft | Output errors are at | 2.00 sigma |
| Reference Wellbore | HZ | Database: | USA EDM 5000 Multi Users DB |
| Reference Design: | Plan #3 | Offset TVD Reference: | Offset Datum |

| Offset Design S27-T10N-R58W - Razor #27I-3414B - HZ - Plan #1 | | | | | | | | | | | | Offset Site Error: | 0.0 usft |
|---------------------------------------------------------------|-----------------------|-----------------------|-----------------------|------------------|---------------|-----------------------|-------------------------------------|--------------|------------------------|-------------------------|------------------------|--------------------|----------|
| Survey Program: 0-ISCSWA MWD | | | | | | | | | | | | Offset Well Error: | 0.0 usft |
| Reference | | Offset | | Semi Major Axis | | Distance | | | | | | | |
| Measured Depth (usft) | Vertical Depth (usft) | Measured Depth (usft) | Vertical Depth (usft) | Reference (usft) | Offset (usft) | Highside Toolface (°) | Offset Wellbore Centre +N/-S (usft) | +E/-W (usft) | Between Centres (usft) | Between Ellipses (usft) | Total Uncertainty Axis | Separation Factor | Warning |
| 9,300.0 | 5,753.1 | 9,584.6 | 5,735.9 | 77.2 | 78.6 | -89.17 | -3,976.4 | 1,209.9 | 667.5 | 512.5 | 155.05 | 4.305 | |
| 9,400.0 | 5,753.1 | 9,684.6 | 5,735.9 | 79.0 | 80.5 | -89.17 | -4,076.4 | 1,209.9 | 667.5 | 508.7 | 158.83 | 4.203 | |
| 9,500.0 | 5,753.1 | 9,784.6 | 5,735.9 | 80.9 | 82.4 | -89.17 | -4,176.4 | 1,209.9 | 667.5 | 504.9 | 162.62 | 4.105 | |
| 9,600.0 | 5,753.1 | 9,884.6 | 5,735.9 | 82.8 | 84.3 | -89.17 | -4,276.4 | 1,209.9 | 667.5 | 501.1 | 166.40 | 4.012 | |
| 9,700.0 | 5,753.1 | 9,984.6 | 5,735.9 | 84.6 | 86.2 | -89.17 | -4,376.4 | 1,209.9 | 667.6 | 497.4 | 170.19 | 3.922 | |
| 9,800.0 | 5,753.1 | 10,084.6 | 5,735.9 | 86.5 | 88.1 | -89.17 | -4,476.4 | 1,209.9 | 667.6 | 493.6 | 173.98 | 3.837 | |
| 9,900.0 | 5,753.1 | 10,184.6 | 5,735.9 | 88.4 | 90.0 | -89.17 | -4,576.4 | 1,209.9 | 667.6 | 489.8 | 177.77 | 3.755 | |
| 10,000.0 | 5,753.1 | 10,284.6 | 5,735.9 | 90.3 | 91.9 | -89.17 | -4,676.4 | 1,209.9 | 667.6 | 486.0 | 181.57 | 3.677 | |
| 10,100.0 | 5,753.1 | 10,384.6 | 5,736.0 | 92.1 | 93.8 | -89.17 | -4,776.4 | 1,209.9 | 667.6 | 482.3 | 185.37 | 3.602 | |
| 10,200.0 | 5,753.1 | 10,484.6 | 5,736.0 | 94.0 | 95.7 | -89.17 | -4,876.4 | 1,209.9 | 667.6 | 478.5 | 189.17 | 3.529 | |
| 10,300.0 | 5,753.1 | 10,584.6 | 5,736.0 | 95.9 | 97.6 | -89.17 | -4,976.4 | 1,209.9 | 667.7 | 474.7 | 192.97 | 3.460 | |
| 10,400.0 | 5,753.1 | 10,684.6 | 5,736.0 | 97.8 | 99.5 | -89.18 | -5,076.4 | 1,209.9 | 667.7 | 470.9 | 196.77 | 3.393 | |
| 10,500.0 | 5,753.1 | 10,784.6 | 5,736.0 | 99.7 | 101.4 | -89.18 | -5,176.4 | 1,209.9 | 667.7 | 467.1 | 200.57 | 3.329 | |
| 10,600.0 | 5,753.1 | 10,884.6 | 5,736.0 | 101.6 | 103.3 | -89.18 | -5,276.4 | 1,210.0 | 667.7 | 463.3 | 204.38 | 3.267 | |
| 10,700.0 | 5,753.1 | 10,984.6 | 5,736.0 | 103.5 | 105.2 | -89.18 | -5,376.4 | 1,210.0 | 667.7 | 459.5 | 208.18 | 3.207 | |
| 10,800.0 | 5,753.1 | 11,084.6 | 5,736.0 | 105.4 | 107.2 | -89.18 | -5,476.4 | 1,210.0 | 667.7 | 455.7 | 211.99 | 3.150 | |
| 10,900.0 | 5,753.0 | 11,184.6 | 5,736.0 | 107.3 | 109.1 | -89.18 | -5,576.4 | 1,210.0 | 667.7 | 451.9 | 215.80 | 3.094 | |
| 11,000.0 | 5,753.0 | 11,284.6 | 5,736.0 | 109.1 | 111.0 | -89.18 | -5,676.4 | 1,210.0 | 667.8 | 448.2 | 219.61 | 3.041 | |
| 11,100.0 | 5,753.0 | 11,384.6 | 5,736.0 | 111.0 | 112.9 | -89.18 | -5,776.4 | 1,210.0 | 667.8 | 444.4 | 223.42 | 2.989 | |
| 11,200.0 | 5,753.0 | 11,484.6 | 5,736.0 | 112.9 | 114.8 | -89.18 | -5,876.4 | 1,210.0 | 667.8 | 440.6 | 227.24 | 2.939 | |
| 11,300.0 | 5,753.0 | 11,584.6 | 5,736.0 | 114.8 | 116.7 | -89.18 | -5,976.4 | 1,210.0 | 667.8 | 436.8 | 231.05 | 2.890 | |
| 11,400.0 | 5,753.0 | 11,684.6 | 5,736.0 | 116.7 | 118.6 | -89.18 | -6,076.4 | 1,210.0 | 667.8 | 433.0 | 234.86 | 2.843 | |
| 11,500.0 | 5,753.0 | 11,784.6 | 5,736.0 | 118.6 | 120.5 | -89.18 | -6,176.4 | 1,210.0 | 667.8 | 429.2 | 238.68 | 2.798 | |
| 11,600.0 | 5,753.0 | 11,884.6 | 5,736.0 | 120.5 | 122.4 | -89.18 | -6,276.4 | 1,210.0 | 667.9 | 425.4 | 242.49 | 2.754 | |
| 11,700.0 | 5,753.0 | 11,984.6 | 5,736.0 | 122.4 | 124.3 | -89.18 | -6,376.4 | 1,210.0 | 667.9 | 421.6 | 246.31 | 2.712 | |
| 11,800.0 | 5,753.0 | 12,084.6 | 5,736.0 | 124.3 | 126.3 | -89.18 | -6,476.4 | 1,210.0 | 667.9 | 417.8 | 250.13 | 2.670 | |
| 11,900.0 | 5,753.0 | 12,184.6 | 5,736.0 | 126.2 | 128.2 | -89.18 | -6,576.4 | 1,210.1 | 667.9 | 414.0 | 253.95 | 2.630 | |
| 12,000.0 | 5,753.0 | 12,284.6 | 5,736.0 | 128.1 | 130.1 | -89.18 | -6,676.4 | 1,210.1 | 667.9 | 410.2 | 257.77 | 2.591 | |
| 12,100.0 | 5,753.0 | 12,384.6 | 5,736.0 | 130.0 | 132.0 | -89.18 | -6,776.4 | 1,210.1 | 667.9 | 406.4 | 261.59 | 2.553 | |
| 12,200.0 | 5,753.0 | 12,484.6 | 5,736.0 | 131.9 | 133.9 | -89.18 | -6,876.4 | 1,210.1 | 668.0 | 402.5 | 265.41 | 2.517 | |
| 12,277.3 | 5,753.0 | 12,561.9 | 5,736.0 | 133.1 | 135.4 | -89.18 | -6,953.7 | 1,210.1 | 668.0 | 399.9 | 268.09 | 2.492 | |
| 12,277.6 | 5,753.0 | 12,562.2 | 5,736.0 | 133.1 | 135.4 | -89.18 | -6,954.0 | 1,210.1 | 668.0 | 399.9 | 268.10 | 2.491 ES, SF | |

Cathedral Energy Services

Anticollision Report

| | | | |
|---------------------------|-------------------------------|-------------------------------------|----------------------------------------|
| Company: | Whiting Petroleum Corporation | Local Co-ordinate Reference: | Well Razor #27J-3412B |
| Project: | Weld County, CO | TVD Reference: | WELL @ 4780.5usft (Original Well Elev) |
| Reference Site: | S27-T10N-R58W | MD Reference: | WELL @ 4780.5usft (Original Well Elev) |
| Site Error: | 0.0usft | North Reference: | True |
| Reference Well: | Razor #27J-3412B | Survey Calculation Method: | Minimum Curvature |
| Well Error: | 0.0usft | Output errors are at | 2.00 sigma |
| Reference Wellbore | HZ | Database: | USA EDM 5000 Multi Users DB |
| Reference Design: | Plan #3 | Offset TVD Reference: | Offset Datum |

| Offset Design S27-T10N-R58W - Razor #27J-3415A - HZ - Plan #1 | | | | | | | | | | | | Offset Site Error: | 0.0 usft |
|---------------------------------------------------------------|-----------------------------|-----------------------------|-----------------------------|---------------------|------------------|-----------------------------|-------------------------------------------|-----------------|------------------------------|----------------------|---------|--------------------|----------|
| Survey Program: 0-ISCWSA MWD | | | | | | | | | | | | Offset Well Error: | 0.0 usft |
| Reference | | Offset | | Semi Major Axis | | Highside Toolface (°) | Distance | | Total Uncertainty Axis | Separation Factor | Warning | | |
| Measured Depth (usft) | Vertical Depth (usft) | Measured Depth (usft) | Vertical Depth (usft) | Reference (usft) | Offset (usft) | | Offset Wellbore Centre +N/-S (usft) | +E/-W (usft) | | | | | |
| 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 82.07 | 170.2 | 1,221.1 | 1,232.9 | | | | |
| 100.0 | 100.0 | 92.5 | 92.5 | 0.1 | 0.1 | 82.07 | 170.2 | 1,221.1 | 1,232.9 | 1,232.7 | 0.18 | 6,825.096 | |
| 200.0 | 200.0 | 192.5 | 192.5 | 0.3 | 0.3 | 82.07 | 170.2 | 1,221.1 | 1,232.9 | 1,232.3 | 0.62 | 1,987.408 | |
| 300.0 | 300.0 | 292.5 | 292.5 | 0.5 | 0.5 | 82.07 | 170.2 | 1,221.1 | 1,232.9 | 1,231.8 | 1.07 | 1,152.363 | |
| 400.0 | 400.0 | 392.5 | 392.5 | 0.8 | 0.8 | 82.07 | 170.2 | 1,221.1 | 1,232.9 | 1,231.4 | 1.52 | 811.427 | |
| 500.0 | 500.0 | 492.5 | 492.5 | 1.0 | 1.0 | 82.07 | 170.2 | 1,221.1 | 1,232.9 | 1,230.9 | 1.97 | 626.170 | |
| 600.0 | 600.0 | 592.5 | 592.5 | 1.2 | 1.2 | -72.52 | 170.2 | 1,221.1 | 1,232.4 | 1,230.0 | 2.39 | 515.097 | |
| 700.0 | 699.8 | 692.3 | 692.3 | 1.4 | 1.4 | -72.78 | 170.2 | 1,221.1 | 1,230.8 | 1,228.0 | 2.81 | 438.648 | |
| 800.0 | 799.6 | 792.1 | 792.1 | 1.6 | 1.6 | -73.09 | 170.2 | 1,221.1 | 1,228.8 | 1,225.5 | 3.24 | 379.316 | |
| 900.0 | 899.4 | 891.9 | 891.9 | 1.8 | 1.9 | -73.40 | 170.2 | 1,221.1 | 1,226.7 | 1,223.1 | 3.69 | 332.726 | |
| 1,000.0 | 999.1 | 991.6 | 991.6 | 2.1 | 2.1 | -73.72 | 170.2 | 1,221.1 | 1,224.8 | 1,220.6 | 4.14 | 295.551 | |
| 1,100.0 | 1,098.9 | 1,091.4 | 1,091.4 | 2.3 | 2.3 | -74.03 | 170.2 | 1,221.1 | 1,222.8 | 1,218.2 | 4.61 | 265.385 | |
| 1,200.0 | 1,198.6 | 1,191.1 | 1,191.1 | 2.5 | 2.5 | -74.34 | 170.2 | 1,221.1 | 1,220.9 | 1,215.8 | 5.08 | 240.515 | |
| 1,300.0 | 1,298.4 | 1,290.9 | 1,290.9 | 2.8 | 2.8 | -74.66 | 170.2 | 1,221.1 | 1,219.0 | 1,213.5 | 5.55 | 219.712 | |
| 1,400.0 | 1,398.1 | 1,390.6 | 1,390.6 | 3.0 | 3.0 | -74.97 | 170.2 | 1,221.1 | 1,217.2 | 1,211.2 | 6.02 | 202.086 | |
| 1,500.0 | 1,497.9 | 1,490.4 | 1,490.4 | 3.3 | 3.2 | -75.29 | 170.2 | 1,221.1 | 1,215.4 | 1,208.9 | 6.50 | 186.979 | |
| 1,600.0 | 1,597.6 | 1,590.1 | 1,590.1 | 3.5 | 3.4 | -75.61 | 170.2 | 1,221.1 | 1,213.7 | 1,206.7 | 6.98 | 173.901 | |
| 1,700.0 | 1,697.4 | 1,689.9 | 1,689.9 | 3.8 | 3.7 | -75.93 | 170.2 | 1,221.1 | 1,211.9 | 1,204.5 | 7.46 | 162.477 | |
| 1,800.0 | 1,797.2 | 1,789.7 | 1,789.7 | 4.1 | 3.9 | -76.25 | 170.2 | 1,221.1 | 1,210.3 | 1,202.3 | 7.94 | 152.417 | |
| 1,900.0 | 1,896.9 | 1,889.4 | 1,889.4 | 4.3 | 4.1 | -76.57 | 170.2 | 1,221.1 | 1,208.6 | 1,200.2 | 8.42 | 143.494 | |
| 2,000.0 | 1,996.7 | 1,989.2 | 1,989.2 | 4.6 | 4.3 | -76.89 | 170.2 | 1,221.1 | 1,207.0 | 1,198.1 | 8.91 | 135.530 | |
| 2,100.0 | 2,096.4 | 2,088.9 | 2,088.9 | 4.8 | 4.6 | -77.21 | 170.2 | 1,221.1 | 1,205.5 | 1,196.1 | 9.39 | 128.380 | |
| 2,200.0 | 2,196.2 | 2,188.7 | 2,188.7 | 5.1 | 4.8 | -77.53 | 170.2 | 1,221.1 | 1,203.9 | 1,194.0 | 9.87 | 121.927 | |
| 2,300.0 | 2,295.9 | 2,288.4 | 2,288.4 | 5.4 | 5.0 | -77.86 | 170.2 | 1,221.1 | 1,202.4 | 1,192.1 | 10.36 | 116.076 | |
| 2,400.0 | 2,395.7 | 2,388.2 | 2,388.2 | 5.6 | 5.2 | -78.18 | 170.2 | 1,221.1 | 1,201.0 | 1,190.1 | 10.84 | 110.746 | |
| 2,500.0 | 2,495.5 | 2,488.0 | 2,488.0 | 5.9 | 5.5 | -78.51 | 170.2 | 1,221.1 | 1,199.6 | 1,188.2 | 11.33 | 105.873 | |
| 2,600.0 | 2,595.2 | 2,587.7 | 2,587.7 | 6.1 | 5.7 | -78.83 | 170.2 | 1,221.1 | 1,198.2 | 1,186.4 | 11.82 | 101.400 | |
| 2,700.0 | 2,695.0 | 2,687.5 | 2,687.5 | 6.4 | 5.9 | -79.16 | 170.2 | 1,221.1 | 1,196.9 | 1,184.6 | 12.30 | 97.282 | |
| 2,800.0 | 2,794.7 | 2,787.2 | 2,787.2 | 6.7 | 6.1 | -79.49 | 170.2 | 1,221.1 | 1,195.6 | 1,182.8 | 12.79 | 93.478 | |
| 2,900.0 | 2,894.5 | 2,887.0 | 2,887.0 | 6.9 | 6.4 | -79.82 | 170.2 | 1,221.1 | 1,194.3 | 1,181.0 | 13.28 | 89.954 | |
| 3,000.0 | 2,994.2 | 2,986.7 | 2,986.7 | 7.2 | 6.6 | -80.14 | 170.2 | 1,221.1 | 1,193.1 | 1,179.3 | 13.76 | 86.681 | |
| 3,100.0 | 3,094.0 | 3,086.5 | 3,086.5 | 7.5 | 6.8 | -80.47 | 170.2 | 1,221.1 | 1,191.9 | 1,177.7 | 14.25 | 83.633 | |
| 3,200.0 | 3,193.7 | 3,186.2 | 3,186.2 | 7.7 | 7.0 | -80.80 | 170.2 | 1,221.1 | 1,190.8 | 1,176.0 | 14.74 | 80.788 | |
| 3,300.0 | 3,293.5 | 3,286.0 | 3,286.0 | 8.0 | 7.3 | -81.14 | 170.2 | 1,221.1 | 1,189.7 | 1,174.5 | 15.23 | 78.128 | |
| 3,400.0 | 3,393.3 | 3,385.8 | 3,385.8 | 8.2 | 7.5 | -81.47 | 170.2 | 1,221.1 | 1,188.6 | 1,172.9 | 15.72 | 75.634 | |
| 3,500.0 | 3,493.0 | 3,485.5 | 3,485.5 | 8.5 | 7.7 | -81.80 | 170.2 | 1,221.1 | 1,187.6 | 1,171.4 | 16.20 | 73.293 | |
| 3,600.0 | 3,592.8 | 3,585.3 | 3,585.3 | 8.8 | 7.9 | -82.13 | 170.2 | 1,221.1 | 1,186.6 | 1,169.9 | 16.69 | 71.090 | |
| 3,700.0 | 3,692.5 | 3,685.0 | 3,685.0 | 9.0 | 8.2 | -82.46 | 170.2 | 1,221.1 | 1,185.7 | 1,168.5 | 17.18 | 69.015 | |
| 3,800.0 | 3,792.3 | 3,784.8 | 3,784.8 | 9.3 | 8.4 | -82.80 | 170.2 | 1,221.1 | 1,184.8 | 1,167.1 | 17.67 | 67.056 | |
| 3,900.0 | 3,892.0 | 3,884.5 | 3,884.5 | 9.6 | 8.6 | -83.13 | 170.2 | 1,221.1 | 1,183.9 | 1,165.8 | 18.16 | 65.205 | |
| 4,000.0 | 3,991.8 | 3,984.3 | 3,984.3 | 9.8 | 8.8 | -83.47 | 170.2 | 1,221.1 | 1,183.1 | 1,164.5 | 18.65 | 63.452 | |
| 4,100.0 | 4,091.6 | 4,084.1 | 4,084.1 | 10.1 | 9.0 | -83.80 | 170.2 | 1,221.1 | 1,182.3 | 1,163.2 | 19.13 | 61.791 | |
| 4,200.0 | 4,191.3 | 4,183.8 | 4,183.8 | 10.4 | 9.3 | -84.14 | 170.2 | 1,221.1 | 1,181.6 | 1,162.0 | 19.62 | 60.215 | |
| 4,300.0 | 4,291.1 | 4,283.6 | 4,283.6 | 10.6 | 9.5 | -84.47 | 170.2 | 1,221.1 | 1,180.9 | 1,160.8 | 20.11 | 58.717 | |
| 4,400.0 | 4,390.8 | 4,383.3 | 4,383.3 | 10.9 | 9.7 | -84.81 | 170.2 | 1,221.1 | 1,180.3 | 1,159.7 | 20.60 | 57.292 | |
| 4,500.0 | 4,490.6 | 4,483.1 | 4,483.1 | 11.1 | 9.9 | -85.15 | 170.2 | 1,221.1 | 1,179.7 | 1,158.6 | 21.09 | 55.935 | |
| 4,600.0 | 4,590.3 | 4,582.8 | 4,582.8 | 11.4 | 10.2 | -85.48 | 170.2 | 1,221.1 | 1,179.1 | 1,157.5 | 21.58 | 54.642 | |
| 4,700.0 | 4,690.1 | 4,682.6 | 4,682.6 | 11.7 | 10.4 | -85.82 | 170.2 | 1,221.1 | 1,178.6 | 1,156.5 | 22.07 | 53.408 | |
| 4,800.0 | 4,789.9 | 4,782.4 | 4,782.4 | 11.9 | 10.6 | -86.16 | 170.2 | 1,221.1 | 1,178.1 | 1,155.5 | 22.56 | 52.229 | |
| 4,900.0 | 4,889.6 | 4,882.1 | 4,882.1 | 12.2 | 10.8 | -86.50 | 170.2 | 1,221.1 | 1,177.6 | 1,154.6 | 23.04 | 51.102 | |
| 5,000.0 | 4,989.4 | 4,981.9 | 4,981.9 | 12.5 | 11.1 | -86.83 | 170.2 | 1,221.1 | 1,177.2 | 1,153.7 | 23.53 | 50.023 | |
| 5,100.0 | 5,089.1 | 5,081.6 | 5,081.6 | 12.7 | 11.3 | -87.17 | 170.2 | 1,221.1 | 1,176.8 | 1,152.8 | 24.02 | 48.991 | |

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Cathedral Energy Services

Anticollision Report

| | | | |
|---------------------------|-------------------------------|-------------------------------------|----------------------------------------|
| Company: | Whiting Petroleum Corporation | Local Co-ordinate Reference: | Well Razor #27J-3412B |
| Project: | Weld County, CO | TVD Reference: | WELL @ 4780.5usft (Original Well Elev) |
| Reference Site: | S27-T10N-R58W | MD Reference: | WELL @ 4780.5usft (Original Well Elev) |
| Site Error: | 0.0usft | North Reference: | True |
| Reference Well: | Razor #27J-3412B | Survey Calculation Method: | Minimum Curvature |
| Well Error: | 0.0usft | Output errors are at | 2.00 sigma |
| Reference Wellbore | HZ | Database: | USA EDM 5000 Multi Users DB |
| Reference Design: | Plan #3 | Offset TVD Reference: | Offset Datum |

| Offset Design S27-T10N-R58W - Razor #27J-3415A - HZ - Plan #1 | | | | | | | | | | | | | Offset Site Error: 0.0 usft | |
|---------------------------------------------------------------|-----------------------|-----------------------|-----------------------|------------------|---------------|-----------------------|-------------------------------------|--------------|------------------------|-------------------------|------------------------|-------------------|-----------------------------|--|
| Survey Program: 0-ISCWSA MWD | | | | | | | | | | | | | Offset Well Error: 0.0 usft | |
| Reference | | Offset | | Semi Major Axis | | | Distance | | | | | | Warning | |
| Measured Depth (usft) | Vertical Depth (usft) | Measured Depth (usft) | Vertical Depth (usft) | Reference (usft) | Offset (usft) | Highside Toolface (°) | Offset Wellbore Centre +N/-S (usft) | +E/-W (usft) | Between Centres (usft) | Between Ellipses (usft) | Total Uncertainty Axis | Separation Factor | | |
| 5,200.0 | 5,188.9 | 5,185.1 | 5,185.0 | 13.0 | 11.5 | -87.37 | 167.2 | 1,222.2 | 1,176.4 | 1,151.9 | 24.49 | 48.035 | | |
| 5,280.0 | 5,268.7 | 5,269.1 | 5,267.4 | 13.2 | 11.7 | -86.88 | 152.4 | 1,228.0 | 1,175.8 | 1,150.9 | 24.84 | 47.333 | | |
| 5,300.0 | 5,288.6 | 5,289.6 | 5,287.0 | 13.3 | 11.7 | -86.83 | 147.0 | 1,230.1 | 1,175.6 | 1,150.7 | 24.93 | 47.152 | | |
| 5,350.0 | 5,338.0 | 5,339.9 | 5,334.1 | 13.4 | 11.8 | -86.51 | 130.5 | 1,236.5 | 1,174.9 | 1,149.7 | 25.19 | 46.633 | | |
| 5,400.0 | 5,386.4 | 5,389.3 | 5,378.5 | 13.7 | 11.9 | -86.16 | 110.3 | 1,244.4 | 1,174.0 | 1,148.5 | 25.51 | 46.014 | | |
| 5,450.0 | 5,433.4 | 5,437.8 | 5,419.8 | 13.9 | 12.0 | -85.83 | 86.8 | 1,253.5 | 1,172.9 | 1,147.0 | 25.91 | 45.266 | | |
| 5,500.0 | 5,478.5 | 5,485.3 | 5,458.0 | 14.2 | 12.1 | -85.54 | 60.3 | 1,263.8 | 1,171.5 | 1,145.1 | 26.39 | 44.401 | | |
| 5,550.0 | 5,521.3 | 5,532.1 | 5,492.8 | 14.6 | 12.3 | -85.28 | 31.2 | 1,275.1 | 1,170.0 | 1,143.0 | 26.94 | 43.433 | | |
| 5,600.0 | 5,561.6 | 5,578.2 | 5,524.2 | 15.0 | 12.5 | -85.06 | -0.1 | 1,287.3 | 1,168.2 | 1,140.6 | 27.57 | 42.369 | | |
| 5,650.0 | 5,598.7 | 5,623.5 | 5,552.1 | 15.5 | 12.8 | -84.88 | -33.4 | 1,300.3 | 1,166.3 | 1,138.0 | 28.29 | 41.218 | | |
| 5,700.0 | 5,632.5 | 5,668.3 | 5,576.5 | 16.0 | 13.1 | -84.75 | -68.4 | 1,313.9 | 1,164.1 | 1,135.0 | 29.11 | 39.994 | | |
| 5,750.0 | 5,662.6 | 5,712.5 | 5,597.3 | 16.6 | 13.5 | -84.66 | -104.7 | 1,328.0 | 1,161.8 | 1,131.8 | 30.01 | 38.714 | | |
| 5,800.0 | 5,688.8 | 5,756.2 | 5,614.6 | 17.2 | 13.8 | -84.61 | -142.1 | 1,342.5 | 1,159.3 | 1,128.3 | 31.00 | 37.398 | | |
| 5,850.0 | 5,710.7 | 5,800.0 | 5,628.5 | 17.9 | 14.3 | -84.61 | -180.8 | 1,357.6 | 1,156.7 | 1,124.6 | 32.08 | 36.055 | | |
| 5,900.0 | 5,728.3 | 5,842.3 | 5,638.5 | 18.6 | 14.8 | -84.65 | -219.1 | 1,372.5 | 1,153.9 | 1,120.7 | 33.23 | 34.723 | | |
| 5,950.0 | 5,741.3 | 5,884.9 | 5,645.3 | 19.3 | 15.3 | -84.74 | -258.3 | 1,387.7 | 1,151.0 | 1,116.6 | 34.46 | 33.400 | | |
| 6,000.0 | 5,749.5 | 5,927.1 | 5,648.5 | 20.1 | 15.8 | -84.87 | -297.5 | 1,403.0 | 1,148.0 | 1,112.3 | 35.78 | 32.089 | | |
| 6,050.0 | 5,753.1 | 6,013.9 | 5,648.9 | 20.9 | 16.9 | -84.99 | -378.8 | 1,433.3 | 1,144.4 | 1,106.7 | 37.73 | 30.330 | | |
| 6,061.8 | 5,753.2 | 6,043.0 | 5,648.9 | 21.1 | 17.3 | -85.11 | -406.3 | 1,442.7 | 1,143.2 | 1,104.8 | 38.34 | 29.813 | | |
| 6,100.0 | 5,753.2 | 6,136.4 | 5,648.9 | 21.7 | 18.5 | -85.07 | -495.7 | 1,469.9 | 1,138.1 | 1,097.8 | 40.30 | 28.239 | | |
| 6,200.0 | 5,753.2 | 6,375.7 | 5,648.9 | 23.2 | 22.1 | -84.92 | -729.7 | 1,519.5 | 1,119.8 | 1,074.4 | 45.45 | 24.638 | | |
| 6,300.0 | 5,753.2 | 6,604.9 | 5,648.9 | 24.7 | 25.6 | -84.71 | -957.9 | 1,539.2 | 1,094.7 | 1,044.2 | 50.50 | 21.676 | | |
| 6,400.0 | 5,753.2 | 6,729.2 | 5,648.9 | 26.3 | 27.5 | -84.61 | -1,082.1 | 1,539.8 | 1,066.7 | 1,012.9 | 53.79 | 19.831 | | |
| 6,500.0 | 5,753.2 | 6,826.4 | 5,648.9 | 27.9 | 29.1 | -84.56 | -1,179.3 | 1,539.8 | 1,043.5 | 986.8 | 56.63 | 18.425 | | |
| 6,600.0 | 5,753.2 | 6,924.7 | 5,648.9 | 29.5 | 30.7 | -84.51 | -1,277.7 | 1,539.8 | 1,025.3 | 965.8 | 59.48 | 17.238 | | |
| 6,700.0 | 5,753.2 | 7,023.8 | 5,648.9 | 31.1 | 32.3 | -84.48 | -1,376.8 | 1,539.8 | 1,012.3 | 950.0 | 62.29 | 16.251 | | |
| 6,800.0 | 5,753.2 | 7,123.5 | 5,648.9 | 32.6 | 34.0 | -84.46 | -1,476.5 | 1,539.8 | 1,004.5 | 939.5 | 65.04 | 15.444 | | |
| 6,900.1 | 5,753.2 | 7,223.6 | 5,648.9 | 34.2 | 35.7 | -84.46 | -1,576.5 | 1,539.8 | 1,001.9 | 934.2 | 67.70 | 14.799 CC | | |
| 6,900.3 | 5,753.2 | 7,223.7 | 5,648.9 | 34.2 | 35.7 | -84.46 | -1,576.7 | 1,539.8 | 1,001.9 | 934.2 | 67.70 | 14.798 | | |
| 7,000.0 | 5,753.2 | 7,323.5 | 5,648.9 | 35.8 | 37.4 | -84.46 | -1,676.4 | 1,539.8 | 1,001.9 | 930.8 | 71.11 | 14.089 | | |
| 7,100.0 | 5,753.2 | 7,423.5 | 5,648.9 | 37.5 | 39.2 | -84.46 | -1,776.4 | 1,539.8 | 1,001.9 | 927.3 | 74.60 | 13.431 | | |
| 7,200.0 | 5,753.2 | 7,523.5 | 5,648.9 | 39.2 | 40.9 | -84.46 | -1,876.4 | 1,539.8 | 1,001.9 | 923.8 | 78.12 | 12.826 | | |
| 7,300.0 | 5,753.2 | 7,623.5 | 5,648.9 | 40.9 | 42.7 | -84.46 | -1,976.4 | 1,539.8 | 1,001.9 | 920.3 | 81.66 | 12.269 | | |
| 7,400.0 | 5,753.2 | 7,723.5 | 5,648.9 | 42.6 | 44.5 | -84.46 | -2,076.4 | 1,539.8 | 1,001.9 | 916.7 | 85.23 | 11.755 | | |
| 7,500.0 | 5,753.2 | 7,823.5 | 5,648.9 | 44.3 | 46.3 | -84.46 | -2,176.4 | 1,539.8 | 1,001.9 | 913.1 | 88.82 | 11.280 | | |
| 7,600.0 | 5,753.2 | 7,923.5 | 5,648.9 | 46.1 | 48.1 | -84.46 | -2,276.4 | 1,539.8 | 1,001.9 | 909.5 | 92.43 | 10.840 | | |
| 7,700.0 | 5,753.2 | 8,023.5 | 5,648.9 | 47.9 | 49.9 | -84.46 | -2,376.4 | 1,539.8 | 1,002.0 | 905.9 | 96.06 | 10.430 | | |
| 7,800.0 | 5,753.2 | 8,123.5 | 5,648.9 | 49.6 | 51.7 | -84.46 | -2,476.4 | 1,539.8 | 1,002.0 | 902.3 | 99.70 | 10.049 | | |
| 7,900.0 | 5,753.2 | 8,223.5 | 5,648.9 | 51.4 | 53.5 | -84.46 | -2,576.4 | 1,539.8 | 1,002.0 | 898.6 | 103.36 | 9.694 | | |
| 8,000.0 | 5,753.2 | 8,323.5 | 5,648.9 | 53.2 | 55.4 | -84.46 | -2,676.4 | 1,539.8 | 1,002.0 | 895.0 | 107.03 | 9.362 | | |
| 8,100.0 | 5,753.1 | 8,423.5 | 5,648.9 | 55.0 | 57.2 | -84.46 | -2,776.4 | 1,539.8 | 1,002.0 | 891.3 | 110.71 | 9.051 | | |
| 8,200.0 | 5,753.1 | 8,523.5 | 5,648.9 | 56.9 | 59.1 | -84.46 | -2,876.4 | 1,539.8 | 1,002.0 | 887.6 | 114.40 | 8.759 | | |
| 8,300.0 | 5,753.1 | 8,623.5 | 5,648.9 | 58.7 | 60.9 | -84.46 | -2,976.4 | 1,539.8 | 1,002.0 | 883.9 | 118.09 | 8.485 | | |
| 8,400.0 | 5,753.1 | 8,723.5 | 5,648.9 | 60.5 | 62.8 | -84.46 | -3,076.4 | 1,539.8 | 1,002.0 | 880.2 | 121.80 | 8.227 | | |
| 8,500.0 | 5,753.1 | 8,823.5 | 5,648.9 | 62.3 | 64.6 | -84.46 | -3,176.4 | 1,539.8 | 1,002.0 | 876.5 | 125.51 | 7.984 | | |
| 8,600.0 | 5,753.1 | 8,923.5 | 5,648.9 | 64.2 | 66.5 | -84.46 | -3,276.4 | 1,539.8 | 1,002.0 | 872.8 | 129.23 | 7.754 | | |
| 8,700.0 | 5,753.1 | 9,023.5 | 5,648.9 | 66.0 | 68.3 | -84.46 | -3,376.4 | 1,539.8 | 1,002.0 | 869.1 | 132.96 | 7.537 | | |
| 8,800.0 | 5,753.1 | 9,123.5 | 5,648.9 | 67.9 | 70.2 | -84.46 | -3,476.4 | 1,539.8 | 1,002.1 | 865.4 | 136.69 | 7.331 | | |
| 8,900.0 | 5,753.1 | 9,223.5 | 5,648.9 | 69.7 | 72.1 | -84.46 | -3,576.4 | 1,539.9 | 1,002.1 | 861.6 | 140.42 | 7.136 | | |
| 9,000.0 | 5,753.1 | 9,323.5 | 5,648.9 | 71.6 | 74.0 | -84.46 | -3,676.4 | 1,539.9 | 1,002.1 | 857.9 | 144.16 | 6.951 | | |
| 9,100.0 | 5,753.1 | 9,423.5 | 5,648.9 | 73.4 | 75.8 | -84.46 | -3,776.4 | 1,539.9 | 1,002.1 | 854.2 | 147.91 | 6.775 | | |
| 9,200.0 | 5,753.1 | 9,523.5 | 5,648.9 | 75.3 | 77.7 | -84.46 | -3,876.4 | 1,539.9 | 1,002.1 | 850.4 | 151.66 | 6.608 | | |

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Cathedral Energy Services

Anticollision Report

| | | | |
|---------------------------|-------------------------------|-------------------------------------|----------------------------------------|
| Company: | Whiting Petroleum Corporation | Local Co-ordinate Reference: | Well Razor #27J-3412B |
| Project: | Weld County, CO | TVD Reference: | WELL @ 4780.5usft (Original Well Elev) |
| Reference Site: | S27-T10N-R58W | MD Reference: | WELL @ 4780.5usft (Original Well Elev) |
| Site Error: | 0.0usft | North Reference: | True |
| Reference Well: | Razor #27J-3412B | Survey Calculation Method: | Minimum Curvature |
| Well Error: | 0.0usft | Output errors are at | 2.00 sigma |
| Reference Wellbore | HZ | Database: | USA EDM 5000 Multi Users DB |
| Reference Design: | Plan #3 | Offset TVD Reference: | Offset Datum |

| Offset Design S27-T10N-R58W - Razor #27I-3415A - HZ - Plan #1 | | | | | | | | | | | | Offset Site Error: | 0.0 usft |
|---------------------------------------------------------------|-----------------------------|-----------------------------|-----------------------------|---------------------|------------------|-----------------------------|------------------------------|-------------------------------|------------------------------|----------------------|---------|--------------------|----------|
| Survey Program: 0-ISCWSA MWD | | | | | | | | | | | | Offset Well Error: | 0.0 usft |
| Reference | | Offset | | Semi Major Axis | | Highside Toolface (°) | Distance | | Total Uncertainty Axis | Separation Factor | Warning | | |
| Measured Depth (usft) | Vertical Depth (usft) | Measured Depth (usft) | Vertical Depth (usft) | Reference (usft) | Offset (usft) | | Between Centres (usft) | Between Ellipses (usft) | | | | | |
| 9,300.0 | 5,753.1 | 9,623.5 | 5,648.9 | 77.2 | 79.6 | -84.46 | -3,976.4 | 1,539.9 | 1,002.1 | 846.7 | 155.41 | 6.448 | |
| 9,400.0 | 5,753.1 | 9,723.5 | 5,648.9 | 79.0 | 81.5 | -84.46 | -4,076.4 | 1,539.9 | 1,002.1 | 842.9 | 159.17 | 6.296 | |
| 9,500.0 | 5,753.1 | 9,823.5 | 5,648.9 | 80.9 | 83.4 | -84.46 | -4,176.4 | 1,539.9 | 1,002.1 | 839.2 | 162.93 | 6.151 | |
| 9,600.0 | 5,753.1 | 9,923.5 | 5,648.9 | 82.8 | 85.2 | -84.47 | -4,276.4 | 1,539.9 | 1,002.1 | 835.4 | 166.69 | 6.012 | |
| 9,700.0 | 5,753.1 | 10,023.5 | 5,648.9 | 84.6 | 87.1 | -84.47 | -4,376.4 | 1,539.9 | 1,002.1 | 831.7 | 170.46 | 5.879 | |
| 9,800.0 | 5,753.1 | 10,123.5 | 5,648.9 | 86.5 | 89.0 | -84.47 | -4,476.4 | 1,539.9 | 1,002.2 | 827.9 | 174.23 | 5.752 | |
| 9,900.0 | 5,753.1 | 10,223.5 | 5,648.9 | 88.4 | 90.9 | -84.47 | -4,576.4 | 1,539.9 | 1,002.2 | 824.2 | 178.00 | 5.630 | |
| 10,000.0 | 5,753.1 | 10,323.5 | 5,648.9 | 90.3 | 92.8 | -84.47 | -4,676.4 | 1,539.9 | 1,002.2 | 820.4 | 181.77 | 5.513 | |
| 10,100.0 | 5,753.1 | 10,423.5 | 5,648.9 | 92.1 | 94.7 | -84.47 | -4,776.4 | 1,539.9 | 1,002.2 | 816.6 | 185.55 | 5.401 | |
| 10,200.0 | 5,753.1 | 10,523.5 | 5,649.0 | 94.0 | 96.6 | -84.47 | -4,876.4 | 1,539.9 | 1,002.2 | 812.9 | 189.32 | 5.294 | |
| 10,300.0 | 5,753.1 | 10,623.5 | 5,649.0 | 95.9 | 98.5 | -84.47 | -4,976.4 | 1,539.9 | 1,002.2 | 809.1 | 193.10 | 5.190 | |
| 10,400.0 | 5,753.1 | 10,723.5 | 5,649.0 | 97.8 | 100.4 | -84.47 | -5,076.4 | 1,539.9 | 1,002.2 | 805.3 | 196.89 | 5.090 | |
| 10,500.0 | 5,753.1 | 10,823.5 | 5,649.0 | 99.7 | 102.3 | -84.47 | -5,176.4 | 1,539.9 | 1,002.2 | 801.6 | 200.67 | 4.994 | |
| 10,600.0 | 5,753.1 | 10,923.5 | 5,649.0 | 101.6 | 104.2 | -84.47 | -5,276.4 | 1,539.9 | 1,002.2 | 797.8 | 204.45 | 4.902 | |
| 10,700.0 | 5,753.1 | 11,023.5 | 5,649.0 | 103.5 | 106.1 | -84.47 | -5,376.4 | 1,539.9 | 1,002.2 | 794.0 | 208.24 | 4.813 | |
| 10,800.0 | 5,753.1 | 11,123.5 | 5,649.0 | 105.4 | 108.0 | -84.47 | -5,476.4 | 1,539.9 | 1,002.2 | 790.2 | 212.03 | 4.727 | |
| 10,900.0 | 5,753.0 | 11,223.5 | 5,649.0 | 107.3 | 109.9 | -84.47 | -5,576.4 | 1,539.9 | 1,002.3 | 786.4 | 215.82 | 4.644 | |
| 11,000.0 | 5,753.0 | 11,323.5 | 5,649.0 | 109.1 | 111.8 | -84.47 | -5,676.4 | 1,539.9 | 1,002.3 | 782.7 | 219.61 | 4.564 | |
| 11,100.0 | 5,753.0 | 11,423.5 | 5,649.0 | 111.0 | 113.7 | -84.47 | -5,776.4 | 1,539.9 | 1,002.3 | 778.9 | 223.40 | 4.486 | |
| 11,200.0 | 5,753.0 | 11,523.5 | 5,649.0 | 112.9 | 115.6 | -84.47 | -5,876.4 | 1,539.9 | 1,002.3 | 775.1 | 227.19 | 4.412 | |
| 11,300.0 | 5,753.0 | 11,623.5 | 5,649.0 | 114.8 | 117.5 | -84.47 | -5,976.4 | 1,539.9 | 1,002.3 | 771.3 | 230.99 | 4.339 | |
| 11,400.0 | 5,753.0 | 11,723.5 | 5,649.0 | 116.7 | 119.4 | -84.47 | -6,076.4 | 1,539.9 | 1,002.3 | 767.5 | 234.78 | 4.269 | |
| 11,500.0 | 5,753.0 | 11,823.5 | 5,649.0 | 118.6 | 121.3 | -84.47 | -6,176.4 | 1,539.9 | 1,002.3 | 763.7 | 238.58 | 4.201 | |
| 11,600.0 | 5,753.0 | 11,923.5 | 5,649.0 | 120.5 | 123.2 | -84.47 | -6,276.4 | 1,539.9 | 1,002.3 | 759.9 | 242.38 | 4.135 | |
| 11,700.0 | 5,753.0 | 12,023.5 | 5,649.0 | 122.4 | 125.1 | -84.47 | -6,376.4 | 1,539.9 | 1,002.3 | 756.2 | 246.17 | 4.072 | |
| 11,800.0 | 5,753.0 | 12,123.5 | 5,649.0 | 124.3 | 127.0 | -84.47 | -6,476.4 | 1,539.9 | 1,002.3 | 752.4 | 249.97 | 4.010 | |
| 11,900.0 | 5,753.0 | 12,223.5 | 5,649.0 | 126.2 | 128.9 | -84.47 | -6,576.4 | 1,539.9 | 1,002.4 | 748.6 | 253.77 | 3.950 | |
| 12,000.0 | 5,753.0 | 12,323.5 | 5,649.0 | 128.1 | 130.8 | -84.47 | -6,676.4 | 1,539.9 | 1,002.4 | 744.8 | 257.57 | 3.892 | |
| 12,100.0 | 5,753.0 | 12,423.5 | 5,649.0 | 130.0 | 132.7 | -84.47 | -6,776.4 | 1,539.9 | 1,002.4 | 741.0 | 261.38 | 3.835 | |
| 12,200.0 | 5,753.0 | 12,523.5 | 5,649.0 | 131.9 | 134.6 | -84.47 | -6,876.4 | 1,539.9 | 1,002.4 | 737.2 | 265.18 | 3.780 | |
| 12,277.3 | 5,753.0 | 12,600.7 | 5,649.0 | 133.1 | 136.1 | -84.48 | -6,953.7 | 1,539.9 | 1,002.4 | 734.5 | 267.85 | 3.742 | |
| 12,277.6 | 5,753.0 | 12,601.1 | 5,649.0 | 133.1 | 136.1 | -84.48 | -6,954.0 | 1,539.9 | 1,002.4 | 734.5 | 267.86 | 3.742 ES, SF | |

Cathedral Energy Services

Anticollision Report

| | | | |
|---------------------------|-------------------------------|-------------------------------------|----------------------------------------|
| Company: | Whiting Petroleum Corporation | Local Co-ordinate Reference: | Well Razor #27J-3412B |
| Project: | Weld County, CO | TVD Reference: | WELL @ 4780.5usft (Original Well Elev) |
| Reference Site: | S27-T10N-R58W | MD Reference: | WELL @ 4780.5usft (Original Well Elev) |
| Site Error: | 0.0usft | North Reference: | True |
| Reference Well: | Razor #27J-3412B | Survey Calculation Method: | Minimum Curvature |
| Well Error: | 0.0usft | Output errors are at | 2.00 sigma |
| Reference Wellbore | HZ | Database: | USA EDM 5000 Multi Users DB |
| Reference Design: | Plan #3 | Offset TVD Reference: | Offset Datum |

| Offset Design S27-T10N-R58W - Razor #27I-3416B - HZ - Plan #2 | | | | | | | | | | | | | Offset Site Error: | 0.0 usft |
|---------------------------------------------------------------|-----------------------------|-----------------------------|-----------------------------|---------------------|------------------|-----------------------------|-------------------------------------------|-----------------|------------------------------|----------------------|---------|------------|--------------------|----------|
| Survey Program: 0-ISCWSA MWD | | | | | | | | | | | | | Offset Well Error: | 0.0 usft |
| Reference | | Offset | | Semi Major Axis | | Highside Toolface (°) | Distance | | Total Uncertainty Axis | Separation Factor | Warning | | | |
| Measured Depth (usft) | Vertical Depth (usft) | Measured Depth (usft) | Vertical Depth (usft) | Reference (usft) | Offset (usft) | | Offset Wellbore Centre +N/-S (usft) | +E/-W (usft) | | | | | | |
| 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 85.65 | 95.5 | 1,254.3 | 1,258.0 | | | | | |
| 100.0 | 100.0 | 92.5 | 92.5 | 0.1 | 0.1 | 85.65 | 95.5 | 1,254.3 | 1,257.9 | 1,257.8 | 0.18 | 6,963.779 | | |
| 200.0 | 200.0 | 192.5 | 192.5 | 0.3 | 0.3 | 85.65 | 95.5 | 1,254.3 | 1,257.9 | 1,257.3 | 0.62 | 2,027.791 | | |
| 300.0 | 300.0 | 292.5 | 292.5 | 0.5 | 0.5 | 85.65 | 95.5 | 1,254.3 | 1,257.9 | 1,256.9 | 1.07 | 1,175.779 | | |
| 400.0 | 400.0 | 392.5 | 392.5 | 0.8 | 0.8 | 85.65 | 95.5 | 1,254.3 | 1,257.9 | 1,256.4 | 1.52 | 827.915 | | |
| 500.0 | 500.0 | 492.5 | 492.5 | 1.0 | 1.0 | 85.65 | 95.5 | 1,254.3 | 1,257.9 | 1,256.0 | 1.97 | 638.893 CC | | |
| 600.0 | 600.0 | 567.9 | 567.9 | 1.2 | 1.1 | -68.88 | 95.1 | 1,255.0 | 1,258.2 | 1,255.9 | 2.32 | 541.456 | | |
| 700.0 | 699.8 | 641.3 | 641.2 | 1.4 | 1.3 | -68.95 | 93.7 | 1,257.3 | 1,259.4 | 1,256.7 | 2.66 | 473.589 | | |
| 800.0 | 799.6 | 720.0 | 719.8 | 1.6 | 1.4 | -69.06 | 91.3 | 1,261.6 | 1,261.9 | 1,258.9 | 3.03 | 417.115 | | |
| 900.0 | 899.4 | 819.9 | 819.4 | 1.8 | 1.7 | -69.18 | 87.8 | 1,267.6 | 1,265.2 | 1,261.7 | 3.46 | 365.781 | | |
| 1,000.0 | 999.1 | 919.8 | 919.1 | 2.1 | 1.9 | -69.29 | 84.3 | 1,273.6 | 1,268.4 | 1,264.5 | 3.91 | 324.541 | | |
| 1,100.0 | 1,098.9 | 1,019.7 | 1,018.8 | 2.3 | 2.1 | -69.40 | 80.8 | 1,279.7 | 1,271.7 | 1,267.3 | 4.37 | 290.997 | | |
| 1,200.0 | 1,198.6 | 1,119.6 | 1,118.5 | 2.5 | 2.4 | -69.52 | 77.3 | 1,285.7 | 1,274.9 | 1,270.1 | 4.84 | 263.386 | | |
| 1,300.0 | 1,298.4 | 1,219.6 | 1,218.1 | 2.8 | 2.6 | -69.63 | 73.8 | 1,291.7 | 1,278.2 | 1,272.9 | 5.32 | 240.375 | | |
| 1,400.0 | 1,398.1 | 1,319.5 | 1,317.8 | 3.0 | 2.9 | -69.74 | 70.3 | 1,297.7 | 1,281.5 | 1,275.7 | 5.80 | 220.963 | | |
| 1,500.0 | 1,497.9 | 1,419.4 | 1,417.5 | 3.3 | 3.1 | -69.86 | 66.8 | 1,303.8 | 1,284.8 | 1,278.5 | 6.29 | 204.409 | | |
| 1,600.0 | 1,597.6 | 1,519.3 | 1,517.1 | 3.5 | 3.4 | -69.97 | 63.3 | 1,309.8 | 1,288.1 | 1,281.3 | 6.77 | 190.143 | | |
| 1,700.0 | 1,697.4 | 1,619.2 | 1,616.8 | 3.8 | 3.6 | -70.08 | 59.8 | 1,315.8 | 1,291.3 | 1,284.1 | 7.27 | 177.736 | | |
| 1,800.0 | 1,797.2 | 1,719.1 | 1,716.5 | 4.1 | 3.9 | -70.19 | 56.3 | 1,321.9 | 1,294.6 | 1,286.9 | 7.76 | 166.859 | | |
| 1,900.0 | 1,896.9 | 1,819.1 | 1,816.2 | 4.3 | 4.2 | -70.30 | 52.8 | 1,327.9 | 1,297.9 | 1,289.7 | 8.25 | 157.250 | | |
| 2,000.0 | 1,996.7 | 1,919.0 | 1,915.8 | 4.6 | 4.4 | -70.41 | 49.3 | 1,333.9 | 1,301.2 | 1,292.5 | 8.75 | 148.704 | | |
| 2,100.0 | 2,096.4 | 2,018.9 | 2,015.5 | 4.8 | 4.7 | -70.51 | 45.8 | 1,340.0 | 1,304.6 | 1,295.3 | 9.25 | 141.058 | | |
| 2,200.0 | 2,196.2 | 2,118.8 | 2,115.2 | 5.1 | 4.9 | -70.62 | 42.3 | 1,346.0 | 1,307.9 | 1,298.1 | 9.75 | 134.178 | | |
| 2,300.0 | 2,295.9 | 2,218.7 | 2,214.8 | 5.4 | 5.2 | -70.73 | 38.8 | 1,352.0 | 1,311.2 | 1,300.9 | 10.25 | 127.956 | | |
| 2,400.0 | 2,395.7 | 2,318.6 | 2,314.5 | 5.6 | 5.4 | -70.84 | 35.3 | 1,358.0 | 1,314.5 | 1,303.8 | 10.75 | 122.305 | | |
| 2,500.0 | 2,495.5 | 2,418.5 | 2,414.2 | 5.9 | 5.7 | -70.94 | 31.9 | 1,364.1 | 1,317.8 | 1,306.6 | 11.25 | 117.149 | | |
| 2,600.0 | 2,595.2 | 2,518.5 | 2,513.9 | 6.1 | 6.0 | -71.05 | 28.4 | 1,370.1 | 1,321.2 | 1,309.4 | 11.75 | 112.427 | | |
| 2,700.0 | 2,695.0 | 2,618.4 | 2,613.5 | 6.4 | 6.2 | -71.15 | 24.9 | 1,376.1 | 1,324.5 | 1,312.2 | 12.25 | 108.086 | | |
| 2,800.0 | 2,794.7 | 2,718.3 | 2,713.2 | 6.7 | 6.5 | -71.26 | 21.4 | 1,382.2 | 1,327.8 | 1,315.1 | 12.76 | 104.084 | | |
| 2,900.0 | 2,894.5 | 2,818.2 | 2,812.9 | 6.9 | 6.7 | -71.36 | 17.9 | 1,388.2 | 1,331.2 | 1,317.9 | 13.26 | 100.382 | | |
| 3,000.0 | 2,994.2 | 2,918.1 | 2,912.5 | 7.2 | 7.0 | -71.46 | 14.4 | 1,394.2 | 1,334.5 | 1,320.8 | 13.77 | 96.948 | | |
| 3,100.0 | 3,094.0 | 3,018.0 | 3,012.2 | 7.5 | 7.3 | -71.57 | 10.9 | 1,400.3 | 1,337.9 | 1,323.6 | 14.27 | 93.754 | | |
| 3,200.0 | 3,193.7 | 3,117.9 | 3,111.9 | 7.7 | 7.5 | -71.67 | 7.4 | 1,406.3 | 1,341.2 | 1,326.5 | 14.78 | 90.776 | | |
| 3,300.0 | 3,293.5 | 3,217.9 | 3,211.6 | 8.0 | 7.8 | -71.77 | 3.9 | 1,412.3 | 1,344.6 | 1,329.3 | 15.28 | 87.993 | | |
| 3,400.0 | 3,393.3 | 3,317.8 | 3,311.2 | 8.2 | 8.1 | -71.87 | 0.4 | 1,418.3 | 1,348.0 | 1,332.2 | 15.79 | 85.386 | | |
| 3,500.0 | 3,493.0 | 3,417.7 | 3,410.9 | 8.5 | 8.3 | -71.98 | -3.1 | 1,424.4 | 1,351.3 | 1,335.0 | 16.29 | 82.940 | | |
| 3,600.0 | 3,592.8 | 3,517.6 | 3,510.6 | 8.8 | 8.6 | -72.08 | -6.6 | 1,430.4 | 1,354.7 | 1,337.9 | 16.80 | 80.640 | | |
| 3,700.0 | 3,692.5 | 3,617.5 | 3,610.2 | 9.0 | 8.8 | -72.18 | -10.1 | 1,436.4 | 1,358.1 | 1,340.8 | 17.31 | 78.473 | | |
| 3,800.0 | 3,792.3 | 3,717.4 | 3,709.9 | 9.3 | 9.1 | -72.28 | -13.6 | 1,442.5 | 1,361.5 | 1,343.7 | 17.81 | 76.429 | | |
| 3,900.0 | 3,892.0 | 3,817.3 | 3,809.6 | 9.6 | 9.4 | -72.37 | -17.1 | 1,448.5 | 1,364.9 | 1,346.5 | 18.32 | 74.497 | | |
| 4,000.0 | 3,991.8 | 3,917.3 | 3,909.3 | 9.8 | 9.6 | -72.47 | -20.6 | 1,454.5 | 1,368.3 | 1,349.4 | 18.83 | 72.668 | | |
| 4,100.0 | 4,091.6 | 4,017.2 | 4,008.9 | 10.1 | 9.9 | -72.57 | -24.1 | 1,460.6 | 1,371.6 | 1,352.3 | 19.34 | 70.935 | | |
| 4,200.0 | 4,191.3 | 4,117.1 | 4,108.6 | 10.4 | 10.1 | -72.67 | -27.6 | 1,466.6 | 1,375.0 | 1,355.2 | 19.84 | 69.290 | | |
| 4,300.0 | 4,291.1 | 4,217.0 | 4,208.3 | 10.6 | 10.4 | -72.77 | -31.1 | 1,472.6 | 1,378.4 | 1,358.1 | 20.35 | 67.726 | | |
| 4,400.0 | 4,390.8 | 4,316.9 | 4,307.9 | 10.9 | 10.7 | -72.86 | -34.6 | 1,478.6 | 1,381.9 | 1,361.0 | 20.86 | 66.238 | | |
| 4,500.0 | 4,490.6 | 4,416.8 | 4,407.6 | 11.1 | 10.9 | -72.96 | -38.1 | 1,484.7 | 1,385.3 | 1,363.9 | 21.37 | 64.820 | | |
| 4,600.0 | 4,590.3 | 4,516.8 | 4,507.3 | 11.4 | 11.2 | -73.05 | -41.5 | 1,490.7 | 1,388.7 | 1,366.8 | 21.88 | 63.468 | | |
| 4,700.0 | 4,690.1 | 4,616.7 | 4,607.0 | 11.7 | 11.5 | -73.15 | -45.0 | 1,496.7 | 1,392.1 | 1,369.7 | 22.39 | 62.177 | | |
| 4,800.0 | 4,789.9 | 4,716.6 | 4,706.6 | 11.9 | 11.7 | -73.24 | -48.5 | 1,502.8 | 1,395.5 | 1,372.6 | 22.90 | 60.942 | | |
| 4,900.0 | 4,889.6 | 4,816.5 | 4,806.3 | 12.2 | 12.0 | -73.34 | -52.0 | 1,508.8 | 1,398.9 | 1,375.5 | 23.41 | 59.762 | | |
| 5,000.0 | 4,989.4 | 4,926.5 | 4,916.0 | 12.5 | 12.3 | -73.44 | -55.8 | 1,515.3 | 1,402.3 | 1,378.4 | 23.93 | 58.592 | | |
| 5,100.0 | 5,089.1 | 5,087.4 | 5,076.9 | 12.7 | 12.6 | -73.75 | -58.4 | 1,519.9 | 1,402.9 | 1,378.3 | 24.52 | 57.216 | | |

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Cathedral Energy Services

Anticollision Report

| | | | |
|---------------------------|-------------------------------|-------------------------------------|----------------------------------------|
| Company: | Whiting Petroleum Corporation | Local Co-ordinate Reference: | Well Razor #27J-3412B |
| Project: | Weld County, CO | TVD Reference: | WELL @ 4780.5usft (Original Well Elev) |
| Reference Site: | S27-T10N-R58W | MD Reference: | WELL @ 4780.5usft (Original Well Elev) |
| Site Error: | 0.0usft | North Reference: | True |
| Reference Well: | Razor #27J-3412B | Survey Calculation Method: | Minimum Curvature |
| Well Error: | 0.0usft | Output errors are at | 2.00 sigma |
| Reference Wellbore | HZ | Database: | USA EDM 5000 Multi Users DB |
| Reference Design: | Plan #3 | Offset TVD Reference: | Offset Datum |

| Offset Design S27-T10N-R58W - Razor #27J-3416B - HZ - Plan #2 | | | | | | | | | | | | Offset Site Error: 0.0 usft | |
|---------------------------------------------------------------|-----------------------|-----------------------|-----------------------|------------------|---------------|-----------------------|-------------------------------------|--------------|------------------------|-------------------------|------------------------|-----------------------------|---------|
| Survey Program: 0-ISCWSA MWD | | | | | | | | | | | | Offset Well Error: 0.0 usft | |
| Reference | | | | Offset | | Semi Major Axis | | | Distance | | | | Warning |
| Measured Depth (usft) | Vertical Depth (usft) | Measured Depth (usft) | Vertical Depth (usft) | Reference (usft) | Offset (usft) | Highside Toolface (°) | Offset Wellbore Centre +N/-S (usft) | +E/-W (usft) | Between Centres (usft) | Between Ellipses (usft) | Total Uncertainty Axis | Separation Factor | |
| 5,200.0 | 5,188.9 | 5,191.9 | 5,181.4 | 13.0 | 12.8 | -74.03 | -58.5 | 1,519.9 | 1,400.9 | 1,376.0 | 24.98 | 56.072 | |
| 5,280.0 | 5,268.7 | 5,263.2 | 5,252.6 | 13.2 | 12.9 | -74.18 | -59.8 | 1,520.2 | 1,399.5 | 1,374.2 | 25.34 | 55.224 | |
| 5,300.0 | 5,288.6 | 5,279.5 | 5,268.8 | 13.3 | 12.9 | -74.33 | -61.1 | 1,520.6 | 1,399.2 | 1,373.8 | 25.45 | 54.989 | |
| 5,350.0 | 5,338.0 | 5,320.2 | 5,309.1 | 13.4 | 13.0 | -74.61 | -66.7 | 1,522.0 | 1,397.7 | 1,372.0 | 25.74 | 54.306 | |
| 5,400.0 | 5,386.4 | 5,360.9 | 5,348.8 | 13.7 | 13.2 | -74.95 | -75.3 | 1,524.3 | 1,395.3 | 1,369.2 | 26.09 | 53.485 | |
| 5,450.0 | 5,433.4 | 5,400.0 | 5,386.2 | 13.9 | 13.3 | -75.39 | -86.4 | 1,527.1 | 1,392.0 | 1,365.5 | 26.49 | 52.540 | |
| 5,500.0 | 5,478.5 | 5,442.5 | 5,425.7 | 14.2 | 13.5 | -75.94 | -101.5 | 1,531.0 | 1,387.7 | 1,360.8 | 26.99 | 51.415 | |
| 5,550.0 | 5,521.3 | 5,483.4 | 5,462.5 | 14.6 | 13.7 | -76.61 | -118.9 | 1,535.6 | 1,382.7 | 1,355.1 | 27.56 | 50.163 | |
| 5,600.0 | 5,561.6 | 5,524.6 | 5,497.9 | 15.0 | 14.0 | -77.39 | -139.2 | 1,540.8 | 1,376.9 | 1,348.6 | 28.23 | 48.776 | |
| 5,650.0 | 5,598.7 | 5,565.9 | 5,531.6 | 15.5 | 14.2 | -78.28 | -162.2 | 1,546.8 | 1,370.3 | 1,341.3 | 28.99 | 47.265 | |
| 5,700.0 | 5,632.5 | 5,607.4 | 5,563.6 | 16.0 | 14.5 | -79.27 | -187.9 | 1,553.4 | 1,363.1 | 1,333.2 | 29.86 | 45.650 | |
| 5,750.0 | 5,662.6 | 5,650.0 | 5,594.0 | 16.6 | 14.9 | -80.37 | -216.7 | 1,560.9 | 1,355.3 | 1,324.5 | 30.84 | 43.946 | |
| 5,800.0 | 5,688.8 | 5,691.5 | 5,621.3 | 17.2 | 15.2 | -81.56 | -247.0 | 1,568.7 | 1,347.0 | 1,315.1 | 31.92 | 42.203 | |
| 5,850.0 | 5,710.7 | 5,734.1 | 5,646.6 | 17.9 | 15.6 | -82.83 | -280.2 | 1,577.3 | 1,338.3 | 1,305.2 | 33.10 | 40.435 | |
| 5,900.0 | 5,728.3 | 5,777.2 | 5,669.2 | 18.6 | 16.1 | -84.17 | -315.6 | 1,586.5 | 1,329.2 | 1,294.8 | 34.36 | 38.683 | |
| 5,950.0 | 5,741.3 | 5,820.8 | 5,689.0 | 19.3 | 16.6 | -85.58 | -353.3 | 1,596.3 | 1,319.9 | 1,284.2 | 35.70 | 36.975 | |
| 6,000.0 | 5,749.5 | 5,865.1 | 5,705.6 | 20.1 | 17.1 | -87.05 | -393.0 | 1,606.6 | 1,310.5 | 1,273.4 | 37.09 | 35.332 | |
| 6,050.0 | 5,753.1 | 5,910.1 | 5,718.9 | 20.9 | 17.7 | -88.55 | -434.6 | 1,617.4 | 1,301.0 | 1,262.5 | 38.52 | 33.772 | |
| 6,061.8 | 5,753.2 | 5,920.9 | 5,721.5 | 21.1 | 17.8 | -88.91 | -444.7 | 1,620.0 | 1,298.8 | 1,259.9 | 38.87 | 33.416 | |
| 6,100.0 | 5,753.2 | 5,956.3 | 5,728.7 | 21.7 | 18.3 | -89.23 | -478.3 | 1,628.7 | 1,292.0 | 1,252.1 | 39.92 | 32.365 | |
| 6,200.0 | 5,753.2 | 6,052.6 | 5,736.0 | 23.2 | 19.7 | -89.56 | -571.1 | 1,652.8 | 1,278.0 | 1,235.4 | 42.68 | 29.946 | |
| 6,300.0 | 5,753.2 | 6,152.3 | 5,736.0 | 24.7 | 21.2 | -89.56 | -667.6 | 1,677.8 | 1,269.4 | 1,223.8 | 45.56 | 27.865 | |
| 6,400.0 | 5,753.2 | 6,252.2 | 5,736.0 | 26.3 | 22.7 | -89.56 | -764.3 | 1,702.9 | 1,266.0 | 1,217.5 | 48.48 | 26.115 | |
| 6,415.4 | 5,753.2 | 6,267.6 | 5,736.0 | 26.5 | 23.0 | -89.56 | -779.2 | 1,706.7 | 1,265.9 | 1,217.0 | 48.93 | 25.873 | |
| 6,500.0 | 5,753.2 | 6,356.6 | 5,736.0 | 27.9 | 24.5 | -89.56 | -865.4 | 1,729.1 | 1,267.8 | 1,216.3 | 51.44 | 24.645 | |
| 6,600.0 | 5,753.2 | 6,536.1 | 5,736.0 | 29.5 | 27.1 | -89.56 | -1,040.5 | 1,768.1 | 1,271.3 | 1,216.0 | 55.29 | 22.995 | |
| 6,700.0 | 5,753.2 | 6,716.0 | 5,736.0 | 31.1 | 29.9 | -89.56 | -1,218.2 | 1,796.0 | 1,273.9 | 1,214.8 | 59.10 | 21.556 | |
| 6,800.0 | 5,753.2 | 6,896.1 | 5,736.0 | 32.6 | 32.7 | -89.56 | -1,397.5 | 1,812.8 | 1,275.3 | 1,212.5 | 62.86 | 20.288 | |
| 6,900.3 | 5,753.2 | 7,064.2 | 5,736.0 | 34.2 | 35.3 | -89.56 | -1,565.5 | 1,818.4 | 1,275.8 | 1,209.5 | 66.35 | 19.230 | |
| 7,000.0 | 5,753.2 | 7,163.9 | 5,736.0 | 35.8 | 37.0 | -89.57 | -1,665.2 | 1,819.2 | 1,276.7 | 1,207.0 | 69.75 | 18.303 | |
| 7,100.0 | 5,753.2 | 7,263.9 | 5,736.0 | 37.5 | 38.7 | -89.57 | -1,765.2 | 1,820.1 | 1,277.6 | 1,204.4 | 73.25 | 17.441 | |
| 7,200.0 | 5,753.2 | 7,363.9 | 5,736.0 | 39.2 | 40.4 | -89.57 | -1,865.2 | 1,821.0 | 1,278.5 | 1,201.7 | 76.78 | 16.651 | |
| 7,300.0 | 5,753.2 | 7,463.9 | 5,736.0 | 40.9 | 42.1 | -89.57 | -1,965.2 | 1,821.9 | 1,279.4 | 1,199.0 | 80.34 | 15.924 | |
| 7,400.0 | 5,753.2 | 7,563.9 | 5,736.0 | 42.6 | 43.9 | -89.57 | -2,065.2 | 1,822.8 | 1,280.3 | 1,196.3 | 83.93 | 15.255 | |
| 7,500.0 | 5,753.2 | 7,663.9 | 5,736.0 | 44.3 | 45.7 | -89.57 | -2,165.2 | 1,823.6 | 1,281.1 | 1,193.6 | 87.53 | 14.636 | |
| 7,600.0 | 5,753.2 | 7,763.9 | 5,736.0 | 46.1 | 47.4 | -89.57 | -2,265.2 | 1,824.5 | 1,282.0 | 1,190.9 | 91.16 | 14.064 | |
| 7,700.0 | 5,753.2 | 7,863.9 | 5,736.0 | 47.9 | 49.2 | -89.57 | -2,365.2 | 1,825.4 | 1,282.9 | 1,188.1 | 94.80 | 13.533 | |
| 7,800.0 | 5,753.2 | 7,963.9 | 5,736.0 | 49.6 | 51.0 | -89.57 | -2,465.2 | 1,826.3 | 1,283.8 | 1,185.3 | 98.46 | 13.039 | |
| 7,900.0 | 5,753.2 | 8,063.9 | 5,736.0 | 51.4 | 52.8 | -89.57 | -2,565.2 | 1,827.1 | 1,284.7 | 1,182.6 | 102.13 | 12.579 | |
| 8,000.0 | 5,753.2 | 8,163.9 | 5,736.0 | 53.2 | 54.7 | -89.57 | -2,665.2 | 1,828.0 | 1,285.6 | 1,179.8 | 105.82 | 12.149 | |
| 8,100.0 | 5,753.1 | 8,263.9 | 5,736.0 | 55.0 | 56.5 | -89.57 | -2,765.2 | 1,828.9 | 1,286.5 | 1,176.9 | 109.51 | 11.747 | |
| 8,200.0 | 5,753.1 | 8,363.9 | 5,736.0 | 56.9 | 58.3 | -89.57 | -2,865.1 | 1,829.8 | 1,287.3 | 1,174.1 | 113.22 | 11.370 | |
| 8,300.0 | 5,753.1 | 8,463.9 | 5,736.0 | 58.7 | 60.1 | -89.57 | -2,965.1 | 1,830.7 | 1,288.2 | 1,171.3 | 116.93 | 11.017 | |
| 8,400.0 | 5,753.1 | 8,563.9 | 5,736.0 | 60.5 | 62.0 | -89.57 | -3,065.1 | 1,831.5 | 1,289.1 | 1,168.5 | 120.66 | 10.684 | |
| 8,500.0 | 5,753.1 | 8,663.9 | 5,736.0 | 62.3 | 63.8 | -89.57 | -3,165.1 | 1,832.4 | 1,290.0 | 1,165.6 | 124.38 | 10.371 | |
| 8,600.0 | 5,753.1 | 8,763.9 | 5,736.0 | 64.2 | 65.7 | -89.57 | -3,265.1 | 1,833.3 | 1,290.9 | 1,162.8 | 128.12 | 10.076 | |
| 8,700.0 | 5,753.1 | 8,863.9 | 5,736.0 | 66.0 | 67.5 | -89.57 | -3,365.1 | 1,834.2 | 1,291.8 | 1,159.9 | 131.86 | 9.796 | |
| 8,800.0 | 5,753.1 | 8,963.9 | 5,736.0 | 67.9 | 69.4 | -89.57 | -3,465.1 | 1,835.0 | 1,292.7 | 1,157.0 | 135.61 | 9.532 | |
| 8,900.0 | 5,753.1 | 9,063.9 | 5,736.0 | 69.7 | 71.3 | -89.57 | -3,565.1 | 1,835.9 | 1,293.5 | 1,154.2 | 139.37 | 9.282 | |
| 9,000.0 | 5,753.1 | 9,163.9 | 5,736.0 | 71.6 | 73.1 | -89.57 | -3,665.1 | 1,836.8 | 1,294.4 | 1,151.3 | 143.12 | 9.044 | |
| 9,100.0 | 5,753.1 | 9,263.8 | 5,736.0 | 73.4 | 75.0 | -89.57 | -3,765.1 | 1,837.7 | 1,295.3 | 1,148.4 | 146.89 | 8.818 | |
| 9,200.0 | 5,753.1 | 9,363.8 | 5,736.0 | 75.3 | 76.9 | -89.58 | -3,865.1 | 1,838.6 | 1,296.2 | 1,145.5 | 150.65 | 8.604 | |

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Cathedral Energy Services

Anticollision Report

| | | | |
|---------------------------|-------------------------------|-------------------------------------|----------------------------------------|
| Company: | Whiting Petroleum Corporation | Local Co-ordinate Reference: | Well Razor #27J-3412B |
| Project: | Weld County, CO | TVD Reference: | WELL @ 4780.5usft (Original Well Elev) |
| Reference Site: | S27-T10N-R58W | MD Reference: | WELL @ 4780.5usft (Original Well Elev) |
| Site Error: | 0.0usft | North Reference: | True |
| Reference Well: | Razor #27J-3412B | Survey Calculation Method: | Minimum Curvature |
| Well Error: | 0.0usft | Output errors are at | 2.00 sigma |
| Reference Wellbore | HZ | Database: | USA EDM 5000 Multi Users DB |
| Reference Design: | Plan #3 | Offset TVD Reference: | Offset Datum |

| Offset Design S27-T10N-R58W - Razor #27I-3416B - HZ - Plan #2 | | | | | | | | | | | | | Offset Site Error: | 0.0 usft |
|---------------------------------------------------------------|-----------------------|-----------------------|-----------------------|------------------|---------------|-----------------------|-------------------------------------|--------------|------------------------|-------------------------|------------------------|-------------------|--------------------|----------|
| Survey Program: 0-ISCSWA MWD | | | | | | | | | | | | | Offset Well Error: | 0.0 usft |
| Reference | | Offset | | Semi Major Axis | | | Distance | | | | | | Warning | |
| Measured Depth (usft) | Vertical Depth (usft) | Measured Depth (usft) | Vertical Depth (usft) | Reference (usft) | Offset (usft) | Highside Toolface (°) | Offset Wellbore Centre +N/-S (usft) | +E/-W (usft) | Between Centres (usft) | Between Ellipses (usft) | Total Uncertainty Axis | Separation Factor | | |
| 9,300.0 | 5,753.1 | 9,463.8 | 5,736.0 | 77.2 | 78.7 | -89.58 | -3,965.1 | 1,839.4 | 1,297.1 | 1,142.7 | 154.43 | 8.399 | | |
| 9,400.0 | 5,753.1 | 9,563.8 | 5,736.0 | 79.0 | 80.6 | -89.58 | -4,065.1 | 1,840.3 | 1,298.0 | 1,139.8 | 158.20 | 8.205 | | |
| 9,500.0 | 5,753.1 | 9,663.8 | 5,736.0 | 80.9 | 82.5 | -89.58 | -4,165.0 | 1,841.2 | 1,298.9 | 1,136.9 | 161.98 | 8.019 | | |
| 9,600.0 | 5,753.1 | 9,763.8 | 5,736.0 | 82.8 | 84.4 | -89.58 | -4,265.0 | 1,842.1 | 1,299.7 | 1,134.0 | 165.76 | 7.841 | | |
| 9,700.0 | 5,753.1 | 9,863.8 | 5,736.0 | 84.6 | 86.2 | -89.58 | -4,365.0 | 1,842.9 | 1,300.6 | 1,131.1 | 169.54 | 7.671 | | |
| 9,800.0 | 5,753.1 | 9,963.8 | 5,736.0 | 86.5 | 88.1 | -89.58 | -4,465.0 | 1,843.8 | 1,301.5 | 1,128.2 | 173.33 | 7.509 | | |
| 9,900.0 | 5,753.1 | 10,063.8 | 5,736.0 | 88.4 | 90.0 | -89.58 | -4,565.0 | 1,844.7 | 1,302.4 | 1,125.3 | 177.12 | 7.353 | | |
| 10,000.0 | 5,753.1 | 10,163.8 | 5,736.0 | 90.3 | 91.9 | -89.58 | -4,665.0 | 1,845.6 | 1,303.3 | 1,122.4 | 180.91 | 7.204 | | |
| 10,100.0 | 5,753.1 | 10,263.8 | 5,736.0 | 92.1 | 93.8 | -89.58 | -4,765.0 | 1,846.5 | 1,304.2 | 1,119.5 | 184.70 | 7.061 | | |
| 10,200.0 | 5,753.1 | 10,363.8 | 5,736.0 | 94.0 | 95.7 | -89.58 | -4,865.0 | 1,847.3 | 1,305.1 | 1,116.6 | 188.49 | 6.924 | | |
| 10,300.0 | 5,753.1 | 10,463.8 | 5,736.0 | 95.9 | 97.6 | -89.58 | -4,965.0 | 1,848.2 | 1,305.9 | 1,113.7 | 192.29 | 6.791 | | |
| 10,400.0 | 5,753.1 | 10,563.8 | 5,736.0 | 97.8 | 99.5 | -89.58 | -5,065.0 | 1,849.1 | 1,306.8 | 1,110.7 | 196.09 | 6.664 | | |
| 10,500.0 | 5,753.1 | 10,663.8 | 5,736.0 | 99.7 | 101.3 | -89.58 | -5,165.0 | 1,850.0 | 1,307.7 | 1,107.8 | 199.89 | 6.542 | | |
| 10,600.0 | 5,753.1 | 10,763.8 | 5,736.0 | 101.6 | 103.2 | -89.58 | -5,265.0 | 1,850.8 | 1,308.6 | 1,104.9 | 203.69 | 6.424 | | |
| 10,700.0 | 5,753.1 | 10,863.8 | 5,736.0 | 103.5 | 105.1 | -89.58 | -5,364.9 | 1,851.7 | 1,309.5 | 1,102.0 | 207.50 | 6.311 | | |
| 10,800.0 | 5,753.1 | 10,963.8 | 5,736.0 | 105.4 | 107.0 | -89.58 | -5,464.9 | 1,852.6 | 1,310.4 | 1,099.1 | 211.31 | 6.201 | | |
| 10,900.0 | 5,753.0 | 11,063.8 | 5,736.0 | 107.3 | 108.9 | -89.58 | -5,564.9 | 1,853.5 | 1,311.3 | 1,096.1 | 215.12 | 6.096 | | |
| 11,000.0 | 5,753.0 | 11,163.8 | 5,736.0 | 109.1 | 110.8 | -89.58 | -5,664.9 | 1,854.4 | 1,312.1 | 1,093.2 | 218.93 | 5.993 | | |
| 11,100.0 | 5,753.0 | 11,263.8 | 5,736.0 | 111.0 | 112.7 | -89.58 | -5,764.9 | 1,855.2 | 1,313.0 | 1,090.3 | 222.74 | 5.895 | | |
| 11,200.0 | 5,753.0 | 11,363.8 | 5,736.0 | 112.9 | 114.6 | -89.58 | -5,864.9 | 1,856.1 | 1,313.9 | 1,087.4 | 226.56 | 5.800 | | |
| 11,300.0 | 5,753.0 | 11,463.8 | 5,736.0 | 114.8 | 116.5 | -89.58 | -5,964.9 | 1,857.0 | 1,314.8 | 1,084.4 | 230.37 | 5.707 | | |
| 11,400.0 | 5,753.0 | 11,563.8 | 5,736.0 | 116.7 | 118.4 | -89.58 | -6,064.9 | 1,857.9 | 1,315.7 | 1,081.5 | 234.19 | 5.618 | | |
| 11,500.0 | 5,753.0 | 11,663.8 | 5,736.0 | 118.6 | 120.3 | -89.59 | -6,164.9 | 1,858.7 | 1,316.6 | 1,078.6 | 238.01 | 5.532 | | |
| 11,600.0 | 5,753.0 | 11,763.8 | 5,736.0 | 120.5 | 122.2 | -89.59 | -6,264.9 | 1,859.6 | 1,317.5 | 1,075.6 | 241.83 | 5.448 | | |
| 11,700.0 | 5,753.0 | 11,863.7 | 5,736.0 | 122.4 | 124.1 | -89.59 | -6,364.9 | 1,860.5 | 1,318.3 | 1,072.7 | 245.64 | 5.367 | | |
| 11,800.0 | 5,753.0 | 11,963.7 | 5,736.0 | 124.3 | 126.0 | -89.59 | -6,464.9 | 1,861.4 | 1,319.2 | 1,069.8 | 249.47 | 5.288 | | |
| 11,900.0 | 5,753.0 | 12,063.7 | 5,736.0 | 126.2 | 127.9 | -89.59 | -6,564.9 | 1,862.3 | 1,320.1 | 1,066.8 | 253.29 | 5.212 | | |
| 12,000.0 | 5,753.0 | 12,163.7 | 5,736.0 | 128.1 | 129.8 | -89.59 | -6,664.8 | 1,863.1 | 1,321.0 | 1,063.9 | 257.11 | 5.138 | | |
| 12,100.0 | 5,753.0 | 12,263.7 | 5,736.0 | 130.0 | 131.8 | -89.59 | -6,764.8 | 1,864.0 | 1,321.9 | 1,061.0 | 260.93 | 5.066 | | |
| 12,200.0 | 5,753.0 | 12,363.7 | 5,736.0 | 131.9 | 133.7 | -89.59 | -6,864.8 | 1,864.9 | 1,322.8 | 1,058.0 | 264.76 | 4.996 | | |
| 12,277.3 | 5,753.0 | 12,441.0 | 5,736.0 | 133.1 | 135.1 | -89.59 | -6,942.1 | 1,865.6 | 1,323.5 | 1,056.0 | 267.44 | 4.949 | | |
| 12,277.6 | 5,753.0 | 12,441.3 | 5,736.0 | 133.1 | 135.1 | -89.59 | -6,942.5 | 1,865.6 | 1,323.5 | 1,056.0 | 267.45 | 4.948 ES, SF | | |

Cathedral Energy Services

Anticollision Report

| | | | |
|---------------------------|-------------------------------|-------------------------------------|----------------------------------------|
| Company: | Whiting Petroleum Corporation | Local Co-ordinate Reference: | Well Razor #27J-3412B |
| Project: | Weld County, CO | TVD Reference: | WELL @ 4780.5usft (Original Well Elev) |
| Reference Site: | S27-T10N-R58W | MD Reference: | WELL @ 4780.5usft (Original Well Elev) |
| Site Error: | 0.0usft | North Reference: | True |
| Reference Well: | Razor #27J-3412B | Survey Calculation Method: | Minimum Curvature |
| Well Error: | 0.0usft | Output errors are at | 2.00 sigma |
| Reference Wellbore | HZ | Database: | USA EDM 5000 Multi Users DB |
| Reference Design: | Plan #3 | Offset TVD Reference: | Offset Datum |

| Offset Design S27-T10N-R58W - Razor #27J-2209A - HZ - Plan #2 | | | | | | | | | | | | | Offset Site Error: | 0.0 usft |
|---------------------------------------------------------------|-----------------------------|-----------------------------|-----------------------------|---------------------|------------------|-----------------------------|-------------------------------------------|-----------------|------------------------------|----------------------|---------|-----------|--------------------|----------|
| Survey Program: 0-ISCSA MWD | | | | | | | | | | | | | Offset Well Error: | 0.0 usft |
| Reference | | Offset | | Semi Major Axis | | Highside Toolface (°) | Distance | | Total Uncertainty Axis | Separation Factor | Warning | | | |
| Measured Depth (usft) | Vertical Depth (usft) | Measured Depth (usft) | Vertical Depth (usft) | Reference (usft) | Offset (usft) | | Offset Wellbore Centre +N/-S (usft) | +E/-W (usft) | | | | | | |
| 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | -41.40 | 75.0 | -66.2 | 100.0 | | | | | |
| 100.0 | 100.0 | 103.0 | 103.0 | 0.1 | 0.1 | -41.40 | 75.0 | -66.2 | 100.0 | 99.9 | 0.19 | 514.657 | | |
| 200.0 | 200.0 | 203.0 | 203.0 | 0.3 | 0.3 | -41.40 | 75.0 | -66.2 | 100.0 | 99.4 | 0.64 | 155.373 | | |
| 300.0 | 300.0 | 303.0 | 303.0 | 0.5 | 0.6 | -41.40 | 75.0 | -66.2 | 100.0 | 99.0 | 1.09 | 91.498 | | |
| 400.0 | 400.0 | 403.0 | 403.0 | 0.8 | 0.8 | -41.40 | 75.0 | -66.2 | 100.0 | 98.5 | 1.54 | 64.841 | | |
| 465.6 | 465.6 | 468.6 | 468.6 | 0.9 | 0.9 | -41.40 | 75.0 | -66.2 | 100.0 | 98.2 | 1.84 | 54.432 CC | | |
| 500.0 | 500.0 | 502.9 | 502.9 | 1.0 | 1.0 | -41.40 | 75.1 | -66.2 | 100.1 | 98.1 | 1.99 | 50.219 ES | | |
| 600.0 | 600.0 | 600.0 | 600.0 | 1.2 | 1.2 | 164.48 | 76.5 | -67.1 | 103.5 | 101.1 | 2.41 | 42.893 | | |
| 700.0 | 699.8 | 695.3 | 695.1 | 1.4 | 1.4 | 165.45 | 80.6 | -69.8 | 113.6 | 110.8 | 2.83 | 40.194 | | |
| 800.0 | 799.6 | 794.1 | 793.7 | 1.6 | 1.7 | 166.61 | 86.4 | -73.6 | 127.3 | 124.1 | 3.25 | 39.197 | | |
| 900.0 | 899.4 | 893.2 | 892.5 | 1.8 | 1.9 | 167.55 | 92.2 | -77.3 | 141.0 | 137.4 | 3.67 | 38.416 | | |
| 1,000.0 | 999.1 | 992.2 | 991.3 | 2.1 | 2.1 | 168.33 | 98.0 | -81.1 | 154.8 | 150.7 | 4.10 | 37.737 | | |
| 1,100.0 | 1,098.9 | 1,091.2 | 1,090.1 | 2.3 | 2.4 | 168.97 | 103.8 | -84.9 | 168.5 | 164.0 | 4.54 | 37.149 | | |
| 1,200.0 | 1,198.6 | 1,190.3 | 1,188.9 | 2.5 | 2.6 | 169.52 | 109.6 | -88.6 | 182.3 | 177.4 | 4.98 | 36.639 | | |
| 1,300.0 | 1,298.4 | 1,289.3 | 1,287.7 | 2.8 | 2.9 | 169.99 | 115.3 | -92.4 | 196.1 | 190.7 | 5.42 | 36.196 | | |
| 1,400.0 | 1,398.1 | 1,388.3 | 1,386.5 | 3.0 | 3.1 | 170.40 | 121.1 | -96.2 | 209.9 | 204.1 | 5.86 | 35.807 | | |
| 1,500.0 | 1,497.9 | 1,487.4 | 1,485.3 | 3.3 | 3.4 | 170.76 | 126.9 | -100.0 | 223.8 | 217.5 | 6.31 | 35.464 | | |
| 1,600.0 | 1,597.6 | 1,586.4 | 1,584.1 | 3.5 | 3.6 | 171.08 | 132.7 | -103.7 | 237.6 | 230.8 | 6.76 | 35.161 | | |
| 1,700.0 | 1,697.4 | 1,685.4 | 1,682.9 | 3.8 | 3.9 | 171.36 | 138.5 | -107.5 | 251.4 | 244.2 | 7.21 | 34.891 | | |
| 1,800.0 | 1,797.2 | 1,784.4 | 1,781.6 | 4.1 | 4.1 | 171.61 | 144.3 | -111.3 | 265.3 | 257.6 | 7.66 | 34.649 | | |
| 1,900.0 | 1,896.9 | 1,883.5 | 1,880.4 | 4.3 | 4.4 | 171.84 | 150.1 | -115.0 | 279.1 | 271.0 | 8.11 | 34.432 | | |
| 2,000.0 | 1,996.7 | 1,982.5 | 1,979.2 | 4.6 | 4.6 | 172.05 | 155.9 | -118.8 | 293.0 | 284.4 | 8.56 | 34.235 | | |
| 2,100.0 | 2,096.4 | 2,081.5 | 2,078.0 | 4.8 | 4.9 | 172.24 | 161.6 | -122.6 | 306.8 | 297.8 | 9.01 | 34.056 | | |
| 2,200.0 | 2,196.2 | 2,180.6 | 2,176.8 | 5.1 | 5.1 | 172.41 | 167.4 | -126.3 | 320.7 | 311.2 | 9.46 | 33.892 | | |
| 2,300.0 | 2,295.9 | 2,279.6 | 2,275.6 | 5.4 | 5.4 | 172.57 | 173.2 | -130.1 | 334.5 | 324.6 | 9.91 | 33.743 | | |
| 2,400.0 | 2,395.7 | 2,378.6 | 2,374.4 | 5.6 | 5.7 | 172.71 | 179.0 | -133.9 | 348.4 | 338.0 | 10.37 | 33.605 | | |
| 2,500.0 | 2,495.5 | 2,477.7 | 2,473.2 | 5.9 | 5.9 | 172.84 | 184.8 | -137.7 | 362.3 | 351.4 | 10.82 | 33.479 | | |
| 2,600.0 | 2,595.2 | 2,576.7 | 2,572.0 | 6.1 | 6.2 | 172.97 | 190.6 | -141.4 | 376.1 | 364.8 | 11.27 | 33.362 | | |
| 2,700.0 | 2,695.0 | 2,675.7 | 2,670.8 | 6.4 | 6.4 | 173.08 | 196.4 | -145.2 | 390.0 | 378.3 | 11.73 | 33.253 | | |
| 2,800.0 | 2,794.7 | 2,774.8 | 2,769.5 | 6.7 | 6.7 | 173.19 | 202.2 | -149.0 | 403.9 | 391.7 | 12.18 | 33.152 | | |
| 2,900.0 | 2,894.5 | 2,873.8 | 2,868.3 | 6.9 | 6.9 | 173.29 | 208.0 | -152.7 | 417.7 | 405.1 | 12.64 | 33.058 | | |
| 3,000.0 | 2,994.2 | 2,972.8 | 2,967.1 | 7.2 | 7.2 | 173.38 | 213.7 | -156.5 | 431.6 | 418.5 | 13.09 | 32.970 | | |
| 3,100.0 | 3,094.0 | 3,071.9 | 3,065.9 | 7.5 | 7.4 | 173.47 | 219.5 | -160.3 | 445.5 | 431.9 | 13.55 | 32.888 | | |
| 3,200.0 | 3,193.7 | 3,170.9 | 3,164.7 | 7.7 | 7.7 | 173.55 | 225.3 | -164.1 | 459.3 | 445.3 | 14.00 | 32.810 | | |
| 3,300.0 | 3,293.5 | 3,269.9 | 3,263.5 | 8.0 | 7.9 | 173.63 | 231.1 | -167.8 | 473.2 | 458.8 | 14.45 | 32.738 | | |
| 3,400.0 | 3,393.3 | 3,368.9 | 3,362.3 | 8.2 | 8.2 | 173.70 | 236.9 | -171.6 | 487.1 | 472.2 | 14.91 | 32.669 | | |
| 3,500.0 | 3,493.0 | 3,468.0 | 3,461.1 | 8.5 | 8.5 | 173.77 | 242.7 | -175.4 | 501.0 | 485.6 | 15.36 | 32.605 | | |
| 3,600.0 | 3,592.8 | 3,567.0 | 3,559.9 | 8.8 | 8.7 | 173.84 | 248.5 | -179.1 | 514.8 | 499.0 | 15.82 | 32.544 | | |
| 3,700.0 | 3,692.5 | 3,666.0 | 3,658.7 | 9.0 | 9.0 | 173.90 | 254.3 | -182.9 | 528.7 | 512.4 | 16.27 | 32.486 | | |
| 3,800.0 | 3,792.3 | 3,765.1 | 3,757.4 | 9.3 | 9.2 | 173.96 | 260.0 | -186.7 | 542.6 | 525.9 | 16.73 | 32.431 | | |
| 3,900.0 | 3,892.0 | 3,864.1 | 3,856.2 | 9.6 | 9.5 | 174.02 | 265.8 | -190.5 | 556.5 | 539.3 | 17.19 | 32.380 | | |
| 4,000.0 | 3,991.8 | 3,963.1 | 3,955.0 | 9.8 | 9.7 | 174.07 | 271.6 | -194.2 | 570.3 | 552.7 | 17.64 | 32.330 | | |
| 4,100.0 | 4,091.6 | 4,062.2 | 4,053.8 | 10.1 | 10.0 | 174.12 | 277.4 | -198.0 | 584.2 | 566.1 | 18.10 | 32.283 | | |
| 4,200.0 | 4,191.3 | 4,161.2 | 4,152.6 | 10.4 | 10.2 | 174.17 | 283.2 | -201.8 | 598.1 | 579.5 | 18.55 | 32.239 | | |
| 4,300.0 | 4,291.1 | 4,260.2 | 4,251.4 | 10.6 | 10.5 | 174.21 | 289.0 | -205.5 | 612.0 | 593.0 | 19.01 | 32.196 | | |
| 4,400.0 | 4,390.8 | 4,359.3 | 4,350.2 | 10.9 | 10.7 | 174.26 | 294.8 | -209.3 | 625.9 | 606.4 | 19.46 | 32.155 | | |
| 4,500.0 | 4,490.6 | 4,458.3 | 4,449.0 | 11.1 | 11.0 | 174.30 | 300.6 | -213.1 | 639.7 | 619.8 | 19.92 | 32.116 | | |
| 4,600.0 | 4,590.3 | 4,557.3 | 4,547.8 | 11.4 | 11.3 | 174.34 | 306.3 | -216.8 | 653.6 | 633.2 | 20.37 | 32.079 | | |
| 4,700.0 | 4,690.1 | 4,656.4 | 4,646.6 | 11.7 | 11.5 | 174.38 | 312.1 | -220.6 | 667.5 | 646.7 | 20.83 | 32.044 | | |
| 4,800.0 | 4,789.9 | 4,755.4 | 4,745.3 | 11.9 | 11.8 | 174.42 | 317.9 | -224.4 | 681.4 | 660.1 | 21.29 | 32.009 | | |
| 4,900.0 | 4,889.6 | 4,854.4 | 4,844.1 | 12.2 | 12.0 | 174.45 | 323.7 | -228.2 | 695.3 | 673.5 | 21.74 | 31.977 | | |
| 5,000.0 | 4,989.4 | 4,953.4 | 4,942.9 | 12.5 | 12.3 | 174.49 | 329.5 | -231.9 | 709.1 | 686.9 | 22.20 | 31.945 | | |

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Cathedral Energy Services

Anticollision Report

| | | | |
|---------------------------|-------------------------------|-------------------------------------|----------------------------------------|
| Company: | Whiting Petroleum Corporation | Local Co-ordinate Reference: | Well Razor #27J-3412B |
| Project: | Weld County, CO | TVD Reference: | WELL @ 4780.5usft (Original Well Elev) |
| Reference Site: | S27-T10N-R58W | MD Reference: | WELL @ 4780.5usft (Original Well Elev) |
| Site Error: | 0.0usft | North Reference: | True |
| Reference Well: | Razor #27J-3412B | Survey Calculation Method: | Minimum Curvature |
| Well Error: | 0.0usft | Output errors are at | 2.00 sigma |
| Reference Wellbore | HZ | Database: | USA EDM 5000 Multi Users DB |
| Reference Design: | Plan #3 | Offset TVD Reference: | Offset Datum |

| Offset Design S27-T10N-R58W - Razor #27J-2209A - HZ - Plan #2 | | | | | | | | | | | | Offset Site Error: | 0.0 usft |
|---------------------------------------------------------------|-----------------------|-----------------------|-----------------------|------------------|---------------|-----------------------|-------------------------------------|--------------|------------------------|-------------------------|------------------------|--------------------|----------|
| Survey Program: 0-ISCWSA MWD | | | | | | | | | | | | Offset Well Error: | 0.0 usft |
| Reference | | Offset | | Semi Major Axis | | Distance | | | | | | | |
| Measured Depth (usft) | Vertical Depth (usft) | Measured Depth (usft) | Vertical Depth (usft) | Reference (usft) | Offset (usft) | Highside Toolface (°) | Offset Wellbore Centre +N/-S (usft) | +E/-W (usft) | Between Centres (usft) | Between Ellipses (usft) | Total Uncertainty Axis | Separation Factor | Warning |
| 5,100.0 | 5,089.1 | 5,052.5 | 5,041.7 | 12.7 | 12.5 | 174.52 | 335.3 | -235.7 | 723.0 | 700.4 | 22.65 | 31.915 | |
| 5,200.0 | 5,188.9 | 5,151.5 | 5,140.5 | 13.0 | 12.8 | 174.55 | 341.1 | -239.5 | 736.9 | 713.8 | 23.11 | 31.886 SF | |
| 5,280.0 | 5,268.7 | 5,200.0 | 5,188.9 | 13.2 | 12.9 | 174.57 | 344.0 | -241.3 | 748.7 | 725.3 | 23.41 | 31.987 | |
| 5,300.0 | 5,288.6 | 5,216.6 | 5,205.4 | 13.3 | 13.0 | 174.41 | 345.3 | -242.2 | 752.4 | 729.0 | 23.42 | 32.128 | |
| 5,350.0 | 5,338.0 | 5,250.0 | 5,238.4 | 13.4 | 13.1 | 174.18 | 349.6 | -244.7 | 767.0 | 743.7 | 23.30 | 32.915 | |
| 5,400.0 | 5,386.4 | 5,250.0 | 5,238.4 | 13.7 | 13.1 | 173.89 | 349.6 | -244.7 | 787.1 | 764.2 | 22.92 | 34.349 | |
| 5,450.0 | 5,433.4 | 5,271.2 | 5,259.2 | 13.9 | 13.1 | 173.56 | 353.2 | -246.8 | 813.2 | 790.8 | 22.40 | 36.308 | |
| 5,500.0 | 5,478.5 | 5,300.0 | 5,287.1 | 14.2 | 13.3 | 173.19 | 359.3 | -250.2 | 844.8 | 823.1 | 21.72 | 38.896 | |
| 5,550.0 | 5,521.3 | 5,300.0 | 5,287.1 | 14.6 | 13.3 | 172.48 | 359.3 | -250.2 | 880.3 | 859.5 | 20.82 | 42.291 | |
| 5,600.0 | 5,561.6 | 5,300.0 | 5,287.1 | 15.0 | 13.3 | 171.45 | 359.3 | -250.2 | 920.1 | 900.4 | 19.79 | 46.504 | |
| 5,650.0 | 5,598.7 | 5,319.5 | 5,305.8 | 15.5 | 13.4 | 170.23 | 364.3 | -253.0 | 962.9 | 944.2 | 18.70 | 51.484 | |
| 5,700.0 | 5,632.5 | 5,326.7 | 5,312.6 | 16.0 | 13.4 | 168.10 | 366.2 | -254.1 | 1,008.3 | 990.7 | 17.63 | 57.194 | |
| 5,750.0 | 5,662.6 | 5,331.9 | 5,317.5 | 16.6 | 13.4 | 164.34 | 367.7 | -254.9 | 1,055.7 | 1,038.8 | 16.91 | 62.441 | |
| 5,800.0 | 5,688.8 | 5,350.0 | 5,334.5 | 17.2 | 13.5 | 157.90 | 373.2 | -258.0 | 1,104.8 | 1,087.4 | 17.38 | 63.575 | |
| 5,850.0 | 5,710.7 | 5,350.0 | 5,334.5 | 17.9 | 13.5 | 136.79 | 373.2 | -258.0 | 1,154.3 | 1,130.7 | 23.60 | 48.911 | |
| 5,900.0 | 5,728.3 | 5,350.0 | 5,334.5 | 18.6 | 13.5 | 68.04 | 373.2 | -258.0 | 1,204.1 | 1,173.5 | 30.62 | 39.319 | |
| 5,950.0 | 5,741.3 | 5,350.0 | 5,334.5 | 19.3 | 13.5 | 27.42 | 373.2 | -258.0 | 1,253.9 | 1,236.3 | 17.54 | 71.487 | |
| 6,000.0 | 5,749.5 | 5,350.0 | 5,334.5 | 20.1 | 13.5 | 15.97 | 373.2 | -258.0 | 1,303.1 | 1,290.7 | 12.40 | 105.065 | |
| 6,050.0 | 5,753.1 | 5,329.8 | 5,315.6 | 20.9 | 13.4 | 10.55 | 367.1 | -254.6 | 1,350.9 | 1,340.8 | 10.07 | 134.181 | |
| 6,061.8 | 5,753.2 | 5,328.8 | 5,314.6 | 21.1 | 13.4 | 9.84 | 366.8 | -254.4 | 1,362.1 | 1,352.3 | 9.80 | 138.927 | |
| 6,100.0 | 5,753.2 | 5,325.5 | 5,311.5 | 21.7 | 13.4 | 12.99 | 365.9 | -253.9 | 1,398.2 | 1,387.0 | 11.18 | 125.017 | |
| 6,200.0 | 5,753.2 | 5,300.0 | 5,287.1 | 23.2 | 13.3 | 20.26 | 359.3 | -250.2 | 1,493.1 | 1,478.1 | 14.97 | 99.736 | |
| 6,300.0 | 5,753.2 | 5,300.0 | 5,287.1 | 24.7 | 13.3 | 27.98 | 359.3 | -250.2 | 1,587.4 | 1,567.6 | 19.73 | 80.442 | |
| 6,400.0 | 5,753.2 | 5,300.0 | 5,287.1 | 26.3 | 13.3 | 35.10 | 359.3 | -250.2 | 1,681.5 | 1,657.1 | 24.42 | 68.850 | |
| 6,500.0 | 5,753.2 | 5,300.0 | 5,287.1 | 27.9 | 13.3 | 41.47 | 359.3 | -250.2 | 1,775.3 | 1,746.6 | 28.72 | 61.805 | |
| 6,600.0 | 5,753.2 | 5,300.0 | 5,287.1 | 29.5 | 13.3 | 47.03 | 359.3 | -250.2 | 1,868.6 | 1,836.1 | 32.52 | 57.457 | |
| 6,700.0 | 5,753.2 | 5,300.0 | 5,287.1 | 31.1 | 13.3 | 51.82 | 359.3 | -250.2 | 1,961.2 | 1,925.4 | 35.80 | 54.780 | |
| 6,800.0 | 5,753.2 | 5,300.0 | 5,287.1 | 32.6 | 13.3 | 55.90 | 359.3 | -250.2 | 2,053.0 | 2,014.4 | 38.60 | 53.187 | |
| 6,900.3 | 5,753.2 | 5,278.0 | 5,265.8 | 34.2 | 13.2 | 58.18 | 354.5 | -247.5 | 2,143.5 | 2,103.1 | 40.41 | 53.042 | |
| 7,000.0 | 5,753.2 | 5,274.2 | 5,262.1 | 35.8 | 13.2 | 57.97 | 353.8 | -247.1 | 2,233.7 | 2,191.9 | 41.85 | 53.377 | |
| 7,100.0 | 5,753.2 | 5,270.6 | 5,258.6 | 37.5 | 13.1 | 57.78 | 353.1 | -246.7 | 2,325.0 | 2,281.6 | 43.33 | 53.655 | |
| 7,200.0 | 5,753.2 | 5,250.0 | 5,238.4 | 39.2 | 13.1 | 56.67 | 349.6 | -244.7 | 2,417.2 | 2,372.9 | 44.35 | 54.508 | |
| 7,300.0 | 5,753.2 | 5,250.0 | 5,238.4 | 40.9 | 13.1 | 56.67 | 349.6 | -244.7 | 2,509.6 | 2,463.7 | 45.94 | 54.629 | |
| 7,400.0 | 5,753.2 | 5,250.0 | 5,238.4 | 42.6 | 13.1 | 56.67 | 349.6 | -244.7 | 2,602.6 | 2,555.0 | 47.54 | 54.741 | |
| 7,500.0 | 5,753.2 | 5,250.0 | 5,238.4 | 44.3 | 13.1 | 56.67 | 349.6 | -244.7 | 2,696.0 | 2,646.9 | 49.16 | 54.844 | |
| 7,600.0 | 5,753.2 | 5,250.0 | 5,238.4 | 46.1 | 13.1 | 56.67 | 349.6 | -244.7 | 2,789.9 | 2,739.1 | 50.78 | 54.940 | |
| 7,700.0 | 5,753.2 | 5,250.0 | 5,238.4 | 47.9 | 13.1 | 56.67 | 349.6 | -244.7 | 2,884.2 | 2,831.8 | 52.41 | 55.029 | |
| 7,800.0 | 5,753.2 | 5,250.0 | 5,238.4 | 49.6 | 13.1 | 56.67 | 349.6 | -244.7 | 2,978.9 | 2,924.9 | 54.05 | 55.113 | |
| 7,900.0 | 5,753.2 | 5,250.0 | 5,238.4 | 51.4 | 13.1 | 56.67 | 349.6 | -244.7 | 3,074.0 | 3,018.3 | 55.70 | 55.191 | |
| 8,000.0 | 5,753.2 | 5,250.0 | 5,238.4 | 53.2 | 13.1 | 56.67 | 349.6 | -244.7 | 3,169.3 | 3,111.9 | 57.35 | 55.265 | |
| 8,100.0 | 5,753.1 | 5,250.0 | 5,238.4 | 55.0 | 13.1 | 56.67 | 349.6 | -244.7 | 3,264.9 | 3,205.9 | 59.00 | 55.334 | |
| 8,200.0 | 5,753.1 | 5,250.0 | 5,238.4 | 56.9 | 13.1 | 56.67 | 349.6 | -244.7 | 3,360.8 | 3,300.1 | 60.66 | 55.400 | |
| 8,300.0 | 5,753.1 | 5,250.0 | 5,238.4 | 58.7 | 13.1 | 56.67 | 349.6 | -244.7 | 3,456.9 | 3,394.5 | 62.33 | 55.463 | |
| 8,400.0 | 5,753.1 | 5,250.0 | 5,238.4 | 60.5 | 13.1 | 56.67 | 349.6 | -244.7 | 3,553.2 | 3,489.2 | 64.00 | 55.522 | |
| 8,500.0 | 5,753.1 | 5,250.0 | 5,238.4 | 62.3 | 13.1 | 56.67 | 349.6 | -244.7 | 3,649.7 | 3,584.0 | 65.67 | 55.578 | |
| 8,600.0 | 5,753.1 | 5,250.0 | 5,238.4 | 64.2 | 13.1 | 56.67 | 349.6 | -244.7 | 3,746.4 | 3,679.1 | 67.34 | 55.632 | |
| 8,700.0 | 5,753.1 | 5,250.0 | 5,238.4 | 66.0 | 13.1 | 56.67 | 349.6 | -244.7 | 3,843.3 | 3,774.2 | 69.02 | 55.684 | |
| 8,800.0 | 5,753.1 | 5,250.0 | 5,238.4 | 67.9 | 13.1 | 56.67 | 349.6 | -244.7 | 3,940.3 | 3,869.6 | 70.70 | 55.733 | |
| 8,900.0 | 5,753.1 | 5,250.0 | 5,238.4 | 69.7 | 13.1 | 56.67 | 349.6 | -244.7 | 4,037.5 | 3,965.1 | 72.38 | 55.780 | |
| 9,000.0 | 5,753.1 | 5,250.0 | 5,238.4 | 71.6 | 13.1 | 56.67 | 349.6 | -244.7 | 4,134.8 | 4,060.7 | 74.07 | 55.825 | |
| 9,100.0 | 5,753.1 | 5,227.6 | 5,216.3 | 73.4 | 13.0 | 55.50 | 346.5 | -242.9 | 4,231.7 | 4,156.9 | 74.79 | 56.583 | |
| 9,200.0 | 5,753.1 | 5,226.3 | 5,215.0 | 75.3 | 13.0 | 55.43 | 346.4 | -242.8 | 4,329.2 | 4,252.8 | 76.40 | 56.665 | |

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Cathedral Energy Services

Anticollision Report

| | | | |
|---------------------------|-------------------------------|-------------------------------------|----------------------------------------|
| Company: | Whiting Petroleum Corporation | Local Co-ordinate Reference: | Well Razor #27J-3412B |
| Project: | Weld County, CO | TVD Reference: | WELL @ 4780.5usft (Original Well Elev) |
| Reference Site: | S27-T10N-R58W | MD Reference: | WELL @ 4780.5usft (Original Well Elev) |
| Site Error: | 0.0usft | North Reference: | True |
| Reference Well: | Razor #27J-3412B | Survey Calculation Method: | Minimum Curvature |
| Well Error: | 0.0usft | Output errors are at | 2.00 sigma |
| Reference Wellbore | HZ | Database: | USA EDM 5000 Multi Users DB |
| Reference Design: | Plan #3 | Offset TVD Reference: | Offset Datum |

| Offset Design S27-T10N-R58W - Razor #27J-2209A - HZ - Plan #2 | | | | | | | | | | | | | Offset Site Error: 0.0 usft | |
|---------------------------------------------------------------|-----------------------|-----------------------|-----------------------|------------------|---------------|-----------------------|-------------------------------------|--------------|------------------------|-------------------------|------------------------|-------------------|-----------------------------|--|
| Survey Program: 0-ISCSWA MWD | | | | | | | | | | | | | Offset Well Error: 0.0 usft | |
| Reference | | Offset | | Semi Major Axis | | | Distance | | | | | | Warning | |
| Measured Depth (usft) | Vertical Depth (usft) | Measured Depth (usft) | Vertical Depth (usft) | Reference (usft) | Offset (usft) | Highside Toolface (°) | Offset Wellbore Centre +N/-S (usft) | +E/-W (usft) | Between Centres (usft) | Between Ellipses (usft) | Total Uncertainty Axis | Separation Factor | | |
| 9,300.0 | 5,753.1 | 5,225.0 | 5,213.8 | 77.2 | 13.0 | 55.37 | 346.2 | -242.7 | 4,426.8 | 4,348.7 | 78.01 | 56.743 | | |
| 9,400.0 | 5,753.1 | 5,223.8 | 5,212.6 | 79.0 | 13.0 | 55.31 | 346.1 | -242.6 | 4,524.5 | 4,444.8 | 79.63 | 56.819 | | |
| 9,500.0 | 5,753.1 | 5,222.6 | 5,211.4 | 80.9 | 13.0 | 55.25 | 346.0 | -242.6 | 4,622.2 | 4,541.0 | 81.25 | 56.892 | | |
| 9,600.0 | 5,753.1 | 5,200.0 | 5,188.9 | 82.8 | 12.9 | 54.11 | 344.0 | -241.3 | 4,720.6 | 4,638.7 | 81.86 | 57.670 | | |
| 9,700.0 | 5,753.1 | 5,200.0 | 5,188.9 | 84.6 | 12.9 | 54.11 | 344.0 | -241.3 | 4,818.5 | 4,735.0 | 83.51 | 57.700 | | |
| 9,800.0 | 5,753.1 | 5,200.0 | 5,188.9 | 86.5 | 12.9 | 54.11 | 344.0 | -241.3 | 4,916.5 | 4,831.4 | 85.16 | 57.729 | | |
| 9,900.0 | 5,753.1 | 5,200.0 | 5,188.9 | 88.4 | 12.9 | 54.11 | 344.0 | -241.3 | 5,014.6 | 4,927.8 | 86.82 | 57.758 | | |
| 10,000.0 | 5,753.1 | 5,200.0 | 5,188.9 | 90.3 | 12.9 | 54.11 | 344.0 | -241.3 | 5,112.8 | 5,024.3 | 88.48 | 57.785 | | |
| 10,100.0 | 5,753.1 | 5,200.0 | 5,188.9 | 92.1 | 12.9 | 54.11 | 344.0 | -241.3 | 5,211.0 | 5,120.8 | 90.14 | 57.812 | | |
| 10,200.0 | 5,753.1 | 5,200.0 | 5,188.9 | 94.0 | 12.9 | 54.11 | 344.0 | -241.3 | 5,309.3 | 5,217.5 | 91.80 | 57.837 | | |
| 10,300.0 | 5,753.1 | 5,200.0 | 5,188.9 | 95.9 | 12.9 | 54.11 | 344.0 | -241.3 | 5,407.6 | 5,314.2 | 93.46 | 57.862 | | |
| 10,400.0 | 5,753.1 | 5,200.0 | 5,188.9 | 97.8 | 12.9 | 54.11 | 344.0 | -241.3 | 5,506.0 | 5,410.9 | 95.12 | 57.887 | | |
| 10,500.0 | 5,753.1 | 5,200.0 | 5,188.9 | 99.7 | 12.9 | 54.11 | 344.0 | -241.3 | 5,604.5 | 5,507.7 | 96.78 | 57.910 | | |
| 10,600.0 | 5,753.1 | 5,200.0 | 5,188.9 | 101.6 | 12.9 | 54.11 | 344.0 | -241.3 | 5,703.0 | 5,604.6 | 98.44 | 57.933 | | |
| 10,700.0 | 5,753.1 | 5,200.0 | 5,188.9 | 103.5 | 12.9 | 54.11 | 344.0 | -241.3 | 5,801.6 | 5,701.5 | 100.10 | 57.955 | | |
| 10,800.0 | 5,753.1 | 5,200.0 | 5,188.9 | 105.4 | 12.9 | 54.11 | 344.0 | -241.3 | 5,900.2 | 5,798.5 | 101.77 | 57.977 | | |
| 10,900.0 | 5,753.0 | 5,200.0 | 5,188.9 | 107.3 | 12.9 | 54.11 | 344.0 | -241.3 | 5,998.9 | 5,895.5 | 103.43 | 57.998 | | |
| 11,000.0 | 5,753.0 | 5,200.0 | 5,188.9 | 109.1 | 12.9 | 54.11 | 344.0 | -241.3 | 6,097.6 | 5,992.5 | 105.10 | 58.019 | | |
| 11,100.0 | 5,753.0 | 5,200.0 | 5,188.9 | 111.0 | 12.9 | 54.11 | 344.0 | -241.3 | 6,196.4 | 6,089.6 | 106.76 | 58.039 | | |
| 11,200.0 | 5,753.0 | 5,200.0 | 5,188.9 | 112.9 | 12.9 | 54.11 | 344.0 | -241.3 | 6,295.2 | 6,186.7 | 108.43 | 58.058 | | |
| 11,300.0 | 5,753.0 | 5,200.0 | 5,188.9 | 114.8 | 12.9 | 54.11 | 344.0 | -241.3 | 6,394.0 | 6,283.9 | 110.10 | 58.077 | | |
| 11,400.0 | 5,753.0 | 5,200.0 | 5,188.9 | 116.7 | 12.9 | 54.11 | 344.0 | -241.3 | 6,492.9 | 6,381.1 | 111.76 | 58.095 | | |
| 11,500.0 | 5,753.0 | 5,200.0 | 5,188.9 | 118.6 | 12.9 | 54.11 | 344.0 | -241.3 | 6,591.8 | 6,478.3 | 113.43 | 58.113 | | |
| 11,600.0 | 5,753.0 | 5,200.0 | 5,188.9 | 120.5 | 12.9 | 54.11 | 344.0 | -241.3 | 6,690.7 | 6,575.6 | 115.10 | 58.131 | | |
| 11,700.0 | 5,753.0 | 5,200.0 | 5,188.9 | 122.4 | 12.9 | 54.11 | 344.0 | -241.3 | 6,789.6 | 6,672.9 | 116.76 | 58.148 | | |
| 11,800.0 | 5,753.0 | 5,200.0 | 5,188.9 | 124.3 | 12.9 | 54.11 | 344.0 | -241.3 | 6,888.6 | 6,770.2 | 118.43 | 58.165 | | |
| 11,900.0 | 5,753.0 | 5,200.0 | 5,188.9 | 126.2 | 12.9 | 54.11 | 344.0 | -241.3 | 6,987.7 | 6,867.6 | 120.10 | 58.181 | | |
| 12,000.0 | 5,753.0 | 5,200.0 | 5,188.9 | 128.1 | 12.9 | 54.11 | 344.0 | -241.3 | 7,086.7 | 6,964.9 | 121.77 | 58.197 | | |
| 12,100.0 | 5,753.0 | 5,200.0 | 5,188.9 | 130.0 | 12.9 | 54.11 | 344.0 | -241.3 | 7,185.8 | 7,062.4 | 123.44 | 58.213 | | |
| 12,200.0 | 5,753.0 | 5,200.0 | 5,188.9 | 131.9 | 12.9 | 54.11 | 344.0 | -241.3 | 7,284.9 | 7,159.8 | 125.11 | 58.228 | | |
| 12,277.3 | 5,753.0 | 5,200.0 | 5,188.9 | 133.1 | 12.9 | 54.11 | 344.0 | -241.3 | 7,361.5 | 7,235.4 | 126.15 | 58.355 | | |
| 12,277.6 | 5,753.0 | 5,200.0 | 5,188.9 | 133.1 | 12.9 | 54.11 | 344.0 | -241.3 | 7,361.8 | 7,235.7 | 126.15 | 58.356 | | |

Cathedral Energy Services

Anticollision Report

| | | | |
|---------------------------|-------------------------------|-------------------------------------|----------------------------------------|
| Company: | Whiting Petroleum Corporation | Local Co-ordinate Reference: | Well Razor #27J-3412B |
| Project: | Weld County, CO | TVD Reference: | WELL @ 4780.5usft (Original Well Elev) |
| Reference Site: | S27-T10N-R58W | MD Reference: | WELL @ 4780.5usft (Original Well Elev) |
| Site Error: | 0.0usft | North Reference: | True |
| Reference Well: | Razor #27J-3412B | Survey Calculation Method: | Minimum Curvature |
| Well Error: | 0.0usft | Output errors are at | 2.00 sigma |
| Reference Wellbore | HZ | Database: | USA EDM 5000 Multi Users DB |
| Reference Design: | Plan #3 | Offset TVD Reference: | Offset Datum |

| Offset Design S27-T10N-R58W - Razor #27J-2210B - HZ - Plan #2 | | | | | | | | | | | | | Offset Site Error: 0.0 usft | |
|---------------------------------------------------------------|-----------------------|-----------------------|-----------------------|------------------|---------------|-----------------------|-------------------------------------|--------------|------------------------|-------------------------|------------------------|-------------------|-----------------------------|---------|
| Survey Program: 0-ISCSWA MWD | | | | | | | | | | | | | Offset Well Error: 0.0 usft | |
| Reference | | Offset | | Semi Major Axis | | | Distance | | | | | | | Warning |
| Measured Depth (usft) | Vertical Depth (usft) | Measured Depth (usft) | Vertical Depth (usft) | Reference (usft) | Offset (usft) | Highside Toolface (°) | Offset Wellbore Centre +N/-S (usft) | +E/-W (usft) | Between Centres (usft) | Between Ellipses (usft) | Total Uncertainty Axis | Separation Factor | | |
| 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | -90.00 | 0.0 | -98.3 | 98.3 | | | | | |
| 100.0 | 100.0 | 100.0 | 100.0 | 0.1 | 0.1 | -90.00 | 0.0 | -98.3 | 98.3 | 98.1 | 0.19 | 523.658 | | |
| 200.0 | 200.0 | 200.0 | 200.0 | 0.3 | 0.3 | -90.00 | 0.0 | -98.3 | 98.3 | 97.6 | 0.64 | 154.232 | | |
| 300.0 | 300.0 | 300.0 | 300.0 | 0.5 | 0.5 | -90.00 | 0.0 | -98.3 | 98.3 | 97.2 | 1.09 | 90.433 | | |
| 400.0 | 400.0 | 400.0 | 400.0 | 0.8 | 0.8 | -90.00 | 0.0 | -98.3 | 98.3 | 96.7 | 1.54 | 63.971 | | |
| 500.0 | 500.0 | 500.0 | 500.0 | 1.0 | 1.0 | -90.00 | 0.0 | -98.3 | 98.3 | 96.3 | 1.99 | 49.489 | CC, ES | |
| 600.0 | 600.0 | 600.0 | 600.0 | 1.2 | 1.2 | 116.40 | 0.0 | -98.3 | 99.0 | 96.6 | 2.41 | 41.102 | | |
| 700.0 | 699.8 | 699.8 | 699.8 | 1.4 | 1.4 | 119.00 | 0.0 | -98.3 | 101.5 | 98.7 | 2.82 | 35.945 | | |
| 800.0 | 799.6 | 799.6 | 799.6 | 1.6 | 1.7 | 122.32 | 0.0 | -98.3 | 105.0 | 101.8 | 3.25 | 32.284 | | |
| 900.0 | 899.4 | 899.3 | 899.3 | 1.8 | 1.9 | 125.42 | 0.0 | -98.3 | 108.9 | 105.2 | 3.69 | 29.483 | | |
| 1,000.0 | 999.1 | 999.1 | 999.1 | 2.1 | 2.1 | 128.30 | 0.0 | -98.3 | 113.1 | 109.0 | 4.14 | 27.311 | | |
| 1,100.0 | 1,098.9 | 1,098.9 | 1,098.9 | 2.3 | 2.3 | 130.96 | 0.0 | -98.3 | 117.6 | 113.0 | 4.59 | 25.602 | | |
| 1,200.0 | 1,198.6 | 1,198.6 | 1,198.6 | 2.5 | 2.6 | 133.43 | 0.0 | -98.3 | 122.3 | 117.2 | 5.05 | 24.235 | | |
| 1,300.0 | 1,298.4 | 1,298.4 | 1,298.4 | 2.8 | 2.8 | 135.71 | 0.0 | -98.3 | 127.2 | 121.7 | 5.50 | 23.126 | | |
| 1,400.0 | 1,398.1 | 1,398.1 | 1,398.1 | 3.0 | 3.0 | 137.82 | 0.0 | -98.3 | 132.3 | 126.3 | 5.95 | 22.216 | | |
| 1,500.0 | 1,497.9 | 1,497.9 | 1,497.9 | 3.3 | 3.2 | 139.77 | 0.0 | -98.3 | 137.5 | 131.1 | 6.41 | 21.460 | | |
| 1,600.0 | 1,597.6 | 1,597.6 | 1,597.6 | 3.5 | 3.5 | 141.57 | 0.0 | -98.3 | 142.9 | 136.1 | 6.86 | 20.827 | | |
| 1,700.0 | 1,697.4 | 1,697.4 | 1,697.4 | 3.8 | 3.7 | 143.24 | 0.0 | -98.3 | 148.5 | 141.1 | 7.32 | 20.291 | | |
| 1,800.0 | 1,797.2 | 1,797.1 | 1,797.1 | 4.1 | 3.9 | 144.79 | 0.0 | -98.3 | 154.1 | 146.3 | 7.77 | 19.833 | | |
| 1,900.0 | 1,896.9 | 1,896.9 | 1,896.9 | 4.3 | 4.1 | 146.23 | 0.0 | -98.3 | 159.9 | 151.6 | 8.22 | 19.440 | | |
| 2,000.0 | 1,996.7 | 1,996.7 | 1,996.7 | 4.6 | 4.4 | 147.57 | 0.0 | -98.3 | 165.7 | 157.0 | 8.68 | 19.098 | | |
| 2,100.0 | 2,096.4 | 2,096.4 | 2,096.4 | 4.8 | 4.6 | 148.82 | 0.0 | -98.3 | 171.6 | 162.5 | 9.13 | 18.801 | | |
| 2,200.0 | 2,196.2 | 2,196.2 | 2,196.2 | 5.1 | 4.8 | 149.99 | 0.0 | -98.3 | 177.7 | 168.1 | 9.58 | 18.540 | | |
| 2,300.0 | 2,295.9 | 2,295.9 | 2,295.9 | 5.4 | 5.0 | 151.07 | 0.0 | -98.3 | 183.7 | 173.7 | 10.03 | 18.309 | | |
| 2,400.0 | 2,395.7 | 2,395.7 | 2,395.7 | 5.6 | 5.3 | 152.09 | 0.0 | -98.3 | 189.9 | 179.4 | 10.49 | 18.105 | | |
| 2,500.0 | 2,495.5 | 2,495.4 | 2,495.4 | 5.9 | 5.5 | 153.04 | 0.0 | -98.3 | 196.1 | 185.1 | 10.94 | 17.922 | | |
| 2,600.0 | 2,595.2 | 2,595.2 | 2,595.2 | 6.1 | 5.7 | 153.94 | 0.0 | -98.3 | 202.3 | 190.9 | 11.39 | 17.759 | | |
| 2,700.0 | 2,695.0 | 2,695.0 | 2,695.0 | 6.4 | 5.9 | 154.78 | 0.0 | -98.3 | 208.6 | 196.8 | 11.84 | 17.613 | | |
| 2,800.0 | 2,794.7 | 2,794.7 | 2,794.7 | 6.7 | 6.2 | 155.57 | 0.0 | -98.3 | 214.9 | 202.6 | 12.30 | 17.480 | | |
| 2,900.0 | 2,894.5 | 2,894.5 | 2,894.5 | 6.9 | 6.4 | 156.32 | 0.0 | -98.3 | 221.3 | 208.6 | 12.75 | 17.361 | | |
| 3,000.0 | 2,994.2 | 2,994.2 | 2,994.2 | 7.2 | 6.6 | 157.02 | 0.0 | -98.3 | 227.7 | 214.5 | 13.20 | 17.252 | | |
| 3,100.0 | 3,094.0 | 3,094.0 | 3,094.0 | 7.5 | 6.8 | 157.69 | 0.0 | -98.3 | 234.2 | 220.5 | 13.65 | 17.152 | | |
| 3,200.0 | 3,193.7 | 3,193.7 | 3,193.7 | 7.7 | 7.0 | 158.32 | 0.0 | -98.3 | 240.6 | 226.5 | 14.10 | 17.061 | | |
| 3,300.0 | 3,293.5 | 3,293.5 | 3,293.5 | 8.0 | 7.3 | 158.92 | 0.0 | -98.3 | 247.1 | 232.6 | 14.56 | 16.978 | | |
| 3,400.0 | 3,393.3 | 3,393.3 | 3,393.3 | 8.2 | 7.5 | 159.48 | 0.0 | -98.3 | 253.6 | 238.6 | 15.01 | 16.902 | | |
| 3,500.0 | 3,493.0 | 3,493.0 | 3,493.0 | 8.5 | 7.7 | 160.02 | 0.0 | -98.3 | 260.2 | 244.7 | 15.46 | 16.831 | | |
| 3,600.0 | 3,592.8 | 3,592.8 | 3,592.8 | 8.8 | 7.9 | 160.53 | 0.0 | -98.3 | 266.8 | 250.8 | 15.91 | 16.766 | | |
| 3,700.0 | 3,692.5 | 3,692.5 | 3,692.5 | 9.0 | 8.2 | 161.02 | 0.0 | -98.3 | 273.3 | 257.0 | 16.36 | 16.705 | | |
| 3,800.0 | 3,792.3 | 3,792.3 | 3,792.3 | 9.3 | 8.4 | 161.49 | 0.0 | -98.3 | 280.0 | 263.1 | 16.82 | 16.649 | | |
| 3,900.0 | 3,892.0 | 3,892.0 | 3,892.0 | 9.6 | 8.6 | 161.93 | 0.0 | -98.3 | 286.6 | 269.3 | 17.27 | 16.597 | | |
| 4,000.0 | 3,991.8 | 3,991.8 | 3,991.8 | 9.8 | 8.8 | 162.35 | 0.0 | -98.3 | 293.2 | 275.5 | 17.72 | 16.548 | | |
| 4,100.0 | 4,091.6 | 4,091.5 | 4,091.5 | 10.1 | 9.1 | 162.76 | 0.0 | -98.3 | 299.9 | 281.7 | 18.17 | 16.503 | | |
| 4,200.0 | 4,191.3 | 4,191.3 | 4,191.3 | 10.4 | 9.3 | 163.14 | 0.0 | -98.3 | 306.5 | 287.9 | 18.62 | 16.460 | | |
| 4,300.0 | 4,291.1 | 4,291.1 | 4,291.1 | 10.6 | 9.5 | 163.51 | 0.0 | -98.3 | 313.2 | 294.2 | 19.08 | 16.421 | | |
| 4,400.0 | 4,390.8 | 4,390.8 | 4,390.8 | 10.9 | 9.7 | 163.87 | 0.0 | -98.3 | 319.9 | 300.4 | 19.53 | 16.383 | | |
| 4,500.0 | 4,490.6 | 4,490.6 | 4,490.6 | 11.1 | 10.0 | 164.21 | 0.0 | -98.3 | 326.6 | 306.7 | 19.98 | 16.348 | | |
| 4,600.0 | 4,590.3 | 4,590.3 | 4,590.3 | 11.4 | 10.2 | 164.53 | 0.0 | -98.3 | 333.4 | 312.9 | 20.43 | 16.315 | | |
| 4,700.0 | 4,690.1 | 4,690.1 | 4,690.1 | 11.7 | 10.4 | 164.85 | 0.0 | -98.3 | 340.1 | 319.2 | 20.88 | 16.284 | | |
| 4,800.0 | 4,789.9 | 4,789.8 | 4,789.8 | 11.9 | 10.6 | 165.15 | 0.0 | -98.3 | 346.8 | 325.5 | 21.34 | 16.255 | | |
| 4,900.0 | 4,889.6 | 4,889.6 | 4,889.6 | 12.2 | 10.9 | 165.44 | 0.0 | -98.3 | 353.6 | 331.8 | 21.79 | 16.227 | | |
| 5,000.0 | 4,989.4 | 4,989.4 | 4,989.4 | 12.5 | 11.1 | 165.72 | 0.0 | -98.3 | 360.3 | 338.1 | 22.24 | 16.201 | | |
| 5,100.0 | 5,089.1 | 5,089.1 | 5,089.1 | 12.7 | 11.3 | 165.98 | 0.0 | -98.3 | 367.1 | 344.4 | 22.69 | 16.176 | | |

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Cathedral Energy Services

Anticollision Report

| | | | |
|---------------------------|-------------------------------|-------------------------------------|----------------------------------------|
| Company: | Whiting Petroleum Corporation | Local Co-ordinate Reference: | Well Razor #27J-3412B |
| Project: | Weld County, CO | TVD Reference: | WELL @ 4780.5usft (Original Well Elev) |
| Reference Site: | S27-T10N-R58W | MD Reference: | WELL @ 4780.5usft (Original Well Elev) |
| Site Error: | 0.0usft | North Reference: | True |
| Reference Well: | Razor #27J-3412B | Survey Calculation Method: | Minimum Curvature |
| Well Error: | 0.0usft | Output errors are at | 2.00 sigma |
| Reference Wellbore | HZ | Database: | USA EDM 5000 Multi Users DB |
| Reference Design: | Plan #3 | Offset TVD Reference: | Offset Datum |

| Offset Design S27-T10N-R58W - Razor #27J-2210B - HZ - Plan #2 | | | | | | | | | | | | | Offset Site Error: 0.0 usft | |
|---------------------------------------------------------------|-----------------------|-----------------------|-----------------------|------------------|---------------|-----------------------|-------------------------------------|--------------|------------------------|-------------------------|------------------------|-------------------|-----------------------------|---------|
| Survey Program: 0-ISCSWA MWD | | | | | | | | | | | | | Offset Well Error: 0.0 usft | |
| Reference | | Offset | | Semi Major Axis | | | Distance | | | | | | | Warning |
| Measured Depth (usft) | Vertical Depth (usft) | Measured Depth (usft) | Vertical Depth (usft) | Reference (usft) | Offset (usft) | Highside Toolface (°) | Offset Wellbore Centre +N/-S (usft) | +E/-W (usft) | Between Centres (usft) | Between Ellipses (usft) | Total Uncertainty Axis | Separation Factor | | |
| 5,200.0 | 5,188.9 | 5,188.9 | 5,188.9 | 13.0 | 11.5 | 166.24 | 0.0 | -98.3 | 373.9 | 350.7 | 23.15 | 16.152 SF | | |
| 5,280.0 | 5,268.7 | 5,250.0 | 5,250.0 | 13.2 | 11.7 | 166.41 | 0.3 | -98.4 | 380.1 | 356.6 | 23.47 | 16.195 | | |
| 5,300.0 | 5,288.6 | 5,265.2 | 5,265.2 | 13.3 | 11.7 | 166.30 | 1.0 | -98.6 | 382.8 | 359.3 | 23.50 | 16.284 | | |
| 5,350.0 | 5,338.0 | 5,300.0 | 5,299.8 | 13.4 | 11.8 | 166.25 | 4.2 | -99.8 | 394.7 | 371.2 | 23.47 | 16.819 | | |
| 5,400.0 | 5,386.4 | 5,320.2 | 5,319.8 | 13.7 | 11.8 | 166.02 | 7.1 | -100.8 | 413.3 | 390.0 | 23.22 | 17.796 | | |
| 5,450.0 | 5,433.4 | 5,350.0 | 5,349.0 | 13.9 | 11.9 | 165.90 | 12.6 | -102.8 | 438.3 | 415.5 | 22.82 | 19.205 | | |
| 5,500.0 | 5,478.5 | 5,365.5 | 5,364.0 | 14.2 | 11.9 | 165.28 | 16.1 | -104.0 | 468.9 | 446.7 | 22.24 | 21.080 | | |
| 5,550.0 | 5,521.3 | 5,383.6 | 5,381.4 | 14.6 | 12.0 | 164.46 | 20.8 | -105.7 | 504.5 | 482.9 | 21.54 | 23.424 | | |
| 5,600.0 | 5,561.6 | 5,400.0 | 5,397.1 | 15.0 | 12.0 | 163.20 | 25.5 | -107.3 | 544.1 | 523.4 | 20.74 | 26.232 | | |
| 5,650.0 | 5,598.7 | 5,400.0 | 5,397.1 | 15.5 | 12.0 | 160.21 | 25.5 | -107.3 | 587.3 | 567.3 | 20.05 | 29.295 | | |
| 5,700.0 | 5,632.5 | 5,419.2 | 5,415.2 | 16.0 | 12.1 | 157.27 | 31.5 | -109.5 | 632.8 | 613.2 | 19.51 | 32.433 | | |
| 5,750.0 | 5,662.6 | 5,425.5 | 5,421.0 | 16.6 | 12.1 | 150.62 | 33.6 | -110.3 | 680.3 | 660.2 | 20.04 | 33.953 | | |
| 5,800.0 | 5,688.8 | 5,429.3 | 5,424.5 | 17.2 | 12.1 | 136.80 | 34.9 | -110.7 | 729.1 | 706.0 | 23.08 | 31.583 | | |
| 5,850.0 | 5,710.7 | 5,430.8 | 5,426.0 | 17.9 | 12.1 | 104.74 | 35.5 | -110.9 | 778.5 | 748.7 | 29.84 | 26.092 | | |
| 5,900.0 | 5,728.3 | 5,430.4 | 5,425.6 | 18.6 | 12.1 | 58.26 | 35.3 | -110.9 | 828.2 | 800.9 | 27.36 | 30.272 | | |
| 5,950.0 | 5,741.3 | 5,428.2 | 5,423.5 | 19.3 | 12.1 | 32.54 | 34.6 | -110.6 | 877.6 | 858.5 | 19.17 | 45.784 | | |
| 6,000.0 | 5,749.5 | 5,424.4 | 5,420.0 | 20.1 | 12.1 | 21.27 | 33.3 | -110.1 | 926.4 | 912.0 | 14.34 | 64.615 | | |
| 6,050.0 | 5,753.1 | 5,419.2 | 5,415.2 | 20.9 | 12.1 | 15.49 | 31.5 | -109.5 | 974.0 | 962.4 | 11.67 | 83.459 | | |
| 6,061.8 | 5,753.2 | 5,417.8 | 5,413.9 | 21.1 | 12.1 | 14.53 | 31.1 | -109.3 | 985.1 | 973.9 | 11.27 | 87.412 | | |
| 6,100.0 | 5,753.2 | 5,400.0 | 5,397.1 | 21.7 | 12.0 | 16.75 | 25.5 | -107.3 | 1,021.1 | 1,008.7 | 12.39 | 82.440 | | |
| 6,200.0 | 5,753.2 | 5,400.0 | 5,397.1 | 23.2 | 12.0 | 24.12 | 25.5 | -107.3 | 1,114.5 | 1,098.0 | 16.56 | 67.318 | | |
| 6,300.0 | 5,753.2 | 5,400.0 | 5,397.1 | 24.7 | 12.0 | 31.29 | 25.5 | -107.3 | 1,208.3 | 1,187.3 | 21.00 | 57.525 | | |
| 6,400.0 | 5,753.2 | 5,400.0 | 5,397.1 | 26.3 | 12.0 | 37.99 | 25.5 | -107.3 | 1,302.2 | 1,276.8 | 25.35 | 51.366 | | |
| 6,500.0 | 5,753.2 | 5,375.9 | 5,374.1 | 27.9 | 12.0 | 42.17 | 18.7 | -105.0 | 1,395.1 | 1,366.7 | 28.41 | 49.109 | | |
| 6,600.0 | 5,753.2 | 5,368.9 | 5,367.3 | 29.5 | 11.9 | 46.95 | 17.0 | -104.3 | 1,487.8 | 1,456.1 | 31.76 | 46.841 | | |
| 6,700.0 | 5,753.2 | 5,350.0 | 5,349.0 | 31.1 | 11.9 | 50.25 | 12.6 | -102.8 | 1,580.2 | 1,545.9 | 34.32 | 46.047 | | |
| 6,800.0 | 5,753.2 | 5,350.0 | 5,349.0 | 32.6 | 11.9 | 54.36 | 12.6 | -102.8 | 1,671.5 | 1,634.4 | 37.17 | 44.964 | | |
| 6,900.3 | 5,753.2 | 5,350.0 | 5,349.0 | 34.2 | 11.9 | 57.94 | 12.6 | -102.8 | 1,762.4 | 1,722.7 | 39.66 | 44.443 | | |
| 7,000.0 | 5,753.2 | 5,350.0 | 5,349.0 | 35.8 | 11.9 | 57.94 | 12.6 | -102.8 | 1,852.8 | 1,811.6 | 41.19 | 44.983 | | |
| 7,100.0 | 5,753.2 | 5,350.0 | 5,349.0 | 37.5 | 11.9 | 57.94 | 12.6 | -102.8 | 1,944.4 | 1,901.6 | 42.77 | 45.461 | | |
| 7,200.0 | 5,753.2 | 5,350.0 | 5,349.0 | 39.2 | 11.9 | 57.94 | 12.6 | -102.8 | 2,036.8 | 1,992.4 | 44.37 | 45.907 | | |
| 7,300.0 | 5,753.2 | 5,350.0 | 5,349.0 | 40.9 | 11.9 | 57.94 | 12.6 | -102.8 | 2,129.9 | 2,083.9 | 45.98 | 46.324 | | |
| 7,400.0 | 5,753.2 | 5,350.0 | 5,349.0 | 42.6 | 11.9 | 57.94 | 12.6 | -102.8 | 2,223.5 | 2,175.9 | 47.60 | 46.712 | | |
| 7,500.0 | 5,753.2 | 5,327.9 | 5,327.3 | 44.3 | 11.8 | 56.52 | 8.4 | -101.3 | 2,317.2 | 2,268.7 | 48.47 | 47.806 | | |
| 7,600.0 | 5,753.2 | 5,324.8 | 5,324.3 | 46.1 | 11.8 | 56.33 | 7.9 | -101.1 | 2,411.7 | 2,361.7 | 49.98 | 48.251 | | |
| 7,700.0 | 5,753.2 | 5,321.9 | 5,321.5 | 47.9 | 11.8 | 56.15 | 7.4 | -100.9 | 2,506.6 | 2,455.1 | 51.50 | 48.670 | | |
| 7,800.0 | 5,753.2 | 5,300.0 | 5,299.8 | 49.6 | 11.8 | 54.79 | 4.2 | -99.8 | 2,602.3 | 2,550.0 | 52.31 | 49.747 | | |
| 7,900.0 | 5,753.2 | 5,300.0 | 5,299.8 | 51.4 | 11.8 | 54.79 | 4.2 | -99.8 | 2,697.8 | 2,643.9 | 53.93 | 50.028 | | |
| 8,000.0 | 5,753.2 | 5,300.0 | 5,299.8 | 53.2 | 11.8 | 54.79 | 4.2 | -99.8 | 2,793.6 | 2,738.0 | 55.55 | 50.292 | | |
| 8,100.0 | 5,753.1 | 5,300.0 | 5,299.8 | 55.0 | 11.8 | 54.79 | 4.2 | -99.8 | 2,889.7 | 2,832.5 | 57.17 | 50.542 | | |
| 8,200.0 | 5,753.1 | 5,300.0 | 5,299.8 | 56.9 | 11.8 | 54.79 | 4.2 | -99.8 | 2,986.0 | 2,927.2 | 58.80 | 50.779 | | |
| 8,300.0 | 5,753.1 | 5,300.0 | 5,299.8 | 58.7 | 11.8 | 54.79 | 4.2 | -99.8 | 3,082.6 | 3,022.2 | 60.44 | 51.004 | | |
| 8,400.0 | 5,753.1 | 5,300.0 | 5,299.8 | 60.5 | 11.8 | 54.79 | 4.2 | -99.8 | 3,179.4 | 3,117.3 | 62.08 | 51.217 | | |
| 8,500.0 | 5,753.1 | 5,300.0 | 5,299.8 | 62.3 | 11.8 | 54.79 | 4.2 | -99.8 | 3,276.4 | 3,212.7 | 63.72 | 51.419 | | |
| 8,600.0 | 5,753.1 | 5,300.0 | 5,299.8 | 64.2 | 11.8 | 54.79 | 4.2 | -99.8 | 3,373.6 | 3,308.2 | 65.36 | 51.612 | | |
| 8,700.0 | 5,753.1 | 5,300.0 | 5,299.8 | 66.0 | 11.8 | 54.79 | 4.2 | -99.8 | 3,470.9 | 3,403.9 | 67.01 | 51.795 | | |
| 8,800.0 | 5,753.1 | 5,300.0 | 5,299.8 | 67.9 | 11.8 | 54.79 | 4.2 | -99.8 | 3,568.4 | 3,499.7 | 68.66 | 51.970 | | |
| 8,900.0 | 5,753.1 | 5,300.0 | 5,299.8 | 69.7 | 11.8 | 54.79 | 4.2 | -99.8 | 3,666.0 | 3,595.6 | 70.31 | 52.137 | | |
| 9,000.0 | 5,753.1 | 5,300.0 | 5,299.8 | 71.6 | 11.8 | 54.79 | 4.2 | -99.8 | 3,763.7 | 3,691.7 | 71.97 | 52.296 | | |
| 9,100.0 | 5,753.1 | 5,300.0 | 5,299.8 | 73.4 | 11.8 | 54.79 | 4.2 | -99.8 | 3,861.5 | 3,787.9 | 73.62 | 52.449 | | |
| 9,200.0 | 5,753.1 | 5,300.0 | 5,299.8 | 75.3 | 11.8 | 54.79 | 4.2 | -99.8 | 3,959.5 | 3,884.2 | 75.28 | 52.595 | | |
| 9,300.0 | 5,753.1 | 5,300.0 | 5,299.8 | 77.2 | 11.8 | 54.79 | 4.2 | -99.8 | 4,057.6 | 3,980.6 | 76.94 | 52.734 | | |

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Cathedral Energy Services

Anticollision Report

| | | | |
|---------------------------|-------------------------------|-------------------------------------|----------------------------------------|
| Company: | Whiting Petroleum Corporation | Local Co-ordinate Reference: | Well Razor #27J-3412B |
| Project: | Weld County, CO | TVD Reference: | WELL @ 4780.5usft (Original Well Elev) |
| Reference Site: | S27-T10N-R58W | MD Reference: | WELL @ 4780.5usft (Original Well Elev) |
| Site Error: | 0.0usft | North Reference: | True |
| Reference Well: | Razor #27J-3412B | Survey Calculation Method: | Minimum Curvature |
| Well Error: | 0.0usft | Output errors are at | 2.00 sigma |
| Reference Wellbore | HZ | Database: | USA EDM 5000 Multi Users DB |
| Reference Design: | Plan #3 | Offset TVD Reference: | Offset Datum |

| Offset Design S27-T10N-R58W - Razor #27J-2210B - HZ - Plan #2 | | | | | | | | | | | | | Offset Site Error: 0.0 usft | |
|---------------------------------------------------------------|-----------------------|-----------------------|-----------------------|------------------|---------------|-----------------------|-------------------------------------|--------------|------------------------|-------------------------|------------------------|-------------------|-----------------------------|---------|
| Survey Program: 0-ISCWSA MWD | | | | | | | | | | | | | Offset Well Error: 0.0 usft | |
| Reference | | Offset | | Semi Major Axis | | | Distance | | | | | | | Warning |
| Measured Depth (usft) | Vertical Depth (usft) | Measured Depth (usft) | Vertical Depth (usft) | Reference (usft) | Offset (usft) | Highside Toolface (°) | Offset Wellbore Centre +N/-S (usft) | +E/-W (usft) | Between Centres (usft) | Between Ellipses (usft) | Total Uncertainty Axis | Separation Factor | | |
| 9,400.0 | 5,753.1 | 5,300.0 | 5,299.8 | 79.0 | 11.8 | 54.79 | 4.2 | -99.8 | 4,155.7 | 4,077.1 | 78.60 | 52.868 | | |
| 9,500.0 | 5,753.1 | 5,300.0 | 5,299.8 | 80.9 | 11.8 | 54.79 | 4.2 | -99.8 | 4,253.9 | 4,173.7 | 80.27 | 52.997 | | |
| 9,600.0 | 5,753.1 | 5,300.0 | 5,299.8 | 82.8 | 11.8 | 54.79 | 4.2 | -99.8 | 4,352.3 | 4,270.3 | 81.93 | 53.120 | | |
| 9,700.0 | 5,753.1 | 5,300.0 | 5,299.8 | 84.6 | 11.8 | 54.79 | 4.2 | -99.8 | 4,450.6 | 4,367.0 | 83.60 | 53.239 | | |
| 9,800.0 | 5,753.1 | 5,300.0 | 5,299.8 | 86.5 | 11.8 | 54.79 | 4.2 | -99.8 | 4,549.1 | 4,463.8 | 85.26 | 53.353 | | |
| 9,900.0 | 5,753.1 | 5,300.0 | 5,299.8 | 88.4 | 11.8 | 54.79 | 4.2 | -99.8 | 4,647.6 | 4,560.7 | 86.93 | 53.463 | | |
| 10,000.0 | 5,753.1 | 5,300.0 | 5,299.8 | 90.3 | 11.8 | 54.79 | 4.2 | -99.8 | 4,746.2 | 4,657.6 | 88.60 | 53.569 | | |
| 10,100.0 | 5,753.1 | 5,300.0 | 5,299.8 | 92.1 | 11.8 | 54.79 | 4.2 | -99.8 | 4,844.9 | 4,754.6 | 90.27 | 53.671 | | |
| 10,200.0 | 5,753.1 | 5,300.0 | 5,299.8 | 94.0 | 11.8 | 54.79 | 4.2 | -99.8 | 4,943.6 | 4,851.6 | 91.94 | 53.769 | | |
| 10,300.0 | 5,753.1 | 5,300.0 | 5,299.8 | 95.9 | 11.8 | 54.79 | 4.2 | -99.8 | 5,042.3 | 4,948.7 | 93.61 | 53.864 | | |
| 10,400.0 | 5,753.1 | 5,300.0 | 5,299.8 | 97.8 | 11.8 | 54.79 | 4.2 | -99.8 | 5,141.1 | 5,045.8 | 95.28 | 53.955 | | |
| 10,500.0 | 5,753.1 | 5,300.0 | 5,299.8 | 99.7 | 11.8 | 54.79 | 4.2 | -99.8 | 5,240.0 | 5,143.0 | 96.96 | 54.044 | | |
| 10,600.0 | 5,753.1 | 5,300.0 | 5,299.8 | 101.6 | 11.8 | 54.79 | 4.2 | -99.8 | 5,338.9 | 5,240.2 | 98.63 | 54.129 | | |
| 10,700.0 | 5,753.1 | 5,300.0 | 5,299.8 | 103.5 | 11.8 | 54.79 | 4.2 | -99.8 | 5,437.8 | 5,337.5 | 100.31 | 54.212 | | |
| 10,800.0 | 5,753.1 | 5,300.0 | 5,299.8 | 105.4 | 11.8 | 54.79 | 4.2 | -99.8 | 5,536.7 | 5,434.8 | 101.98 | 54.292 | | |
| 10,900.0 | 5,753.0 | 5,276.7 | 5,276.7 | 107.3 | 11.7 | 53.40 | 1.9 | -98.9 | 5,635.2 | 5,533.1 | 102.07 | 55.209 | | |
| 11,000.0 | 5,753.0 | 5,276.0 | 5,276.0 | 109.1 | 11.7 | 53.36 | 1.8 | -98.9 | 5,734.2 | 5,630.5 | 103.67 | 55.310 | | |
| 11,100.0 | 5,753.0 | 5,275.4 | 5,275.3 | 111.0 | 11.7 | 53.32 | 1.7 | -98.9 | 5,833.2 | 5,728.0 | 105.28 | 55.407 | | |
| 11,200.0 | 5,753.0 | 5,274.7 | 5,274.7 | 112.9 | 11.7 | 53.28 | 1.7 | -98.9 | 5,932.3 | 5,825.4 | 106.89 | 55.502 | | |
| 11,300.0 | 5,753.0 | 5,274.1 | 5,274.0 | 114.8 | 11.7 | 53.24 | 1.6 | -98.9 | 6,031.4 | 5,922.9 | 108.49 | 55.593 | | |
| 11,400.0 | 5,753.0 | 5,273.4 | 5,273.4 | 116.7 | 11.7 | 53.21 | 1.6 | -98.8 | 6,130.5 | 6,020.4 | 110.10 | 55.682 | | |
| 11,500.0 | 5,753.0 | 5,250.0 | 5,250.0 | 118.6 | 11.7 | 51.87 | 0.3 | -98.4 | 6,230.2 | 6,120.2 | 110.03 | 56.621 | | |
| 11,600.0 | 5,753.0 | 5,250.0 | 5,250.0 | 120.5 | 11.7 | 51.87 | 0.3 | -98.4 | 6,329.4 | 6,217.7 | 111.66 | 56.683 | | |
| 11,700.0 | 5,753.0 | 5,250.0 | 5,250.0 | 122.4 | 11.7 | 51.87 | 0.3 | -98.4 | 6,428.6 | 6,315.3 | 113.29 | 56.743 | | |
| 11,800.0 | 5,753.0 | 5,250.0 | 5,250.0 | 124.3 | 11.7 | 51.87 | 0.3 | -98.4 | 6,527.8 | 6,412.8 | 114.92 | 56.802 | | |
| 11,900.0 | 5,753.0 | 5,250.0 | 5,250.0 | 126.2 | 11.7 | 51.87 | 0.3 | -98.4 | 6,627.0 | 6,510.4 | 116.55 | 56.859 | | |
| 12,000.0 | 5,753.0 | 5,250.0 | 5,250.0 | 128.1 | 11.7 | 51.87 | 0.3 | -98.4 | 6,726.2 | 6,608.1 | 118.18 | 56.914 | | |
| 12,100.0 | 5,753.0 | 5,250.0 | 5,250.0 | 130.0 | 11.7 | 51.87 | 0.3 | -98.4 | 6,825.5 | 6,705.7 | 119.81 | 56.968 | | |
| 12,200.0 | 5,753.0 | 5,250.0 | 5,250.0 | 131.9 | 11.7 | 51.87 | 0.3 | -98.4 | 6,924.8 | 6,803.4 | 121.44 | 57.021 | | |
| 12,277.3 | 5,753.0 | 5,250.0 | 5,250.0 | 133.1 | 11.7 | 51.87 | 0.3 | -98.4 | 7,001.6 | 6,879.1 | 122.45 | 57.177 | | |
| 12,277.6 | 5,753.0 | 5,250.0 | 5,250.0 | 133.1 | 11.7 | 51.87 | 0.3 | -98.4 | 7,001.9 | 6,879.4 | 122.46 | 57.178 | | |

Cathedral Energy Services

Anticollision Report

| | | | |
|---------------------------|-------------------------------|-------------------------------------|----------------------------------------|
| Company: | Whiting Petroleum Corporation | Local Co-ordinate Reference: | Well Razor #27J-3412B |
| Project: | Weld County, CO | TVD Reference: | WELL @ 4780.5usft (Original Well Elev) |
| Reference Site: | S27-T10N-R58W | MD Reference: | WELL @ 4780.5usft (Original Well Elev) |
| Site Error: | 0.0usft | North Reference: | True |
| Reference Well: | Razor #27J-3412B | Survey Calculation Method: | Minimum Curvature |
| Well Error: | 0.0usft | Output errors are at | 2.00 sigma |
| Reference Wellbore | HZ | Database: | USA EDM 5000 Multi Users DB |
| Reference Design: | Plan #3 | Offset TVD Reference: | Offset Datum |

| Offset Design S27-T10N-R58W - Razor #27J-2211A - HZ - Plan #2 | | | | | | | | | | | | | Offset Site Error: | 0.0 usft |
|---------------------------------------------------------------|-----------------------------|-----------------------------|-----------------------------|---------------------|------------------|-----------------------------|-------------------------------------------|-----------------|------------------------------|----------------------|---------|---------------|--------------------|----------|
| Survey Program: 0-ISCSWA MWD | | | | | | | | | | | | | Offset Well Error: | 0.0 usft |
| Reference | | Offset | | Semi Major Axis | | Highside Toolface (°) | Distance | | Total Uncertainty Axis | Separation Factor | Warning | | | |
| Measured Depth (usft) | Vertical Depth (usft) | Measured Depth (usft) | Vertical Depth (usft) | Reference (usft) | Offset (usft) | | Offset Wellbore Centre +N/-S (usft) | +E/-W (usft) | | | | | | |
| 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 0.00 | 75.1 | 0.0 | 75.1 | | | | | |
| 100.0 | 100.0 | 103.0 | 103.0 | 0.1 | 0.1 | 0.00 | 75.1 | 0.0 | 75.1 | 74.9 | 0.19 | 386.076 | | |
| 200.0 | 200.0 | 203.0 | 203.0 | 0.3 | 0.3 | 0.00 | 75.1 | 0.0 | 75.1 | 74.4 | 0.64 | 116.555 | | |
| 300.0 | 300.0 | 303.0 | 303.0 | 0.5 | 0.6 | 0.00 | 75.1 | 0.0 | 75.1 | 74.0 | 1.09 | 68.638 | | |
| 400.0 | 400.0 | 403.0 | 403.0 | 0.8 | 0.8 | 0.00 | 75.1 | 0.0 | 75.1 | 73.5 | 1.54 | 48.642 | | |
| 500.0 | 500.0 | 503.0 | 503.0 | 1.0 | 1.0 | 0.00 | 75.1 | 0.0 | 75.1 | 73.1 | 1.99 | 37.668 CC, ES | | |
| 600.0 | 600.0 | 603.0 | 603.0 | 1.2 | 1.2 | -155.05 | 75.1 | 0.0 | 76.6 | 74.2 | 2.42 | 31.684 | | |
| 700.0 | 699.8 | 702.8 | 702.8 | 1.4 | 1.4 | -156.56 | 75.1 | 0.0 | 81.4 | 78.6 | 2.83 | 28.739 | | |
| 800.0 | 799.6 | 802.6 | 802.6 | 1.6 | 1.7 | -158.37 | 75.1 | 0.0 | 87.9 | 84.6 | 3.25 | 26.997 | | |
| 900.0 | 899.4 | 902.3 | 902.3 | 1.8 | 1.9 | -159.93 | 75.1 | 0.0 | 94.4 | 90.7 | 3.68 | 25.618 | | |
| 1,000.0 | 999.1 | 1,002.1 | 1,002.1 | 2.1 | 2.1 | -161.29 | 75.1 | 0.0 | 101.0 | 96.8 | 4.12 | 24.510 | | |
| 1,100.0 | 1,098.9 | 1,101.9 | 1,101.9 | 2.3 | 2.3 | -162.48 | 75.1 | 0.0 | 107.6 | 103.0 | 4.56 | 23.605 | | |
| 1,200.0 | 1,198.6 | 1,201.6 | 1,201.6 | 2.5 | 2.6 | -163.54 | 75.1 | 0.0 | 114.3 | 109.3 | 5.00 | 22.856 | | |
| 1,300.0 | 1,298.4 | 1,301.4 | 1,301.4 | 2.8 | 2.8 | -164.47 | 75.1 | 0.0 | 121.0 | 115.5 | 5.44 | 22.226 | | |
| 1,400.0 | 1,398.1 | 1,401.1 | 1,401.1 | 3.0 | 3.0 | -165.31 | 75.1 | 0.0 | 127.7 | 121.8 | 5.89 | 21.690 | | |
| 1,500.0 | 1,497.9 | 1,500.9 | 1,500.9 | 3.3 | 3.2 | -166.06 | 75.1 | 0.0 | 134.5 | 128.1 | 6.33 | 21.230 | | |
| 1,600.0 | 1,597.6 | 1,600.6 | 1,600.6 | 3.5 | 3.5 | -166.74 | 75.1 | 0.0 | 141.2 | 134.5 | 6.78 | 20.830 | | |
| 1,700.0 | 1,697.4 | 1,700.4 | 1,700.4 | 3.8 | 3.7 | -167.36 | 75.1 | 0.0 | 148.0 | 140.8 | 7.23 | 20.480 | | |
| 1,800.0 | 1,797.2 | 1,800.1 | 1,800.1 | 4.1 | 3.9 | -167.93 | 75.1 | 0.0 | 154.9 | 147.2 | 7.68 | 20.171 | | |
| 1,900.0 | 1,896.9 | 1,899.9 | 1,899.9 | 4.3 | 4.1 | -168.45 | 75.1 | 0.0 | 161.7 | 153.6 | 8.13 | 19.897 | | |
| 2,000.0 | 1,996.7 | 1,999.7 | 1,999.7 | 4.6 | 4.4 | -168.92 | 75.1 | 0.0 | 168.5 | 160.0 | 8.58 | 19.652 | | |
| 2,100.0 | 2,096.4 | 2,099.4 | 2,099.4 | 4.8 | 4.6 | -169.36 | 75.1 | 0.0 | 175.4 | 166.4 | 9.03 | 19.431 | | |
| 2,200.0 | 2,196.2 | 2,199.2 | 2,199.2 | 5.1 | 4.8 | -169.76 | 75.1 | 0.0 | 182.2 | 172.8 | 9.48 | 19.232 | | |
| 2,300.0 | 2,295.9 | 2,298.9 | 2,298.9 | 5.4 | 5.0 | -170.14 | 75.1 | 0.0 | 189.1 | 179.2 | 9.93 | 19.051 | | |
| 2,400.0 | 2,395.7 | 2,398.7 | 2,398.7 | 5.6 | 5.3 | -170.49 | 75.1 | 0.0 | 196.0 | 185.6 | 10.38 | 18.887 | | |
| 2,500.0 | 2,495.5 | 2,498.4 | 2,498.4 | 5.9 | 5.5 | -170.81 | 75.1 | 0.0 | 202.9 | 192.0 | 10.83 | 18.736 | | |
| 2,600.0 | 2,595.2 | 2,598.2 | 2,598.2 | 6.1 | 5.7 | -171.12 | 75.1 | 0.0 | 209.8 | 198.5 | 11.28 | 18.597 | | |
| 2,700.0 | 2,695.0 | 2,698.0 | 2,698.0 | 6.4 | 5.9 | -171.40 | 75.1 | 0.0 | 216.7 | 204.9 | 11.73 | 18.469 | | |
| 2,800.0 | 2,794.7 | 2,797.7 | 2,797.7 | 6.7 | 6.2 | -171.67 | 75.1 | 0.0 | 223.6 | 211.4 | 12.18 | 18.351 | | |
| 2,900.0 | 2,894.5 | 2,897.5 | 2,897.5 | 6.9 | 6.4 | -171.92 | 75.1 | 0.0 | 230.5 | 217.8 | 12.63 | 18.242 | | |
| 3,000.0 | 2,994.2 | 2,997.2 | 2,997.2 | 7.2 | 6.6 | -172.16 | 75.1 | 0.0 | 237.4 | 224.3 | 13.09 | 18.140 | | |
| 3,100.0 | 3,094.0 | 3,097.0 | 3,097.0 | 7.5 | 6.8 | -172.38 | 75.1 | 0.0 | 244.3 | 230.7 | 13.54 | 18.045 | | |
| 3,200.0 | 3,193.7 | 3,196.7 | 3,196.7 | 7.7 | 7.1 | -172.59 | 75.1 | 0.0 | 251.2 | 237.2 | 13.99 | 17.956 | | |
| 3,300.0 | 3,293.5 | 3,296.5 | 3,296.5 | 8.0 | 7.3 | -172.79 | 75.1 | 0.0 | 258.1 | 243.7 | 14.44 | 17.873 | | |
| 3,400.0 | 3,393.3 | 3,396.3 | 3,396.3 | 8.2 | 7.5 | -172.98 | 75.1 | 0.0 | 265.0 | 250.1 | 14.89 | 17.795 | | |
| 3,500.0 | 3,493.0 | 3,496.0 | 3,496.0 | 8.5 | 7.7 | -173.16 | 75.1 | 0.0 | 272.0 | 256.6 | 15.35 | 17.722 | | |
| 3,600.0 | 3,592.8 | 3,595.8 | 3,595.8 | 8.8 | 8.0 | -173.33 | 75.1 | 0.0 | 278.9 | 263.1 | 15.80 | 17.653 | | |
| 3,700.0 | 3,692.5 | 3,695.5 | 3,695.5 | 9.0 | 8.2 | -173.49 | 75.1 | 0.0 | 285.8 | 269.6 | 16.25 | 17.588 | | |
| 3,800.0 | 3,792.3 | 3,795.3 | 3,795.3 | 9.3 | 8.4 | -173.65 | 75.1 | 0.0 | 292.8 | 276.1 | 16.70 | 17.526 | | |
| 3,900.0 | 3,892.0 | 3,895.0 | 3,895.0 | 9.6 | 8.6 | -173.80 | 75.1 | 0.0 | 299.7 | 282.5 | 17.16 | 17.468 | | |
| 4,000.0 | 3,991.8 | 3,994.8 | 3,994.8 | 9.8 | 8.8 | -173.94 | 75.1 | 0.0 | 306.6 | 289.0 | 17.61 | 17.413 | | |
| 4,100.0 | 4,091.6 | 4,094.5 | 4,094.5 | 10.1 | 9.1 | -174.07 | 75.1 | 0.0 | 313.6 | 295.5 | 18.06 | 17.361 | | |
| 4,200.0 | 4,191.3 | 4,194.3 | 4,194.3 | 10.4 | 9.3 | -174.20 | 75.1 | 0.0 | 320.5 | 302.0 | 18.51 | 17.311 | | |
| 4,300.0 | 4,291.1 | 4,294.1 | 4,294.1 | 10.6 | 9.5 | -174.32 | 75.1 | 0.0 | 327.4 | 308.5 | 18.97 | 17.263 | | |
| 4,400.0 | 4,390.8 | 4,393.8 | 4,393.8 | 10.9 | 9.7 | -174.44 | 75.1 | 0.0 | 334.4 | 315.0 | 19.42 | 17.218 | | |
| 4,500.0 | 4,490.6 | 4,493.6 | 4,493.6 | 11.1 | 10.0 | -174.55 | 75.1 | 0.0 | 341.3 | 321.5 | 19.87 | 17.175 | | |
| 4,600.0 | 4,590.3 | 4,593.3 | 4,593.3 | 11.4 | 10.2 | -174.66 | 75.1 | 0.0 | 348.3 | 327.9 | 20.33 | 17.134 | | |
| 4,700.0 | 4,690.1 | 4,693.1 | 4,693.1 | 11.7 | 10.4 | -174.77 | 75.1 | 0.0 | 355.2 | 334.4 | 20.78 | 17.095 | | |
| 4,800.0 | 4,789.9 | 4,792.8 | 4,792.8 | 11.9 | 10.6 | -174.87 | 75.1 | 0.0 | 362.2 | 340.9 | 21.23 | 17.058 | | |
| 4,900.0 | 4,889.6 | 4,892.6 | 4,892.6 | 12.2 | 10.9 | -174.97 | 75.1 | 0.0 | 369.1 | 347.4 | 21.69 | 17.022 | | |
| 5,000.0 | 4,989.4 | 4,992.4 | 4,992.4 | 12.5 | 11.1 | -175.06 | 75.1 | 0.0 | 376.1 | 353.9 | 22.14 | 16.987 | | |
| 5,100.0 | 5,089.1 | 5,092.1 | 5,092.1 | 12.7 | 11.3 | -175.15 | 75.1 | 0.0 | 383.0 | 360.4 | 22.59 | 16.954 SF | | |

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Cathedral Energy Services

Anticollision Report

| | | | |
|---------------------------|-------------------------------|-------------------------------------|----------------------------------------|
| Company: | Whiting Petroleum Corporation | Local Co-ordinate Reference: | Well Razor #27J-3412B |
| Project: | Weld County, CO | TVD Reference: | WELL @ 4780.5usft (Original Well Elev) |
| Reference Site: | S27-T10N-R58W | MD Reference: | WELL @ 4780.5usft (Original Well Elev) |
| Site Error: | 0.0usft | North Reference: | True |
| Reference Well: | Razor #27J-3412B | Survey Calculation Method: | Minimum Curvature |
| Well Error: | 0.0usft | Output errors are at | 2.00 sigma |
| Reference Wellbore | HZ | Database: | USA EDM 5000 Multi Users DB |
| Reference Design: | Plan #3 | Offset TVD Reference: | Offset Datum |

| Offset Design S27-T10N-R58W - Razor #27J-2211A - HZ - Plan #2 | | | | | | | | | | | | | Offset Site Error: 0.0 usft | |
|---------------------------------------------------------------|-----------------------|-----------------------|-----------------------|------------------|---------------|-----------------------|-------------------------------------|--------------|------------------------|-------------------------|------------------------|-------------------|-----------------------------|---------|
| Survey Program: 0-ISCSWA MWD | | | | | | | | | | | | | Offset Well Error: 0.0 usft | |
| Reference | | Offset | | Semi Major Axis | | | Distance | | | | | | | Warning |
| Measured Depth (usft) | Vertical Depth (usft) | Measured Depth (usft) | Vertical Depth (usft) | Reference (usft) | Offset (usft) | Highside Toolface (°) | Offset Wellbore Centre +N/-S (usft) | +E/-W (usft) | Between Centres (usft) | Between Ellipses (usft) | Total Uncertainty Axis | Separation Factor | | |
| 5,200.0 | 5,188.9 | 5,172.6 | 5,172.6 | 13.0 | 11.5 | -175.19 | 75.7 | -0.1 | 391.1 | 368.1 | 23.00 | 17.003 | | |
| 5,280.0 | 5,268.7 | 5,218.1 | 5,217.9 | 13.2 | 11.6 | -175.06 | 80.0 | -0.4 | 403.9 | 380.6 | 23.29 | 17.343 | | |
| 5,300.0 | 5,288.6 | 5,229.2 | 5,228.9 | 13.3 | 11.6 | -175.09 | 81.7 | -0.6 | 408.5 | 385.2 | 23.32 | 17.520 | | |
| 5,350.0 | 5,338.0 | 5,250.0 | 5,249.3 | 13.4 | 11.7 | -174.93 | 85.4 | -0.9 | 425.0 | 401.8 | 23.24 | 18.290 | | |
| 5,400.0 | 5,386.4 | 5,280.4 | 5,278.9 | 13.7 | 11.7 | -174.54 | 92.2 | -1.5 | 447.9 | 424.9 | 22.99 | 19.486 | | |
| 5,450.0 | 5,433.4 | 5,300.0 | 5,297.8 | 13.9 | 11.8 | -174.06 | 97.6 | -2.0 | 476.8 | 454.3 | 22.53 | 21.169 | | |
| 5,500.0 | 5,478.5 | 5,321.4 | 5,318.1 | 14.2 | 11.8 | -173.41 | 104.2 | -2.6 | 510.9 | 489.0 | 21.89 | 23.344 | | |
| 5,550.0 | 5,521.3 | 5,350.0 | 5,344.8 | 14.6 | 11.9 | -172.49 | 114.3 | -3.5 | 549.7 | 528.6 | 21.10 | 26.055 | | |
| 5,600.0 | 5,561.6 | 5,350.0 | 5,344.8 | 15.0 | 11.9 | -171.31 | 114.3 | -3.5 | 591.4 | 571.3 | 20.12 | 29.397 | | |
| 5,650.0 | 5,598.7 | 5,350.0 | 5,344.8 | 15.5 | 11.9 | -169.38 | 114.3 | -3.5 | 636.6 | 617.5 | 19.08 | 33.360 | | |
| 5,700.0 | 5,632.5 | 5,368.3 | 5,361.6 | 16.0 | 11.9 | -166.34 | 121.6 | -4.2 | 683.4 | 665.3 | 18.15 | 37.665 | | |
| 5,750.0 | 5,662.6 | 5,373.3 | 5,366.2 | 16.6 | 12.0 | -159.99 | 123.7 | -4.3 | 732.0 | 714.1 | 17.87 | 40.954 | | |
| 5,800.0 | 5,688.8 | 5,376.1 | 5,368.7 | 17.2 | 12.0 | -141.41 | 124.9 | -4.4 | 781.5 | 760.1 | 21.37 | 36.579 | | |
| 5,850.0 | 5,710.7 | 5,376.8 | 5,369.3 | 17.9 | 12.0 | -69.52 | 125.2 | -4.5 | 831.4 | 803.1 | 28.30 | 29.380 | | |
| 5,900.0 | 5,728.3 | 5,375.7 | 5,368.3 | 18.6 | 12.0 | -25.00 | 124.7 | -4.4 | 881.2 | 864.7 | 16.52 | 53.339 | | |
| 5,950.0 | 5,741.3 | 5,372.9 | 5,365.8 | 19.3 | 12.0 | -13.81 | 123.5 | -4.3 | 930.5 | 918.3 | 12.18 | 76.366 | | |
| 6,000.0 | 5,749.5 | 5,368.6 | 5,361.9 | 20.1 | 11.9 | -9.23 | 121.7 | -4.2 | 978.8 | 968.8 | 10.02 | 97.702 | | |
| 6,050.0 | 5,753.1 | 5,350.0 | 5,344.8 | 20.9 | 11.9 | -6.33 | 114.3 | -3.5 | 1,026.2 | 1,017.6 | 8.68 | 118.247 | | |
| 6,061.8 | 5,753.2 | 5,350.0 | 5,344.8 | 21.1 | 11.9 | -6.00 | 114.3 | -3.5 | 1,037.1 | 1,028.6 | 8.52 | 121.741 | | |
| 6,100.0 | 5,753.2 | 5,350.0 | 5,344.8 | 21.7 | 11.9 | -3.31 | 114.3 | -3.5 | 1,072.3 | 1,064.0 | 8.25 | 130.001 | | |
| 6,200.0 | 5,753.2 | 5,350.0 | 5,344.8 | 23.2 | 11.9 | 4.26 | 114.3 | -3.5 | 1,165.2 | 1,156.3 | 8.91 | 130.839 | | |
| 6,300.0 | 5,753.2 | 5,350.0 | 5,344.8 | 24.7 | 11.9 | 12.37 | 114.3 | -3.5 | 1,259.1 | 1,247.4 | 11.77 | 107.004 | | |
| 6,400.0 | 5,753.2 | 5,324.0 | 5,320.5 | 26.3 | 11.8 | 19.75 | 105.0 | -2.7 | 1,352.7 | 1,337.0 | 15.74 | 85.940 | | |
| 6,500.0 | 5,753.2 | 5,300.0 | 5,297.8 | 27.9 | 11.8 | 26.27 | 97.6 | -2.0 | 1,446.9 | 1,427.0 | 19.89 | 72.743 | | |
| 6,600.0 | 5,753.2 | 5,300.0 | 5,297.8 | 29.5 | 11.8 | 33.15 | 97.6 | -2.0 | 1,540.5 | 1,516.0 | 24.48 | 62.919 | | |
| 6,700.0 | 5,753.2 | 5,300.0 | 5,297.8 | 31.1 | 11.8 | 39.43 | 97.6 | -2.0 | 1,633.8 | 1,605.0 | 28.78 | 56.777 | | |
| 6,800.0 | 5,753.2 | 5,300.0 | 5,297.8 | 32.6 | 11.8 | 45.02 | 97.6 | -2.0 | 1,726.7 | 1,694.1 | 32.60 | 52.959 | | |
| 6,900.3 | 5,753.2 | 5,300.0 | 5,297.8 | 34.2 | 11.8 | 49.92 | 97.6 | -2.0 | 1,819.4 | 1,783.4 | 35.93 | 50.636 | | |
| 7,000.0 | 5,753.2 | 5,280.3 | 5,278.8 | 35.8 | 11.7 | 48.74 | 92.2 | -1.5 | 1,911.0 | 1,874.3 | 36.71 | 52.059 | | |
| 7,100.0 | 5,753.2 | 5,275.0 | 5,273.7 | 37.5 | 11.7 | 48.43 | 90.9 | -1.4 | 2,003.9 | 1,965.9 | 37.97 | 52.774 | | |
| 7,200.0 | 5,753.2 | 5,270.1 | 5,268.9 | 39.2 | 11.7 | 48.15 | 89.7 | -1.3 | 2,097.4 | 2,058.1 | 39.25 | 53.434 | | |
| 7,300.0 | 5,753.2 | 5,250.0 | 5,249.3 | 40.9 | 11.7 | 47.00 | 85.4 | -0.9 | 2,191.7 | 2,151.6 | 40.01 | 54.781 | | |
| 7,400.0 | 5,753.2 | 5,250.0 | 5,249.3 | 42.6 | 11.7 | 47.00 | 85.4 | -0.9 | 2,286.0 | 2,244.5 | 41.45 | 55.146 | | |
| 7,500.0 | 5,753.2 | 5,250.0 | 5,249.3 | 44.3 | 11.7 | 47.00 | 85.4 | -0.9 | 2,380.8 | 2,337.9 | 42.91 | 55.484 | | |
| 7,600.0 | 5,753.2 | 5,250.0 | 5,249.3 | 46.1 | 11.7 | 47.00 | 85.4 | -0.9 | 2,476.0 | 2,431.6 | 44.37 | 55.800 | | |
| 7,700.0 | 5,753.2 | 5,250.0 | 5,249.3 | 47.9 | 11.7 | 47.00 | 85.4 | -0.9 | 2,571.5 | 2,525.7 | 45.84 | 56.095 | | |
| 7,800.0 | 5,753.2 | 5,250.0 | 5,249.3 | 49.6 | 11.7 | 47.00 | 85.4 | -0.9 | 2,667.4 | 2,620.1 | 47.32 | 56.371 | | |
| 7,900.0 | 5,753.2 | 5,250.0 | 5,249.3 | 51.4 | 11.7 | 47.00 | 85.4 | -0.9 | 2,763.6 | 2,714.8 | 48.80 | 56.629 | | |
| 8,000.0 | 5,753.2 | 5,250.0 | 5,249.3 | 53.2 | 11.7 | 47.00 | 85.4 | -0.9 | 2,860.0 | 2,809.7 | 50.29 | 56.872 | | |
| 8,100.0 | 5,753.1 | 5,250.0 | 5,249.3 | 55.0 | 11.7 | 47.00 | 85.4 | -0.9 | 2,956.7 | 2,904.9 | 51.78 | 57.101 | | |
| 8,200.0 | 5,753.1 | 5,250.0 | 5,249.3 | 56.9 | 11.7 | 47.00 | 85.4 | -0.9 | 3,053.6 | 3,000.3 | 53.28 | 57.316 | | |
| 8,300.0 | 5,753.1 | 5,250.0 | 5,249.3 | 58.7 | 11.7 | 47.00 | 85.4 | -0.9 | 3,150.7 | 3,095.9 | 54.78 | 57.519 | | |
| 8,400.0 | 5,753.1 | 5,250.0 | 5,249.3 | 60.5 | 11.7 | 47.00 | 85.4 | -0.9 | 3,248.0 | 3,191.7 | 56.28 | 57.712 | | |
| 8,500.0 | 5,753.1 | 5,250.0 | 5,249.3 | 62.3 | 11.7 | 47.00 | 85.4 | -0.9 | 3,345.4 | 3,287.6 | 57.78 | 57.894 | | |
| 8,600.0 | 5,753.1 | 5,226.7 | 5,226.4 | 64.2 | 11.6 | 45.72 | 81.3 | -0.6 | 3,442.3 | 3,384.2 | 58.18 | 59.166 | | |
| 8,700.0 | 5,753.1 | 5,224.7 | 5,224.4 | 66.0 | 11.6 | 45.61 | 81.0 | -0.5 | 3,540.0 | 3,480.4 | 59.57 | 59.423 | | |
| 8,800.0 | 5,753.1 | 5,222.8 | 5,222.5 | 67.9 | 11.6 | 45.51 | 80.7 | -0.5 | 3,637.7 | 3,576.7 | 60.97 | 59.667 | | |
| 8,900.0 | 5,753.1 | 5,200.0 | 5,199.9 | 69.7 | 11.6 | 44.30 | 77.8 | -0.2 | 3,736.0 | 3,674.7 | 61.32 | 60.925 | | |
| 9,000.0 | 5,753.1 | 5,200.0 | 5,199.9 | 71.6 | 11.6 | 44.30 | 77.8 | -0.2 | 3,833.9 | 3,771.1 | 62.79 | 61.062 | | |
| 9,100.0 | 5,753.1 | 5,200.0 | 5,199.9 | 73.4 | 11.6 | 44.30 | 77.8 | -0.2 | 3,931.8 | 3,867.6 | 64.25 | 61.192 | | |
| 9,200.0 | 5,753.1 | 5,200.0 | 5,199.9 | 75.3 | 11.6 | 44.30 | 77.8 | -0.2 | 4,029.9 | 3,964.2 | 65.72 | 61.317 | | |
| 9,300.0 | 5,753.1 | 5,200.0 | 5,199.9 | 77.2 | 11.6 | 44.30 | 77.8 | -0.2 | 4,128.1 | 4,060.9 | 67.19 | 61.436 | | |

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Cathedral Energy Services

Anticollision Report

| | | | |
|---------------------------|-------------------------------|-------------------------------------|----------------------------------------|
| Company: | Whiting Petroleum Corporation | Local Co-ordinate Reference: | Well Razor #27J-3412B |
| Project: | Weld County, CO | TVD Reference: | WELL @ 4780.5usft (Original Well Elev) |
| Reference Site: | S27-T10N-R58W | MD Reference: | WELL @ 4780.5usft (Original Well Elev) |
| Site Error: | 0.0usft | North Reference: | True |
| Reference Well: | Razor #27J-3412B | Survey Calculation Method: | Minimum Curvature |
| Well Error: | 0.0usft | Output errors are at | 2.00 sigma |
| Reference Wellbore | HZ | Database: | USA EDM 5000 Multi Users DB |
| Reference Design: | Plan #3 | Offset TVD Reference: | Offset Datum |

| Offset Design S27-T10N-R58W - Razor #27J-2211A - HZ - Plan #2 | | | | | | | | | | | | | Offset Site Error: 0.0 usft | |
|---------------------------------------------------------------|-----------------------|-----------------------|-----------------------|------------------|---------------|-----------------------|-------------------------------------|--------------|------------------------|-------------------------|------------------------|-------------------|-----------------------------|---------|
| Survey Program: 0-ISCSWA MWD | | | | | | | | | | | | | Offset Well Error: 0.0 usft | |
| Reference | | Offset | | Semi Major Axis | | | Distance | | | | | | | Warning |
| Measured Depth (usft) | Vertical Depth (usft) | Measured Depth (usft) | Vertical Depth (usft) | Reference (usft) | Offset (usft) | Highside Toolface (°) | Offset Wellbore Centre +N/-S (usft) | +E/-W (usft) | Between Centres (usft) | Between Ellipses (usft) | Total Uncertainty Axis | Separation Factor | | |
| 9,400.0 | 5,753.1 | 5,200.0 | 5,199.9 | 79.0 | 11.6 | 44.30 | 77.8 | -0.2 | 4,226.3 | 4,157.7 | 68.66 | 61.551 | | |
| 9,500.0 | 5,753.1 | 5,200.0 | 5,199.9 | 80.9 | 11.6 | 44.30 | 77.8 | -0.2 | 4,324.7 | 4,254.5 | 70.14 | 61.660 | | |
| 9,600.0 | 5,753.1 | 5,200.0 | 5,199.9 | 82.8 | 11.6 | 44.30 | 77.8 | -0.2 | 4,423.1 | 4,351.5 | 71.61 | 61.766 | | |
| 9,700.0 | 5,753.1 | 5,200.0 | 5,199.9 | 84.6 | 11.6 | 44.30 | 77.8 | -0.2 | 4,521.6 | 4,448.5 | 73.09 | 61.867 | | |
| 9,800.0 | 5,753.1 | 5,200.0 | 5,199.9 | 86.5 | 11.6 | 44.30 | 77.8 | -0.2 | 4,620.1 | 4,545.5 | 74.56 | 61.964 | | |
| 9,900.0 | 5,753.1 | 5,200.0 | 5,199.9 | 88.4 | 11.6 | 44.30 | 77.8 | -0.2 | 4,718.7 | 4,642.7 | 76.04 | 62.057 | | |
| 10,000.0 | 5,753.1 | 5,200.0 | 5,199.9 | 90.3 | 11.6 | 44.30 | 77.8 | -0.2 | 4,817.4 | 4,739.8 | 77.52 | 62.147 | | |
| 10,100.0 | 5,753.1 | 5,200.0 | 5,199.9 | 92.1 | 11.6 | 44.30 | 77.8 | -0.2 | 4,916.1 | 4,837.1 | 78.99 | 62.233 | | |
| 10,200.0 | 5,753.1 | 5,200.0 | 5,199.9 | 94.0 | 11.6 | 44.30 | 77.8 | -0.2 | 5,014.8 | 4,934.4 | 80.47 | 62.317 | | |
| 10,300.0 | 5,753.1 | 5,200.0 | 5,199.9 | 95.9 | 11.6 | 44.30 | 77.8 | -0.2 | 5,113.7 | 5,031.7 | 81.95 | 62.397 | | |
| 10,400.0 | 5,753.1 | 5,200.0 | 5,199.9 | 97.8 | 11.6 | 44.30 | 77.8 | -0.2 | 5,212.5 | 5,129.1 | 83.43 | 62.474 | | |
| 10,500.0 | 5,753.1 | 5,200.0 | 5,199.9 | 99.7 | 11.6 | 44.30 | 77.8 | -0.2 | 5,311.4 | 5,226.5 | 84.92 | 62.549 | | |
| 10,600.0 | 5,753.1 | 5,200.0 | 5,199.9 | 101.6 | 11.6 | 44.30 | 77.8 | -0.2 | 5,410.4 | 5,324.0 | 86.40 | 62.622 | | |
| 10,700.0 | 5,753.1 | 5,200.0 | 5,199.9 | 103.5 | 11.6 | 44.30 | 77.8 | -0.2 | 5,509.3 | 5,421.5 | 87.88 | 62.692 | | |
| 10,800.0 | 5,753.1 | 5,200.0 | 5,199.9 | 105.4 | 11.6 | 44.30 | 77.8 | -0.2 | 5,608.4 | 5,519.0 | 89.36 | 62.759 | | |
| 10,900.0 | 5,753.0 | 5,200.0 | 5,199.9 | 107.3 | 11.6 | 44.30 | 77.8 | -0.2 | 5,707.4 | 5,616.6 | 90.85 | 62.825 | | |
| 11,000.0 | 5,753.0 | 5,200.0 | 5,199.9 | 109.1 | 11.6 | 44.30 | 77.8 | -0.2 | 5,806.5 | 5,714.2 | 92.33 | 62.888 | | |
| 11,100.0 | 5,753.0 | 5,200.0 | 5,199.9 | 111.0 | 11.6 | 44.30 | 77.8 | -0.2 | 5,905.6 | 5,811.8 | 93.81 | 62.950 | | |
| 11,200.0 | 5,753.0 | 5,200.0 | 5,199.9 | 112.9 | 11.6 | 44.30 | 77.8 | -0.2 | 6,004.8 | 5,909.5 | 95.30 | 63.009 | | |
| 11,300.0 | 5,753.0 | 5,200.0 | 5,199.9 | 114.8 | 11.6 | 44.30 | 77.8 | -0.2 | 6,103.9 | 6,007.1 | 96.79 | 63.067 | | |
| 11,400.0 | 5,753.0 | 5,200.0 | 5,199.9 | 116.7 | 11.6 | 44.30 | 77.8 | -0.2 | 6,203.1 | 6,104.9 | 98.27 | 63.123 | | |
| 11,500.0 | 5,753.0 | 5,200.0 | 5,199.9 | 118.6 | 11.6 | 44.30 | 77.8 | -0.2 | 6,302.4 | 6,202.6 | 99.76 | 63.177 | | |
| 11,600.0 | 5,753.0 | 5,200.0 | 5,199.9 | 120.5 | 11.6 | 44.30 | 77.8 | -0.2 | 6,401.6 | 6,300.4 | 101.24 | 63.230 | | |
| 11,700.0 | 5,753.0 | 5,200.0 | 5,199.9 | 122.4 | 11.6 | 44.30 | 77.8 | -0.2 | 6,500.9 | 6,398.1 | 102.73 | 63.281 | | |
| 11,800.0 | 5,753.0 | 5,200.0 | 5,199.9 | 124.3 | 11.6 | 44.30 | 77.8 | -0.2 | 6,600.2 | 6,495.9 | 104.22 | 63.331 | | |
| 11,900.0 | 5,753.0 | 5,200.0 | 5,199.9 | 126.2 | 11.6 | 44.30 | 77.8 | -0.2 | 6,699.5 | 6,593.8 | 105.70 | 63.379 | | |
| 12,000.0 | 5,753.0 | 5,200.0 | 5,199.9 | 128.1 | 11.6 | 44.30 | 77.8 | -0.2 | 6,798.8 | 6,691.6 | 107.19 | 63.426 | | |
| 12,100.0 | 5,753.0 | 5,200.0 | 5,199.9 | 130.0 | 11.6 | 44.30 | 77.8 | -0.2 | 6,898.2 | 6,789.5 | 108.68 | 63.472 | | |
| 12,200.0 | 5,753.0 | 5,200.0 | 5,199.9 | 131.9 | 11.6 | 44.30 | 77.8 | -0.2 | 6,997.5 | 6,887.4 | 110.17 | 63.517 | | |
| 12,277.3 | 5,753.0 | 5,200.0 | 5,199.9 | 133.1 | 11.6 | 44.30 | 77.8 | -0.2 | 7,074.4 | 6,963.3 | 111.07 | 63.691 | | |
| 12,277.6 | 5,753.0 | 5,200.0 | 5,199.9 | 133.1 | 11.6 | 44.30 | 77.8 | -0.2 | 7,074.7 | 6,963.6 | 111.08 | 63.692 | | |

Cathedral Energy Services

Anticollision Report

| | | | |
|---------------------------|-------------------------------|-------------------------------------|----------------------------------------|
| Company: | Whiting Petroleum Corporation | Local Co-ordinate Reference: | Well Razor #27J-3412B |
| Project: | Weld County, CO | TVD Reference: | WELL @ 4780.5usft (Original Well Elev) |
| Reference Site: | S27-T10N-R58W | MD Reference: | WELL @ 4780.5usft (Original Well Elev) |
| Site Error: | 0.0usft | North Reference: | True |
| Reference Well: | Razor #27J-3412B | Survey Calculation Method: | Minimum Curvature |
| Well Error: | 0.0usft | Output errors are at | 2.00 sigma |
| Reference Wellbore | HZ | Database: | USA EDM 5000 Multi Users DB |
| Reference Design: | Plan #3 | Offset TVD Reference: | Offset Datum |

| Offset Design S27-T10N-R58W - Razor #27J-2212B - HZ - Plan #2 | | | | | | | | | | | | | Offset Site Error: 0.0 usft | |
|---------------------------------------------------------------|-----------------------|-----------------------|-----------------------|------------------|---------------|-----------------------|-------------------------------------|--------------|------------------------|-------------------------|------------------------|-------------------|-----------------------------|---------|
| Survey Program: 0-ISCSWA MWD | | | | | | | | | | | | | Offset Well Error: 0.0 usft | |
| Reference | | Offset | | Semi Major Axis | | | Distance | | | | | | | Warning |
| Measured Depth (usft) | Vertical Depth (usft) | Measured Depth (usft) | Vertical Depth (usft) | Reference (usft) | Offset (usft) | Highside Toolface (°) | Offset Wellbore Centre +N/-S (usft) | +E/-W (usft) | Between Centres (usft) | Between Ellipses (usft) | Total Uncertainty Axis | Separation Factor | | |
| 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | -90.00 | 0.0 | -32.9 | 32.9 | | | | | |
| 100.0 | 100.0 | 100.0 | 100.0 | 0.1 | 0.1 | -90.00 | 0.0 | -32.9 | 32.9 | 32.8 | 0.19 | 175.528 | | |
| 200.0 | 200.0 | 200.0 | 200.0 | 0.3 | 0.3 | -90.00 | 0.0 | -32.9 | 32.9 | 32.3 | 0.64 | 51.699 | | |
| 300.0 | 300.0 | 300.0 | 300.0 | 0.5 | 0.5 | -90.00 | 0.0 | -32.9 | 32.9 | 31.9 | 1.09 | 30.314 | | |
| 400.0 | 400.0 | 400.0 | 400.0 | 0.8 | 0.8 | -90.00 | 0.0 | -32.9 | 32.9 | 31.4 | 1.54 | 21.443 | | |
| 500.0 | 500.0 | 500.0 | 500.0 | 1.0 | 1.0 | -90.00 | 0.0 | -32.9 | 32.9 | 31.0 | 1.99 | 16.589 | CC, ES | |
| 600.0 | 600.0 | 600.0 | 600.0 | 1.2 | 1.2 | 118.16 | 0.0 | -32.9 | 33.7 | 31.3 | 2.41 | 13.998 | | |
| 700.0 | 699.8 | 699.8 | 699.8 | 1.4 | 1.4 | 125.37 | 0.0 | -32.9 | 36.5 | 33.7 | 2.82 | 12.928 | | |
| 800.0 | 799.6 | 799.6 | 799.6 | 1.6 | 1.7 | 133.35 | 0.0 | -32.9 | 40.9 | 37.7 | 3.25 | 12.595 | | |
| 900.0 | 899.4 | 899.4 | 899.4 | 1.8 | 1.9 | 139.67 | 0.0 | -32.9 | 46.0 | 42.3 | 3.68 | 12.486 | SF | |
| 1,000.0 | 999.1 | 999.1 | 999.1 | 2.1 | 2.1 | 144.69 | 0.0 | -32.9 | 51.5 | 47.4 | 4.12 | 12.496 | | |
| 1,100.0 | 1,098.9 | 1,098.9 | 1,098.9 | 2.3 | 2.3 | 148.72 | 0.0 | -32.9 | 57.4 | 52.8 | 4.57 | 12.566 | | |
| 1,200.0 | 1,198.6 | 1,198.6 | 1,198.6 | 2.5 | 2.6 | 151.99 | 0.0 | -32.9 | 63.4 | 58.4 | 5.01 | 12.666 | | |
| 1,300.0 | 1,298.4 | 1,298.4 | 1,298.4 | 2.8 | 2.8 | 154.69 | 0.0 | -32.9 | 69.7 | 64.2 | 5.45 | 12.777 | | |
| 1,400.0 | 1,398.1 | 1,398.1 | 1,398.1 | 3.0 | 3.0 | 156.93 | 0.0 | -32.9 | 76.0 | 70.1 | 5.90 | 12.892 | | |
| 1,500.0 | 1,497.9 | 1,497.9 | 1,497.9 | 3.3 | 3.2 | 158.83 | 0.0 | -32.9 | 82.5 | 76.2 | 6.35 | 13.003 | | |
| 1,600.0 | 1,597.6 | 1,597.9 | 1,597.9 | 3.5 | 3.5 | 161.53 | 1.1 | -31.6 | 88.9 | 82.1 | 6.78 | 13.102 | | |
| 1,700.0 | 1,697.4 | 1,697.6 | 1,697.5 | 3.8 | 3.7 | 165.94 | 4.3 | -27.6 | 95.3 | 88.1 | 7.22 | 13.212 | | |
| 1,800.0 | 1,797.2 | 1,797.0 | 1,796.6 | 4.1 | 3.9 | 170.78 | 8.6 | -22.2 | 102.4 | 94.8 | 7.65 | 13.381 | | |
| 1,900.0 | 1,896.9 | 1,896.4 | 1,895.8 | 4.3 | 4.1 | 174.97 | 13.0 | -16.9 | 110.1 | 102.0 | 8.10 | 13.596 | | |
| 2,000.0 | 1,996.7 | 1,995.8 | 1,994.9 | 4.6 | 4.3 | 178.60 | 17.4 | -11.5 | 118.3 | 109.8 | 8.55 | 13.839 | | |
| 2,100.0 | 2,096.4 | 2,095.2 | 2,094.1 | 4.8 | 4.6 | -178.25 | 21.7 | -6.1 | 126.9 | 117.9 | 9.01 | 14.095 | | |
| 2,200.0 | 2,196.2 | 2,194.6 | 2,193.3 | 5.1 | 4.8 | -175.50 | 26.1 | -0.7 | 135.9 | 126.4 | 9.47 | 14.354 | | |
| 2,300.0 | 2,295.9 | 2,294.0 | 2,292.4 | 5.4 | 5.0 | -173.10 | 30.4 | 4.7 | 145.1 | 135.2 | 9.93 | 14.612 | | |
| 2,400.0 | 2,395.7 | 2,393.4 | 2,391.6 | 5.6 | 5.3 | -170.99 | 34.8 | 10.1 | 154.6 | 144.2 | 10.40 | 14.864 | | |
| 2,500.0 | 2,495.5 | 2,492.8 | 2,490.7 | 5.9 | 5.5 | -169.12 | 39.1 | 15.5 | 164.2 | 153.3 | 10.87 | 15.109 | | |
| 2,600.0 | 2,595.2 | 2,592.2 | 2,589.9 | 6.1 | 5.8 | -167.46 | 43.5 | 20.9 | 174.0 | 162.6 | 11.34 | 15.344 | | |
| 2,700.0 | 2,695.0 | 2,691.6 | 2,689.1 | 6.4 | 6.0 | -165.98 | 47.9 | 26.3 | 183.9 | 172.1 | 11.81 | 15.570 | | |
| 2,800.0 | 2,794.7 | 2,791.0 | 2,788.2 | 6.7 | 6.3 | -164.65 | 52.2 | 31.7 | 193.9 | 181.6 | 12.28 | 15.786 | | |
| 2,900.0 | 2,894.5 | 2,890.4 | 2,887.4 | 6.9 | 6.5 | -163.45 | 56.6 | 37.1 | 204.0 | 191.3 | 12.76 | 15.992 | | |
| 3,000.0 | 2,994.2 | 2,989.8 | 2,986.5 | 7.2 | 6.7 | -162.36 | 60.9 | 42.5 | 214.2 | 201.0 | 13.23 | 16.187 | | |
| 3,100.0 | 3,094.0 | 3,089.2 | 3,085.7 | 7.5 | 7.0 | -161.38 | 65.3 | 47.9 | 224.5 | 210.8 | 13.71 | 16.374 | | |
| 3,200.0 | 3,193.7 | 3,188.6 | 3,184.8 | 7.7 | 7.2 | -160.48 | 69.6 | 53.3 | 234.8 | 220.6 | 14.19 | 16.552 | | |
| 3,300.0 | 3,293.5 | 3,288.0 | 3,284.0 | 8.0 | 7.5 | -159.65 | 74.0 | 58.7 | 245.2 | 230.5 | 14.67 | 16.721 | | |
| 3,400.0 | 3,393.3 | 3,387.4 | 3,383.2 | 8.2 | 7.7 | -158.90 | 78.4 | 64.0 | 255.6 | 240.5 | 15.14 | 16.882 | | |
| 3,500.0 | 3,493.0 | 3,491.7 | 3,487.3 | 8.5 | 8.0 | -158.42 | 82.0 | 68.6 | 265.3 | 249.7 | 15.60 | 17.006 | | |
| 3,600.0 | 3,592.8 | 3,597.1 | 3,592.6 | 8.8 | 8.2 | -158.64 | 83.3 | 70.2 | 272.9 | 256.9 | 16.02 | 17.038 | | |
| 3,700.0 | 3,692.5 | 3,697.0 | 3,692.5 | 9.0 | 8.3 | -159.16 | 83.3 | 70.2 | 279.4 | 263.0 | 16.44 | 16.998 | | |
| 3,800.0 | 3,792.3 | 3,796.8 | 3,792.3 | 9.3 | 8.6 | -159.66 | 83.3 | 70.2 | 285.9 | 269.1 | 16.88 | 16.939 | | |
| 3,900.0 | 3,892.0 | 3,896.5 | 3,892.0 | 9.6 | 8.8 | -160.13 | 83.3 | 70.2 | 292.5 | 275.2 | 17.32 | 16.883 | | |
| 4,000.0 | 3,991.8 | 3,996.3 | 3,991.8 | 9.8 | 9.0 | -160.59 | 83.3 | 70.2 | 299.1 | 281.3 | 17.77 | 16.831 | | |
| 4,100.0 | 4,091.6 | 4,096.0 | 4,091.6 | 10.1 | 9.2 | -161.02 | 83.3 | 70.2 | 305.7 | 287.4 | 18.21 | 16.783 | | |
| 4,200.0 | 4,191.3 | 4,195.8 | 4,191.3 | 10.4 | 9.4 | -161.44 | 83.3 | 70.2 | 312.3 | 293.6 | 18.66 | 16.737 | | |
| 4,300.0 | 4,291.1 | 4,295.5 | 4,291.1 | 10.6 | 9.6 | -161.84 | 83.3 | 70.2 | 318.9 | 299.8 | 19.10 | 16.694 | | |
| 4,400.0 | 4,390.8 | 4,395.3 | 4,390.8 | 10.9 | 9.8 | -162.22 | 83.3 | 70.2 | 325.5 | 306.0 | 19.55 | 16.653 | | |
| 4,500.0 | 4,490.6 | 4,495.0 | 4,490.6 | 11.1 | 10.0 | -162.59 | 83.3 | 70.2 | 332.2 | 312.2 | 19.99 | 16.615 | | |
| 4,600.0 | 4,590.3 | 4,594.8 | 4,590.3 | 11.4 | 10.3 | -162.94 | 83.3 | 70.2 | 338.8 | 318.4 | 20.44 | 16.578 | | |
| 4,700.0 | 4,690.1 | 4,694.6 | 4,690.1 | 11.7 | 10.5 | -163.28 | 83.3 | 70.2 | 345.5 | 324.6 | 20.88 | 16.544 | | |
| 4,800.0 | 4,789.9 | 4,794.3 | 4,789.9 | 11.9 | 10.7 | -163.61 | 83.3 | 70.2 | 352.2 | 330.9 | 21.33 | 16.512 | | |
| 4,900.0 | 4,889.6 | 4,894.1 | 4,889.6 | 12.2 | 10.9 | -163.92 | 83.3 | 70.2 | 358.9 | 337.1 | 21.78 | 16.481 | | |
| 5,000.0 | 4,989.4 | 4,993.8 | 4,989.4 | 12.5 | 11.1 | -164.22 | 83.3 | 70.2 | 365.6 | 343.4 | 22.22 | 16.452 | | |
| 5,100.0 | 5,089.1 | 5,093.6 | 5,089.1 | 12.7 | 11.3 | -164.52 | 83.3 | 70.2 | 372.3 | 349.7 | 22.67 | 16.424 | | |

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Cathedral Energy Services

Anticollision Report

| | | | |
|---------------------------|-------------------------------|-------------------------------------|----------------------------------------|
| Company: | Whiting Petroleum Corporation | Local Co-ordinate Reference: | Well Razor #27J-3412B |
| Project: | Weld County, CO | TVD Reference: | WELL @ 4780.5usft (Original Well Elev) |
| Reference Site: | S27-T10N-R58W | MD Reference: | WELL @ 4780.5usft (Original Well Elev) |
| Site Error: | 0.0usft | North Reference: | True |
| Reference Well: | Razor #27J-3412B | Survey Calculation Method: | Minimum Curvature |
| Well Error: | 0.0usft | Output errors are at | 2.00 sigma |
| Reference Wellbore | HZ | Database: | USA EDM 5000 Multi Users DB |
| Reference Design: | Plan #3 | Offset TVD Reference: | Offset Datum |

| Offset Design S27-T10N-R58W - Razor #27J-2212B - HZ - Plan #2 | | | | | | | | | | | | | Offset Site Error: 0.0 usft | |
|---------------------------------------------------------------|-----------------------|-----------------------|-----------------------|------------------|---------------|-----------------------|-------------------------------------|--------------|------------------------|-------------------------|------------------------|-------------------|-----------------------------|--|
| Survey Program: 0-ICWSA MWD | | | | | | | | | | | | | Offset Well Error: 0.0 usft | |
| Reference | | Offset | | Semi Major Axis | | | Distance | | | | | | Warning | |
| Measured Depth (usft) | Vertical Depth (usft) | Measured Depth (usft) | Vertical Depth (usft) | Reference (usft) | Offset (usft) | Highside Toolface (°) | Offset Wellbore Centre +N/-S (usft) | +E/-W (usft) | Between Centres (usft) | Between Ellipses (usft) | Total Uncertainty Axis | Separation Factor | | |
| 5,200.0 | 5,188.9 | 5,193.3 | 5,188.9 | 13.0 | 11.6 | -164.80 | 83.3 | 70.2 | 379.1 | 355.9 | 23.12 | 16.397 | | |
| 5,280.0 | 5,268.7 | 5,250.0 | 5,245.5 | 13.2 | 11.7 | -164.94 | 83.4 | 70.2 | 385.3 | 361.9 | 23.43 | 16.447 | | |
| 5,300.0 | 5,288.6 | 5,270.6 | 5,266.1 | 13.3 | 11.7 | -164.99 | 84.3 | 70.4 | 387.8 | 364.3 | 23.47 | 16.521 | | |
| 5,350.0 | 5,338.0 | 5,300.0 | 5,295.4 | 13.4 | 11.8 | -164.76 | 87.0 | 71.2 | 399.4 | 376.0 | 23.42 | 17.055 | | |
| 5,400.0 | 5,386.4 | 5,326.8 | 5,321.9 | 13.7 | 11.9 | -164.24 | 90.7 | 72.2 | 417.7 | 394.5 | 23.19 | 18.012 | | |
| 5,450.0 | 5,433.4 | 5,350.0 | 5,344.6 | 13.9 | 11.9 | -163.43 | 95.1 | 73.4 | 442.3 | 419.5 | 22.80 | 19.400 | | |
| 5,500.0 | 5,478.5 | 5,374.1 | 5,368.0 | 14.2 | 12.0 | -162.30 | 100.6 | 74.9 | 472.3 | 450.1 | 22.27 | 21.211 | | |
| 5,550.0 | 5,521.3 | 5,400.0 | 5,392.9 | 14.6 | 12.1 | -160.80 | 107.7 | 76.8 | 507.3 | 485.7 | 21.64 | 23.440 | | |
| 5,600.0 | 5,561.6 | 5,400.0 | 5,392.9 | 15.0 | 12.1 | -158.39 | 107.7 | 76.8 | 546.4 | 525.5 | 20.97 | 26.061 | | |
| 5,650.0 | 5,598.7 | 5,423.2 | 5,414.8 | 15.5 | 12.2 | -155.44 | 115.1 | 78.8 | 588.6 | 568.2 | 20.43 | 28.810 | | |
| 5,700.0 | 5,632.5 | 5,433.7 | 5,424.6 | 16.0 | 12.2 | -150.72 | 118.7 | 79.8 | 633.5 | 613.2 | 20.30 | 31.202 | | |
| 5,750.0 | 5,662.6 | 5,450.0 | 5,439.6 | 16.6 | 12.3 | -143.91 | 124.7 | 81.5 | 680.6 | 659.6 | 21.02 | 32.381 | | |
| 5,800.0 | 5,688.8 | 5,450.0 | 5,439.6 | 17.2 | 12.3 | -130.37 | 124.7 | 81.5 | 728.8 | 704.8 | 23.90 | 30.488 | | |
| 5,850.0 | 5,710.7 | 5,450.0 | 5,439.6 | 17.9 | 12.3 | -105.73 | 124.7 | 81.5 | 777.8 | 749.0 | 28.81 | 27.000 | | |
| 5,900.0 | 5,728.3 | 5,450.0 | 5,439.6 | 18.6 | 12.3 | -71.82 | 124.7 | 81.5 | 827.2 | 797.9 | 29.32 | 28.216 | | |
| 5,950.0 | 5,741.3 | 5,450.0 | 5,439.6 | 19.3 | 12.3 | -45.75 | 124.7 | 81.5 | 876.4 | 852.7 | 23.66 | 37.037 | | |
| 6,000.0 | 5,749.5 | 5,450.0 | 5,439.6 | 20.1 | 12.3 | -31.22 | 124.7 | 81.5 | 925.1 | 906.6 | 18.46 | 50.122 | | |
| 6,050.0 | 5,753.1 | 5,450.0 | 5,439.6 | 20.9 | 12.3 | -23.06 | 124.7 | 81.5 | 972.9 | 957.8 | 15.05 | 64.637 | | |
| 6,061.8 | 5,753.2 | 5,450.0 | 5,439.6 | 21.1 | 12.3 | -21.67 | 124.7 | 81.5 | 984.0 | 969.5 | 14.47 | 68.023 | | |
| 6,100.0 | 5,753.2 | 5,450.0 | 5,439.6 | 21.7 | 12.3 | -18.63 | 124.7 | 81.5 | 1,020.0 | 1,006.6 | 13.44 | 75.911 | | |
| 6,200.0 | 5,753.2 | 5,426.1 | 5,417.5 | 23.2 | 12.2 | -7.99 | 116.1 | 79.1 | 1,114.5 | 1,104.5 | 10.02 | 111.177 | | |
| 6,300.0 | 5,753.2 | 5,400.0 | 5,392.9 | 24.7 | 12.1 | 2.53 | 107.7 | 76.8 | 1,210.5 | 1,201.1 | 9.31 | 130.052 | | |
| 6,400.0 | 5,753.2 | 5,400.0 | 5,392.9 | 26.3 | 12.1 | 12.36 | 107.7 | 76.8 | 1,306.2 | 1,293.9 | 12.31 | 106.106 | | |
| 6,500.0 | 5,753.2 | 5,400.0 | 5,392.9 | 27.9 | 12.1 | 22.20 | 107.7 | 76.8 | 1,402.2 | 1,384.4 | 17.76 | 78.960 | | |
| 6,600.0 | 5,753.2 | 5,400.0 | 5,392.9 | 29.5 | 12.1 | 31.40 | 107.7 | 76.8 | 1,498.2 | 1,474.6 | 23.59 | 63.502 | | |
| 6,700.0 | 5,753.2 | 5,400.0 | 5,392.9 | 31.1 | 12.1 | 39.54 | 107.7 | 76.8 | 1,594.0 | 1,565.1 | 28.94 | 55.081 | | |
| 6,800.0 | 5,753.2 | 5,376.2 | 5,370.1 | 32.6 | 12.0 | 44.88 | 101.1 | 75.0 | 1,688.7 | 1,656.1 | 32.60 | 51.803 | | |
| 6,900.3 | 5,753.2 | 5,369.8 | 5,363.9 | 34.2 | 12.0 | 50.25 | 99.5 | 74.6 | 1,783.4 | 1,747.2 | 36.16 | 49.316 | | |
| 7,000.0 | 5,753.2 | 5,350.0 | 5,344.6 | 35.8 | 11.9 | 48.96 | 95.1 | 73.4 | 1,877.6 | 1,840.7 | 36.87 | 50.920 | | |
| 7,100.0 | 5,753.2 | 5,350.0 | 5,344.6 | 37.5 | 11.9 | 48.96 | 95.1 | 73.4 | 1,972.2 | 1,933.9 | 38.32 | 51.473 | | |
| 7,200.0 | 5,753.2 | 5,350.0 | 5,344.6 | 39.2 | 11.9 | 48.96 | 95.1 | 73.4 | 2,067.4 | 2,027.6 | 39.77 | 51.980 | | |
| 7,300.0 | 5,753.2 | 5,350.0 | 5,344.6 | 40.9 | 11.9 | 48.96 | 95.1 | 73.4 | 2,162.9 | 2,121.7 | 41.24 | 52.445 | | |
| 7,400.0 | 5,753.2 | 5,350.0 | 5,344.6 | 42.6 | 11.9 | 48.96 | 95.1 | 73.4 | 2,258.9 | 2,216.2 | 42.72 | 52.874 | | |
| 7,500.0 | 5,753.2 | 5,350.0 | 5,344.6 | 44.3 | 11.9 | 48.96 | 95.1 | 73.4 | 2,355.2 | 2,311.0 | 44.21 | 53.271 | | |
| 7,600.0 | 5,753.2 | 5,350.0 | 5,344.6 | 46.1 | 11.9 | 48.96 | 95.1 | 73.4 | 2,451.8 | 2,406.0 | 45.71 | 53.638 | | |
| 7,700.0 | 5,753.2 | 5,350.0 | 5,344.6 | 47.9 | 11.9 | 48.96 | 95.1 | 73.4 | 2,548.6 | 2,501.4 | 47.21 | 53.979 | | |
| 7,800.0 | 5,753.2 | 5,350.0 | 5,344.6 | 49.6 | 11.9 | 48.96 | 95.1 | 73.4 | 2,645.7 | 2,597.0 | 48.73 | 54.297 | | |
| 7,900.0 | 5,753.2 | 5,327.6 | 5,322.7 | 51.4 | 11.9 | 47.54 | 90.9 | 72.2 | 2,742.5 | 2,693.2 | 49.22 | 55.716 | | |
| 8,000.0 | 5,753.2 | 5,324.8 | 5,319.9 | 53.2 | 11.9 | 47.36 | 90.4 | 72.1 | 2,839.8 | 2,789.2 | 50.59 | 56.135 | | |
| 8,100.0 | 5,753.1 | 5,322.2 | 5,317.3 | 55.0 | 11.9 | 47.20 | 90.0 | 72.0 | 2,937.3 | 2,885.4 | 51.96 | 56.529 | | |
| 8,200.0 | 5,753.1 | 5,300.0 | 5,295.4 | 56.9 | 11.8 | 45.85 | 87.0 | 71.2 | 3,035.4 | 2,983.0 | 52.39 | 57.942 | | |
| 8,300.0 | 5,753.1 | 5,300.0 | 5,295.4 | 58.7 | 11.8 | 45.85 | 87.0 | 71.2 | 3,133.1 | 3,079.2 | 53.86 | 58.166 | | |
| 8,400.0 | 5,753.1 | 5,300.0 | 5,295.4 | 60.5 | 11.8 | 45.85 | 87.0 | 71.2 | 3,230.9 | 3,175.6 | 55.35 | 58.378 | | |
| 8,500.0 | 5,753.1 | 5,300.0 | 5,295.4 | 62.3 | 11.8 | 45.85 | 87.0 | 71.2 | 3,328.9 | 3,272.1 | 56.83 | 58.577 | | |
| 8,600.0 | 5,753.1 | 5,300.0 | 5,295.4 | 64.2 | 11.8 | 45.85 | 87.0 | 71.2 | 3,427.0 | 3,368.7 | 58.32 | 58.766 | | |
| 8,700.0 | 5,753.1 | 5,300.0 | 5,295.4 | 66.0 | 11.8 | 45.85 | 87.0 | 71.2 | 3,525.2 | 3,465.4 | 59.81 | 58.944 | | |
| 8,800.0 | 5,753.1 | 5,300.0 | 5,295.4 | 67.9 | 11.8 | 45.85 | 87.0 | 71.2 | 3,623.5 | 3,562.2 | 61.30 | 59.114 | | |
| 8,900.0 | 5,753.1 | 5,300.0 | 5,295.4 | 69.7 | 11.8 | 45.85 | 87.0 | 71.2 | 3,721.9 | 3,659.1 | 62.79 | 59.275 | | |
| 9,000.0 | 5,753.1 | 5,300.0 | 5,295.4 | 71.6 | 11.8 | 45.85 | 87.0 | 71.2 | 3,820.3 | 3,756.0 | 64.29 | 59.428 | | |
| 9,100.0 | 5,753.1 | 5,300.0 | 5,295.4 | 73.4 | 11.8 | 45.85 | 87.0 | 71.2 | 3,918.9 | 3,853.1 | 65.78 | 59.574 | | |
| 9,200.0 | 5,753.1 | 5,300.0 | 5,295.4 | 75.3 | 11.8 | 45.85 | 87.0 | 71.2 | 4,017.5 | 3,950.2 | 67.28 | 59.713 | | |
| 9,300.0 | 5,753.1 | 5,300.0 | 5,295.4 | 77.2 | 11.8 | 45.85 | 87.0 | 71.2 | 4,116.2 | 4,047.4 | 68.78 | 59.845 | | |

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Cathedral Energy Services

Anticollision Report

| | | | |
|---------------------------|-------------------------------|-------------------------------------|----------------------------------------|
| Company: | Whiting Petroleum Corporation | Local Co-ordinate Reference: | Well Razor #27J-3412B |
| Project: | Weld County, CO | TVD Reference: | WELL @ 4780.5usft (Original Well Elev) |
| Reference Site: | S27-T10N-R58W | MD Reference: | WELL @ 4780.5usft (Original Well Elev) |
| Site Error: | 0.0usft | North Reference: | True |
| Reference Well: | Razor #27J-3412B | Survey Calculation Method: | Minimum Curvature |
| Well Error: | 0.0usft | Output errors are at | 2.00 sigma |
| Reference Wellbore | HZ | Database: | USA EDM 5000 Multi Users DB |
| Reference Design: | Plan #3 | Offset TVD Reference: | Offset Datum |

| Offset Design S27-T10N-R58W - Razor #27J-2212B - HZ - Plan #2 | | | | | | | | | | | | | Offset Site Error: 0.0 usft | |
|---------------------------------------------------------------|-----------------------|-----------------------|-----------------------|------------------|---------------|-----------------------|-------------------------------------|---------------------|------------------------|-------------------------|------------------------|-------------------|-----------------------------|---------|
| Survey Program: 0-ISCSWA MWD | | | | | | | | | | | | | Offset Well Error: 0.0 usft | |
| Reference | | Offset | | Semi Major Axis | | | Distance | | | | | | | Warning |
| Measured Depth (usft) | Vertical Depth (usft) | Measured Depth (usft) | Vertical Depth (usft) | Reference (usft) | Offset (usft) | Highside Toolface (°) | Offset Wellbore Centre +N/-S (usft) | Centre +E/-W (usft) | Between Centres (usft) | Between Ellipses (usft) | Total Uncertainty Axis | Separation Factor | | |
| 9,400.0 | 5,753.1 | 5,300.0 | 5,295.4 | 79.0 | 11.8 | 45.85 | 87.0 | 71.2 | 4,214.9 | 4,144.6 | 70.28 | 59.972 | | |
| 9,500.0 | 5,753.1 | 5,300.0 | 5,295.4 | 80.9 | 11.8 | 45.85 | 87.0 | 71.2 | 4,313.7 | 4,241.9 | 71.78 | 60.093 | | |
| 9,600.0 | 5,753.1 | 5,300.0 | 5,295.4 | 82.8 | 11.8 | 45.85 | 87.0 | 71.2 | 4,412.6 | 4,339.3 | 73.29 | 60.208 | | |
| 9,700.0 | 5,753.1 | 5,300.0 | 5,295.4 | 84.6 | 11.8 | 45.85 | 87.0 | 71.2 | 4,511.5 | 4,436.7 | 74.79 | 60.319 | | |
| 9,800.0 | 5,753.1 | 5,300.0 | 5,295.4 | 86.5 | 11.8 | 45.85 | 87.0 | 71.2 | 4,610.5 | 4,534.2 | 76.30 | 60.426 | | |
| 9,900.0 | 5,753.1 | 5,300.0 | 5,295.4 | 88.4 | 11.8 | 45.85 | 87.0 | 71.2 | 4,709.5 | 4,631.6 | 77.81 | 60.528 | | |
| 10,000.0 | 5,753.1 | 5,300.0 | 5,295.4 | 90.3 | 11.8 | 45.85 | 87.0 | 71.2 | 4,808.5 | 4,729.2 | 79.31 | 60.626 | | |
| 10,100.0 | 5,753.1 | 5,300.0 | 5,295.4 | 92.1 | 11.8 | 45.85 | 87.0 | 71.2 | 4,907.6 | 4,826.8 | 80.82 | 60.720 | | |
| 10,200.0 | 5,753.1 | 5,300.0 | 5,295.4 | 94.0 | 11.8 | 45.85 | 87.0 | 71.2 | 5,006.7 | 4,924.4 | 82.33 | 60.811 | | |
| 10,300.0 | 5,753.1 | 5,300.0 | 5,295.4 | 95.9 | 11.8 | 45.85 | 87.0 | 71.2 | 5,105.8 | 5,022.0 | 83.84 | 60.898 | | |
| 10,400.0 | 5,753.1 | 5,300.0 | 5,295.4 | 97.8 | 11.8 | 45.85 | 87.0 | 71.2 | 5,205.0 | 5,119.7 | 85.35 | 60.982 | | |
| 10,500.0 | 5,753.1 | 5,300.0 | 5,295.4 | 99.7 | 11.8 | 45.85 | 87.0 | 71.2 | 5,304.2 | 5,217.4 | 86.86 | 61.063 | | |
| 10,600.0 | 5,753.1 | 5,300.0 | 5,295.4 | 101.6 | 11.8 | 45.85 | 87.0 | 71.2 | 5,403.5 | 5,315.1 | 88.38 | 61.141 | | |
| 10,700.0 | 5,753.1 | 5,300.0 | 5,295.4 | 103.5 | 11.8 | 45.85 | 87.0 | 71.2 | 5,502.8 | 5,412.9 | 89.89 | 61.217 | | |
| 10,800.0 | 5,753.1 | 5,300.0 | 5,295.4 | 105.4 | 11.8 | 45.85 | 87.0 | 71.2 | 5,602.1 | 5,510.6 | 91.40 | 61.290 | | |
| 10,900.0 | 5,753.0 | 5,300.0 | 5,295.4 | 107.3 | 11.8 | 45.85 | 87.0 | 71.2 | 5,701.4 | 5,608.5 | 92.92 | 61.360 | | |
| 11,000.0 | 5,753.0 | 5,300.0 | 5,295.4 | 109.1 | 11.8 | 45.85 | 87.0 | 71.2 | 5,800.7 | 5,706.3 | 94.43 | 61.428 | | |
| 11,100.0 | 5,753.0 | 5,300.0 | 5,295.4 | 111.0 | 11.8 | 45.85 | 87.0 | 71.2 | 5,900.1 | 5,804.1 | 95.95 | 61.494 | | |
| 11,200.0 | 5,753.0 | 5,300.0 | 5,295.4 | 112.9 | 11.8 | 45.85 | 87.0 | 71.2 | 5,999.5 | 5,902.0 | 97.46 | 61.558 | | |
| 11,300.0 | 5,753.0 | 5,300.0 | 5,295.4 | 114.8 | 11.8 | 45.85 | 87.0 | 71.2 | 6,098.9 | 5,999.9 | 98.98 | 61.619 | | |
| 11,400.0 | 5,753.0 | 5,300.0 | 5,295.4 | 116.7 | 11.8 | 45.85 | 87.0 | 71.2 | 6,198.3 | 6,097.8 | 100.49 | 61.679 | | |
| 11,500.0 | 5,753.0 | 5,300.0 | 5,295.4 | 118.6 | 11.8 | 45.85 | 87.0 | 71.2 | 6,297.8 | 6,195.7 | 102.01 | 61.737 | | |
| 11,600.0 | 5,753.0 | 5,300.0 | 5,295.4 | 120.5 | 11.8 | 45.85 | 87.0 | 71.2 | 6,397.2 | 6,293.7 | 103.53 | 61.793 | | |
| 11,700.0 | 5,753.0 | 5,300.0 | 5,295.4 | 122.4 | 11.8 | 45.85 | 87.0 | 71.2 | 6,496.7 | 6,391.6 | 105.04 | 61.848 | | |
| 11,800.0 | 5,753.0 | 5,300.0 | 5,295.4 | 124.3 | 11.8 | 45.85 | 87.0 | 71.2 | 6,596.2 | 6,489.6 | 106.56 | 61.901 | | |
| 11,900.0 | 5,753.0 | 5,276.6 | 5,272.1 | 126.2 | 11.8 | 44.46 | 84.7 | 70.6 | 6,695.2 | 6,589.2 | 105.97 | 63.182 | | |
| 12,000.0 | 5,753.0 | 5,276.1 | 5,271.6 | 128.1 | 11.8 | 44.43 | 84.7 | 70.5 | 6,794.7 | 6,687.3 | 107.41 | 63.261 | | |
| 12,100.0 | 5,753.0 | 5,275.5 | 5,271.0 | 130.0 | 11.8 | 44.40 | 84.7 | 70.5 | 6,894.2 | 6,785.3 | 108.85 | 63.338 | | |
| 12,200.0 | 5,753.0 | 5,275.0 | 5,270.5 | 131.9 | 11.8 | 44.37 | 84.6 | 70.5 | 6,993.7 | 6,883.4 | 110.29 | 63.412 | | |
| 12,277.3 | 5,753.0 | 5,274.6 | 5,270.1 | 133.1 | 11.8 | 44.35 | 84.6 | 70.5 | 7,070.6 | 6,959.5 | 111.16 | 63.608 | | |
| 12,277.6 | 5,753.0 | 5,274.6 | 5,270.1 | 133.1 | 11.8 | 44.35 | 84.6 | 70.5 | 7,071.0 | 6,959.8 | 111.16 | 63.610 | | |

Cathedral Energy Services

Anticollision Report

| | | | |
|---------------------------|-------------------------------|-------------------------------------|----------------------------------------|
| Company: | Whiting Petroleum Corporation | Local Co-ordinate Reference: | Well Razor #27J-3412B |
| Project: | Weld County, CO | TVD Reference: | WELL @ 4780.5usft (Original Well Elev) |
| Reference Site: | S27-T10N-R58W | MD Reference: | WELL @ 4780.5usft (Original Well Elev) |
| Site Error: | 0.0usft | North Reference: | True |
| Reference Well: | Razor #27J-3412B | Survey Calculation Method: | Minimum Curvature |
| Well Error: | 0.0usft | Output errors are at | 2.00 sigma |
| Reference Wellbore | HZ | Database: | USA EDM 5000 Multi Users DB |
| Reference Design: | Plan #3 | Offset TVD Reference: | Offset Datum |

| Offset Design S27-T10N-R58W - Razor #27J-3409A - Hz - Plan #3 | | | | | | | | | | | | | Offset Site Error: | 0.0 usft |
|---------------------------------------------------------------|-----------------------------|-----------------------------|-----------------------------|---------------------|------------------|-----------------------------|-------------------------------------------|-----------------|------------------------------|----------------------|---------|---------------|--------------------|----------|
| Survey Program: 0-ISCSA MWD | | | | | | | | | | | | | Offset Well Error: | 0.0 usft |
| Reference | | Offset | | Semi Major Axis | | Highside Toolface (°) | Distance | | Total Uncertainty Axis | Separation Factor | Warning | | | |
| Measured Depth (usft) | Vertical Depth (usft) | Measured Depth (usft) | Vertical Depth (usft) | Reference (usft) | Offset (usft) | | Offset Wellbore Centre +N/-S (usft) | +E/-W (usft) | | | | | | |
| 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | -52.63 | 75.1 | -98.3 | 123.7 | | | | | |
| 100.0 | 100.0 | 103.0 | 103.0 | 0.1 | 0.1 | -52.63 | 75.1 | -98.3 | 123.7 | 123.5 | 0.19 | 636.009 | | |
| 200.0 | 200.0 | 203.0 | 203.0 | 0.3 | 0.3 | -52.63 | 75.1 | -98.3 | 123.7 | 123.0 | 0.64 | 192.024 | | |
| 300.0 | 300.0 | 303.0 | 303.0 | 0.5 | 0.6 | -52.63 | 75.1 | -98.3 | 123.7 | 122.6 | 1.09 | 113.083 | | |
| 400.0 | 400.0 | 403.0 | 403.0 | 0.8 | 0.8 | -52.63 | 75.1 | -98.3 | 123.7 | 122.1 | 1.54 | 80.138 | | |
| 500.0 | 500.0 | 503.0 | 503.0 | 1.0 | 1.0 | -52.63 | 75.0 | -98.3 | 123.7 | 121.7 | 1.99 | 62.079 | | |
| 501.8 | 501.8 | 504.9 | 504.9 | 1.0 | 1.0 | 152.87 | 75.0 | -98.3 | 123.7 | 121.7 | 2.00 | 61.851 CC, ES | | |
| 600.0 | 600.0 | 604.5 | 604.5 | 1.2 | 1.2 | 152.40 | 73.2 | -98.9 | 124.6 | 122.2 | 2.39 | 52.079 | | |
| 700.0 | 699.8 | 705.7 | 705.6 | 1.4 | 1.4 | 151.15 | 68.0 | -100.5 | 127.5 | 124.7 | 2.77 | 46.028 | | |
| 800.0 | 799.6 | 805.6 | 805.2 | 1.6 | 1.6 | 149.73 | 61.4 | -102.7 | 131.5 | 128.3 | 3.18 | 41.387 | | |
| 900.0 | 899.4 | 905.5 | 904.8 | 1.8 | 1.8 | 148.38 | 54.8 | -104.8 | 135.6 | 132.0 | 3.61 | 37.552 | | |
| 1,000.0 | 999.1 | 1,005.3 | 1,004.4 | 2.1 | 2.1 | 147.12 | 48.1 | -106.9 | 139.8 | 135.7 | 4.06 | 34.407 | | |
| 1,100.0 | 1,098.9 | 1,105.2 | 1,104.1 | 2.3 | 2.3 | 145.93 | 41.5 | -109.1 | 144.0 | 139.5 | 4.53 | 31.815 | | |
| 1,200.0 | 1,198.6 | 1,205.1 | 1,203.7 | 2.5 | 2.5 | 144.81 | 34.9 | -111.2 | 148.3 | 143.3 | 5.00 | 29.658 | | |
| 1,300.0 | 1,298.4 | 1,304.9 | 1,303.3 | 2.8 | 2.8 | 143.75 | 28.2 | -113.4 | 152.6 | 147.1 | 5.48 | 27.847 | | |
| 1,400.0 | 1,398.1 | 1,404.8 | 1,402.9 | 3.0 | 3.0 | 142.75 | 21.6 | -115.5 | 157.0 | 151.0 | 5.97 | 26.311 | | |
| 1,500.0 | 1,497.9 | 1,504.7 | 1,502.6 | 3.3 | 3.3 | 141.81 | 15.0 | -117.6 | 161.4 | 155.0 | 6.46 | 24.995 | | |
| 1,600.0 | 1,597.6 | 1,604.5 | 1,602.2 | 3.5 | 3.6 | 140.91 | 8.4 | -119.8 | 165.9 | 159.0 | 6.95 | 23.858 | | |
| 1,700.0 | 1,697.4 | 1,704.4 | 1,701.8 | 3.8 | 3.8 | 140.07 | 1.7 | -121.9 | 170.4 | 163.0 | 7.45 | 22.868 | | |
| 1,800.0 | 1,797.2 | 1,804.3 | 1,801.4 | 4.1 | 4.1 | 139.26 | -4.9 | -124.0 | 175.0 | 167.0 | 7.95 | 21.998 | | |
| 1,900.0 | 1,896.9 | 1,904.1 | 1,901.1 | 4.3 | 4.3 | 138.50 | -11.5 | -126.2 | 179.6 | 171.1 | 8.46 | 21.229 | | |
| 2,000.0 | 1,996.7 | 2,004.0 | 2,000.7 | 4.6 | 4.6 | 137.78 | -18.2 | -128.3 | 184.2 | 175.2 | 8.96 | 20.545 | | |
| 2,100.0 | 2,096.4 | 2,103.9 | 2,100.3 | 4.8 | 4.8 | 137.09 | -24.8 | -130.5 | 188.8 | 179.3 | 9.47 | 19.933 | | |
| 2,200.0 | 2,196.2 | 2,203.7 | 2,199.9 | 5.1 | 5.1 | 136.43 | -31.4 | -132.6 | 193.5 | 183.5 | 9.98 | 19.384 | | |
| 2,300.0 | 2,295.9 | 2,303.6 | 2,299.5 | 5.4 | 5.4 | 135.81 | -38.1 | -134.7 | 198.2 | 187.7 | 10.49 | 18.888 | | |
| 2,400.0 | 2,395.7 | 2,403.5 | 2,399.2 | 5.6 | 5.6 | 135.21 | -44.7 | -136.9 | 202.9 | 191.9 | 11.00 | 18.438 | | |
| 2,500.0 | 2,495.5 | 2,503.3 | 2,498.8 | 5.9 | 5.9 | 134.64 | -51.3 | -139.0 | 207.6 | 196.1 | 11.52 | 18.028 | | |
| 2,600.0 | 2,595.2 | 2,603.2 | 2,598.4 | 6.1 | 6.1 | 134.10 | -58.0 | -141.1 | 212.4 | 200.3 | 12.03 | 17.653 | | |
| 2,700.0 | 2,695.0 | 2,703.1 | 2,698.0 | 6.4 | 6.4 | 133.58 | -64.6 | -143.3 | 217.1 | 204.6 | 12.54 | 17.310 | | |
| 2,800.0 | 2,794.7 | 2,803.0 | 2,797.7 | 6.7 | 6.7 | 133.08 | -71.2 | -145.4 | 221.9 | 208.9 | 13.06 | 16.994 | | |
| 2,900.0 | 2,894.5 | 2,902.8 | 2,897.3 | 6.9 | 6.9 | 132.61 | -77.8 | -147.5 | 226.7 | 213.2 | 13.57 | 16.702 | | |
| 3,000.0 | 2,994.2 | 3,002.7 | 2,996.9 | 7.2 | 7.2 | 132.15 | -84.5 | -149.7 | 231.5 | 217.5 | 14.09 | 16.433 | | |
| 3,100.0 | 3,094.0 | 3,102.6 | 3,096.5 | 7.5 | 7.5 | 131.71 | -91.1 | -151.8 | 236.4 | 221.8 | 14.61 | 16.182 | | |
| 3,200.0 | 3,193.7 | 3,202.4 | 3,196.2 | 7.7 | 7.7 | 131.29 | -97.7 | -154.0 | 241.2 | 226.1 | 15.12 | 15.949 | | |
| 3,300.0 | 3,293.5 | 3,302.3 | 3,295.8 | 8.0 | 8.0 | 130.89 | -104.4 | -156.1 | 246.1 | 230.4 | 15.64 | 15.732 | | |
| 3,400.0 | 3,393.3 | 3,402.2 | 3,395.4 | 8.2 | 8.2 | 130.50 | -111.0 | -158.2 | 251.0 | 234.8 | 16.16 | 15.530 | | |
| 3,500.0 | 3,493.0 | 3,502.0 | 3,495.0 | 8.5 | 8.5 | 130.13 | -117.6 | -160.4 | 255.8 | 239.2 | 16.68 | 15.340 | | |
| 3,600.0 | 3,592.8 | 3,601.9 | 3,594.7 | 8.8 | 8.8 | 129.77 | -124.3 | -162.5 | 260.7 | 243.5 | 17.20 | 15.162 | | |
| 3,700.0 | 3,692.5 | 3,701.8 | 3,694.3 | 9.0 | 9.0 | 129.42 | -130.9 | -164.6 | 265.6 | 247.9 | 17.71 | 14.995 | | |
| 3,800.0 | 3,792.3 | 3,801.6 | 3,793.9 | 9.3 | 9.3 | 129.09 | -137.5 | -166.8 | 270.5 | 252.3 | 18.23 | 14.837 | | |
| 3,900.0 | 3,892.0 | 3,901.5 | 3,893.5 | 9.6 | 9.6 | 128.77 | -144.2 | -168.9 | 275.5 | 256.7 | 18.75 | 14.689 | | |
| 4,000.0 | 3,991.8 | 4,001.4 | 3,993.2 | 9.8 | 9.8 | 128.46 | -150.8 | -171.0 | 280.4 | 261.1 | 19.27 | 14.549 | | |
| 4,100.0 | 4,091.6 | 4,101.2 | 4,092.8 | 10.1 | 10.1 | 128.16 | -157.4 | -173.2 | 285.3 | 265.5 | 19.79 | 14.416 | | |
| 4,200.0 | 4,191.3 | 4,201.1 | 4,192.4 | 10.4 | 10.4 | 127.87 | -164.0 | -175.3 | 290.3 | 270.0 | 20.31 | 14.291 | | |
| 4,300.0 | 4,291.1 | 4,301.0 | 4,292.0 | 10.6 | 10.6 | 127.59 | -170.7 | -177.5 | 295.2 | 274.4 | 20.83 | 14.172 | | |
| 4,400.0 | 4,390.8 | 4,400.8 | 4,391.6 | 10.9 | 10.9 | 127.32 | -177.3 | -179.6 | 300.2 | 278.8 | 21.35 | 14.059 | | |
| 4,500.0 | 4,490.6 | 4,500.7 | 4,491.3 | 11.1 | 11.1 | 127.06 | -183.9 | -181.7 | 305.1 | 283.3 | 21.87 | 13.952 | | |
| 4,600.0 | 4,590.3 | 4,600.6 | 4,590.9 | 11.4 | 11.4 | 126.80 | -190.6 | -183.9 | 310.1 | 287.7 | 22.39 | 13.850 | | |
| 4,700.0 | 4,690.1 | 4,700.4 | 4,690.5 | 11.7 | 11.7 | 126.56 | -197.2 | -186.0 | 315.1 | 292.2 | 22.91 | 13.752 | | |
| 4,800.0 | 4,789.9 | 4,800.3 | 4,790.1 | 11.9 | 11.9 | 126.32 | -203.8 | -188.1 | 320.1 | 296.6 | 23.43 | 13.660 | | |
| 4,900.0 | 4,889.6 | 4,900.2 | 4,889.8 | 12.2 | 12.2 | 126.09 | -210.5 | -190.3 | 325.1 | 301.1 | 23.95 | 13.571 | | |
| 5,000.0 | 4,989.4 | 5,000.0 | 4,989.4 | 12.5 | 12.5 | 125.87 | -217.1 | -192.4 | 330.0 | 305.6 | 24.47 | 13.486 | | |

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Cathedral Energy Services

Anticollision Report

| | | | |
|---------------------------|-------------------------------|-------------------------------------|----------------------------------------|
| Company: | Whiting Petroleum Corporation | Local Co-ordinate Reference: | Well Razor #27J-3412B |
| Project: | Weld County, CO | TVD Reference: | WELL @ 4780.5usft (Original Well Elev) |
| Reference Site: | S27-T10N-R58W | MD Reference: | WELL @ 4780.5usft (Original Well Elev) |
| Site Error: | 0.0usft | North Reference: | True |
| Reference Well: | Razor #27J-3412B | Survey Calculation Method: | Minimum Curvature |
| Well Error: | 0.0usft | Output errors are at | 2.00 sigma |
| Reference Wellbore | HZ | Database: | USA EDM 5000 Multi Users DB |
| Reference Design: | Plan #3 | Offset TVD Reference: | Offset Datum |

| Offset Design S27-T10N-R58W - Razor #27J-3409A - Hz - Plan #3 | | | | | | | | | | | | Offset Site Error: | 0.0 usft |
|---------------------------------------------------------------|-----------------------|-----------------------|-----------------------|------------------|---------------|-----------------------|-------------------------------------|--------------|------------------------|-------------------------|------------------------|--------------------|----------|
| Survey Program: 0-ISCWSA MWD | | | | | | | | | | | | Offset Well Error: | 0.0 usft |
| Reference | | Offset | | Semi Major Axis | | Distance | | | | | | | |
| Measured Depth (usft) | Vertical Depth (usft) | Measured Depth (usft) | Vertical Depth (usft) | Reference (usft) | Offset (usft) | Highside Toolface (°) | Offset Wellbore Centre +N/-S (usft) | +E/-W (usft) | Between Centres (usft) | Between Ellipses (usft) | Total Uncertainty Axis | Separation Factor | Warning |
| 5,100.0 | 5,089.1 | 5,099.9 | 5,089.0 | 12.7 | 12.7 | 125.65 | -223.7 | -194.5 | 335.0 | 310.1 | 24.99 | 13.405 | |
| 5,200.0 | 5,188.9 | 5,199.2 | 5,188.1 | 13.0 | 13.0 | 125.44 | -230.4 | -196.7 | 340.1 | 314.5 | 25.51 | 13.329 | |
| 5,280.0 | 5,268.7 | 5,271.8 | 5,259.7 | 13.2 | 13.2 | 124.32 | -240.7 | -200.0 | 345.0 | 319.0 | 25.98 | 13.278 | |
| 5,300.0 | 5,288.6 | 5,289.5 | 5,277.0 | 13.3 | 13.3 | 123.56 | -244.7 | -201.3 | 346.8 | 320.7 | 26.10 | 13.286 | |
| 5,350.0 | 5,338.0 | 5,333.2 | 5,318.7 | 13.4 | 13.5 | 121.65 | -256.9 | -205.2 | 353.6 | 327.2 | 26.41 | 13.392 | |
| 5,400.0 | 5,386.4 | 5,375.7 | 5,358.2 | 13.7 | 13.8 | 119.55 | -271.9 | -210.1 | 363.9 | 337.1 | 26.73 | 13.611 | |
| 5,450.0 | 5,433.4 | 5,416.9 | 5,395.1 | 13.9 | 14.0 | 117.22 | -289.3 | -215.7 | 377.4 | 350.3 | 27.10 | 13.924 | |
| 5,500.0 | 5,478.5 | 5,456.7 | 5,429.3 | 14.2 | 14.3 | 114.69 | -308.7 | -221.9 | 393.9 | 366.4 | 27.53 | 14.307 | |
| 5,550.0 | 5,521.3 | 5,495.2 | 5,460.8 | 14.6 | 14.6 | 111.97 | -329.7 | -228.7 | 413.2 | 385.2 | 28.04 | 14.735 | |
| 5,600.0 | 5,561.6 | 5,532.3 | 5,489.5 | 15.0 | 14.9 | 109.08 | -352.1 | -235.9 | 435.0 | 406.4 | 28.66 | 15.179 | |
| 5,650.0 | 5,598.7 | 5,568.0 | 5,515.5 | 15.5 | 15.2 | 106.03 | -375.4 | -243.4 | 459.0 | 429.6 | 29.42 | 15.602 | |
| 5,700.0 | 5,632.5 | 5,600.0 | 5,537.3 | 16.0 | 15.6 | 102.82 | -397.6 | -250.6 | 485.0 | 454.7 | 30.27 | 16.023 | |
| 5,750.0 | 5,662.6 | 5,635.8 | 5,560.0 | 16.6 | 15.9 | 99.52 | -424.0 | -259.1 | 512.6 | 481.3 | 31.25 | 16.402 | |
| 5,800.0 | 5,688.8 | 5,668.0 | 5,578.7 | 17.2 | 16.3 | 96.11 | -449.0 | -267.1 | 541.5 | 509.2 | 32.28 | 16.776 | |
| 5,850.0 | 5,710.7 | 5,700.0 | 5,595.6 | 17.9 | 16.7 | 92.66 | -474.8 | -275.4 | 571.5 | 538.1 | 33.34 | 17.140 | |
| 5,900.0 | 5,728.3 | 5,729.8 | 5,609.9 | 18.6 | 17.1 | 89.14 | -499.7 | -283.5 | 602.3 | 567.9 | 34.41 | 17.505 | |
| 5,950.0 | 5,741.3 | 5,759.5 | 5,622.6 | 19.3 | 17.4 | 85.66 | -525.3 | -291.7 | 633.7 | 598.2 | 35.45 | 17.874 | |
| 6,000.0 | 5,749.5 | 5,788.8 | 5,633.6 | 20.1 | 17.8 | 82.24 | -551.0 | -300.0 | 665.4 | 629.0 | 36.46 | 18.250 | |
| 6,050.0 | 5,753.1 | 5,817.6 | 5,642.9 | 20.9 | 18.2 | 78.93 | -577.0 | -308.4 | 697.4 | 659.9 | 37.43 | 18.633 | |
| 6,061.8 | 5,753.2 | 5,824.4 | 5,644.9 | 21.1 | 18.3 | 78.16 | -583.2 | -310.4 | 704.9 | 667.3 | 37.65 | 18.723 | |
| 6,100.0 | 5,753.2 | 5,850.0 | 5,651.6 | 21.7 | 18.7 | 79.36 | -606.7 | -318.0 | 729.2 | 690.4 | 38.81 | 18.791 | |
| 6,200.0 | 5,753.2 | 5,909.4 | 5,662.4 | 23.2 | 19.6 | 81.39 | -662.3 | -335.9 | 791.5 | 749.9 | 41.58 | 19.037 | |
| 6,300.0 | 5,753.2 | 5,979.0 | 5,666.5 | 24.7 | 20.6 | 82.56 | -728.4 | -357.2 | 851.2 | 806.8 | 44.45 | 19.152 | |
| 6,400.0 | 5,753.2 | 6,135.4 | 5,666.5 | 26.3 | 22.7 | 83.55 | -879.1 | -398.7 | 903.8 | 855.6 | 48.21 | 18.749 | |
| 6,500.0 | 5,753.2 | 6,311.8 | 5,666.5 | 27.9 | 25.2 | 84.21 | -1,052.6 | -430.5 | 944.2 | 891.8 | 52.43 | 18.008 | |
| 6,600.0 | 5,753.2 | 6,504.4 | 5,666.5 | 29.5 | 28.1 | 84.60 | -1,244.4 | -446.8 | 970.6 | 913.5 | 57.08 | 17.005 | |
| 6,700.0 | 5,753.2 | 6,636.9 | 5,666.6 | 31.1 | 30.2 | 84.75 | -1,376.8 | -447.9 | 984.2 | 923.2 | 60.95 | 16.147 | |
| 6,800.0 | 5,753.2 | 6,736.6 | 5,666.6 | 32.6 | 31.9 | 84.81 | -1,476.5 | -447.9 | 992.0 | 927.7 | 64.28 | 15.431 | |
| 6,900.3 | 5,753.2 | 6,836.8 | 5,666.6 | 34.2 | 33.6 | 84.83 | -1,576.8 | -447.9 | 994.6 | 927.1 | 67.50 | 14.735 | |
| 7,000.0 | 5,753.2 | 6,936.5 | 5,666.6 | 35.8 | 35.3 | 84.83 | -1,676.5 | -447.9 | 994.6 | 923.7 | 70.91 | 14.026 | |
| 7,100.0 | 5,753.2 | 7,036.5 | 5,666.6 | 37.5 | 37.0 | 84.83 | -1,776.5 | -447.9 | 994.6 | 920.2 | 74.39 | 13.369 | |
| 7,200.0 | 5,753.2 | 7,136.5 | 5,666.6 | 39.2 | 38.8 | 84.83 | -1,876.5 | -447.9 | 994.6 | 916.6 | 77.91 | 12.765 | |
| 7,300.0 | 5,753.2 | 7,236.5 | 5,666.6 | 40.9 | 40.6 | 84.83 | -1,976.5 | -447.9 | 994.5 | 913.1 | 81.46 | 12.209 | |
| 7,400.0 | 5,753.2 | 7,336.5 | 5,666.6 | 42.6 | 42.3 | 84.83 | -2,076.5 | -447.9 | 994.5 | 909.5 | 85.03 | 11.696 | |
| 7,500.0 | 5,753.2 | 7,436.5 | 5,666.6 | 44.3 | 44.1 | 84.83 | -2,176.5 | -447.9 | 994.5 | 905.9 | 88.63 | 11.221 | |
| 7,600.0 | 5,753.2 | 7,536.5 | 5,666.6 | 46.1 | 45.9 | 84.83 | -2,276.5 | -447.9 | 994.5 | 902.3 | 92.24 | 10.781 | |
| 7,700.0 | 5,753.2 | 7,636.5 | 5,666.6 | 47.9 | 47.7 | 84.83 | -2,376.5 | -447.9 | 994.5 | 898.6 | 95.88 | 10.373 | |
| 7,800.0 | 5,753.2 | 7,736.5 | 5,666.6 | 49.6 | 49.6 | 84.84 | -2,476.5 | -447.9 | 994.5 | 895.0 | 99.52 | 9.993 | |
| 7,900.0 | 5,753.2 | 7,836.5 | 5,666.7 | 51.4 | 51.4 | 84.84 | -2,576.5 | -447.9 | 994.5 | 891.3 | 103.18 | 9.638 | |
| 8,000.0 | 5,753.2 | 7,936.5 | 5,666.7 | 53.2 | 53.2 | 84.84 | -2,676.5 | -447.9 | 994.5 | 887.6 | 106.85 | 9.307 | |
| 8,100.0 | 5,753.1 | 8,036.5 | 5,666.7 | 55.0 | 55.1 | 84.84 | -2,776.5 | -447.9 | 994.5 | 883.9 | 110.54 | 8.997 | |
| 8,200.0 | 5,753.1 | 8,136.5 | 5,666.7 | 56.9 | 56.9 | 84.84 | -2,876.5 | -447.9 | 994.4 | 880.2 | 114.23 | 8.706 | |
| 8,300.0 | 5,753.1 | 8,236.5 | 5,666.7 | 58.7 | 58.8 | 84.84 | -2,976.5 | -447.9 | 994.4 | 876.5 | 117.93 | 8.432 | |
| 8,400.0 | 5,753.1 | 8,336.5 | 5,666.7 | 60.5 | 60.6 | 84.84 | -3,076.5 | -447.9 | 994.4 | 872.8 | 121.64 | 8.175 | |
| 8,500.0 | 5,753.1 | 8,436.5 | 5,666.7 | 62.3 | 62.5 | 84.84 | -3,176.5 | -447.9 | 994.4 | 869.0 | 125.36 | 7.933 | |
| 8,600.0 | 5,753.1 | 8,536.5 | 5,666.7 | 64.2 | 64.3 | 84.84 | -3,276.5 | -447.9 | 994.4 | 865.3 | 129.08 | 7.704 | |
| 8,700.0 | 5,753.1 | 8,636.5 | 5,666.7 | 66.0 | 66.2 | 84.84 | -3,376.5 | -447.9 | 994.4 | 861.6 | 132.81 | 7.487 | |
| 8,800.0 | 5,753.1 | 8,736.5 | 5,666.7 | 67.9 | 68.1 | 84.84 | -3,476.5 | -447.9 | 994.4 | 857.8 | 136.55 | 7.282 | |
| 8,900.0 | 5,753.1 | 8,836.5 | 5,666.7 | 69.7 | 69.9 | 84.84 | -3,576.5 | -447.9 | 994.4 | 854.1 | 140.29 | 7.088 | |
| 9,000.0 | 5,753.1 | 8,936.5 | 5,666.7 | 71.6 | 71.8 | 84.84 | -3,676.5 | -447.9 | 994.3 | 850.3 | 144.03 | 6.904 | |
| 9,100.0 | 5,753.1 | 9,036.5 | 5,666.7 | 73.4 | 73.7 | 84.84 | -3,776.5 | -447.9 | 994.3 | 846.6 | 147.78 | 6.728 | |
| 9,200.0 | 5,753.1 | 9,136.5 | 5,666.8 | 75.3 | 75.6 | 84.84 | -3,876.5 | -447.9 | 994.3 | 842.8 | 151.53 | 6.562 | |

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Cathedral Energy Services

Anticollision Report

| | | | |
|---------------------------|-------------------------------|-------------------------------------|----------------------------------------|
| Company: | Whiting Petroleum Corporation | Local Co-ordinate Reference: | Well Razor #27J-3412B |
| Project: | Weld County, CO | TVD Reference: | WELL @ 4780.5usft (Original Well Elev) |
| Reference Site: | S27-T10N-R58W | MD Reference: | WELL @ 4780.5usft (Original Well Elev) |
| Site Error: | 0.0usft | North Reference: | True |
| Reference Well: | Razor #27J-3412B | Survey Calculation Method: | Minimum Curvature |
| Well Error: | 0.0usft | Output errors are at | 2.00 sigma |
| Reference Wellbore | HZ | Database: | USA EDM 5000 Multi Users DB |
| Reference Design: | Plan #3 | Offset TVD Reference: | Offset Datum |

| Offset Design S27-T10N-R58W - Razor #27J-3409A - Hz - Plan #3 | | | | | | | | | | | | Offset Site Error: | 0.0 usft |
|---------------------------------------------------------------|-----------------------------|-----------------------------|-----------------------------|---------------------|------------------|-----------------------------|------------------------------|-------------------------------|------------------------------|----------------------|---------|--------------------|----------|
| Survey Program: 0-ISCSWA MWD | | | | | | | | | | | | Offset Well Error: | 0.0 usft |
| Reference | | Offset | | Semi Major Axis | | Highside Toolface (°) | Distance | | Total Uncertainty Axis | Separation Factor | Warning | | |
| Measured Depth (usft) | Vertical Depth (usft) | Measured Depth (usft) | Vertical Depth (usft) | Reference (usft) | Offset (usft) | | Between Centres (usft) | Between Ellipses (usft) | | | | | |
| 9,300.0 | 5,753.1 | 9,236.5 | 5,666.8 | 77.2 | 77.5 | 84.84 | -3,976.5 | -447.9 | 994.3 | 839.0 | 155.29 | 6.403 | |
| 9,400.0 | 5,753.1 | 9,336.5 | 5,666.8 | 79.0 | 79.3 | 84.85 | -4,076.5 | -447.9 | 994.3 | 835.2 | 159.05 | 6.251 | |
| 9,500.0 | 5,753.1 | 9,436.5 | 5,666.8 | 80.9 | 81.2 | 84.85 | -4,176.5 | -447.9 | 994.3 | 831.5 | 162.81 | 6.107 | |
| 9,600.0 | 5,753.1 | 9,536.5 | 5,666.8 | 82.8 | 83.1 | 84.85 | -4,276.5 | -447.8 | 994.3 | 827.7 | 166.58 | 5.969 | |
| 9,700.0 | 5,753.1 | 9,636.5 | 5,666.8 | 84.6 | 85.0 | 84.85 | -4,376.5 | -447.8 | 994.3 | 823.9 | 170.35 | 5.837 | |
| 9,800.0 | 5,753.1 | 9,736.5 | 5,666.8 | 86.5 | 86.9 | 84.85 | -4,476.5 | -447.8 | 994.2 | 820.1 | 174.12 | 5.710 | |
| 9,900.0 | 5,753.1 | 9,836.5 | 5,666.8 | 88.4 | 88.8 | 84.85 | -4,576.5 | -447.8 | 994.2 | 816.3 | 177.90 | 5.589 | |
| 10,000.0 | 5,753.1 | 9,936.5 | 5,666.8 | 90.3 | 90.7 | 84.85 | -4,676.5 | -447.8 | 994.2 | 812.5 | 181.67 | 5.473 | |
| 10,100.0 | 5,753.1 | 10,036.5 | 5,666.8 | 92.1 | 92.6 | 84.85 | -4,776.5 | -447.8 | 994.2 | 808.8 | 185.45 | 5.361 | |
| 10,200.0 | 5,753.1 | 10,136.5 | 5,666.8 | 94.0 | 94.5 | 84.85 | -4,876.5 | -447.8 | 994.2 | 805.0 | 189.24 | 5.254 | |
| 10,300.0 | 5,753.1 | 10,236.5 | 5,666.8 | 95.9 | 96.4 | 84.85 | -4,976.5 | -447.8 | 994.2 | 801.2 | 193.02 | 5.151 | |
| 10,400.0 | 5,753.1 | 10,336.5 | 5,666.8 | 97.8 | 98.2 | 84.85 | -5,076.5 | -447.8 | 994.2 | 797.4 | 196.80 | 5.052 | |
| 10,500.0 | 5,753.1 | 10,436.5 | 5,666.9 | 99.7 | 100.1 | 84.85 | -5,176.5 | -447.8 | 994.2 | 793.6 | 200.59 | 4.956 | |
| 10,600.0 | 5,753.1 | 10,536.5 | 5,666.9 | 101.6 | 102.0 | 84.85 | -5,276.5 | -447.8 | 994.2 | 789.8 | 204.38 | 4.864 | |
| 10,700.0 | 5,753.1 | 10,636.5 | 5,666.9 | 103.5 | 103.9 | 84.85 | -5,376.5 | -447.8 | 994.1 | 786.0 | 208.17 | 4.776 | |
| 10,800.0 | 5,753.1 | 10,736.5 | 5,666.9 | 105.4 | 105.8 | 84.85 | -5,476.5 | -447.8 | 994.1 | 782.2 | 211.96 | 4.690 | |
| 10,900.0 | 5,753.0 | 10,836.5 | 5,666.9 | 107.3 | 107.7 | 84.85 | -5,576.5 | -447.8 | 994.1 | 778.4 | 215.75 | 4.608 | |
| 11,000.0 | 5,753.0 | 10,936.5 | 5,666.9 | 109.1 | 109.6 | 84.85 | -5,676.5 | -447.8 | 994.1 | 774.6 | 219.54 | 4.528 | |
| 11,100.0 | 5,753.0 | 11,036.5 | 5,666.9 | 111.0 | 111.5 | 84.86 | -5,776.5 | -447.8 | 994.1 | 770.8 | 223.34 | 4.451 | |
| 11,200.0 | 5,753.0 | 11,136.5 | 5,666.9 | 112.9 | 113.4 | 84.86 | -5,876.5 | -447.8 | 994.1 | 766.9 | 227.14 | 4.377 | |
| 11,300.0 | 5,753.0 | 11,236.5 | 5,666.9 | 114.8 | 115.4 | 84.86 | -5,976.5 | -447.8 | 994.1 | 763.1 | 230.93 | 4.305 | |
| 11,400.0 | 5,753.0 | 11,336.5 | 5,666.9 | 116.7 | 117.3 | 84.86 | -6,076.5 | -447.8 | 994.1 | 759.3 | 234.73 | 4.235 | |
| 11,500.0 | 5,753.0 | 11,436.5 | 5,666.9 | 118.6 | 119.2 | 84.86 | -6,176.5 | -447.8 | 994.0 | 755.5 | 238.53 | 4.167 | |
| 11,600.0 | 5,753.0 | 11,536.5 | 5,666.9 | 120.5 | 121.1 | 84.86 | -6,276.5 | -447.8 | 994.0 | 751.7 | 242.33 | 4.102 | |
| 11,700.0 | 5,753.0 | 11,636.5 | 5,667.0 | 122.4 | 123.0 | 84.86 | -6,376.5 | -447.8 | 994.0 | 747.9 | 246.13 | 4.039 | |
| 11,800.0 | 5,753.0 | 11,736.5 | 5,667.0 | 124.3 | 124.9 | 84.86 | -6,476.5 | -447.8 | 994.0 | 744.1 | 249.93 | 3.977 | |
| 11,900.0 | 5,753.0 | 11,836.5 | 5,667.0 | 126.2 | 126.8 | 84.86 | -6,576.5 | -447.8 | 994.0 | 740.3 | 253.74 | 3.917 | |
| 12,000.0 | 5,753.0 | 11,936.5 | 5,667.0 | 128.1 | 128.7 | 84.86 | -6,676.5 | -447.8 | 994.0 | 736.4 | 257.54 | 3.860 | |
| 12,100.0 | 5,753.0 | 12,036.5 | 5,667.0 | 130.0 | 130.6 | 84.86 | -6,776.5 | -447.8 | 994.0 | 732.6 | 261.34 | 3.803 | |
| 12,200.0 | 5,753.0 | 12,136.5 | 5,667.0 | 131.9 | 132.5 | 84.86 | -6,876.5 | -447.8 | 994.0 | 728.8 | 265.15 | 3.749 | |
| 12,277.3 | 5,753.0 | 12,213.8 | 5,667.0 | 133.1 | 134.0 | 84.86 | -6,953.8 | -447.8 | 993.9 | 726.1 | 267.82 | 3.711 | |
| 12,277.6 | 5,753.0 | 12,214.1 | 5,667.0 | 133.1 | 134.0 | 84.86 | -6,954.1 | -447.8 | 993.9 | 726.1 | 267.83 | 3.711 SF | |

Cathedral Energy Services

Anticollision Report

| | | | |
|---------------------------|-------------------------------|-------------------------------------|----------------------------------------|
| Company: | Whiting Petroleum Corporation | Local Co-ordinate Reference: | Well Razor #27J-3412B |
| Project: | Weld County, CO | TVD Reference: | WELL @ 4780.5usft (Original Well Elev) |
| Reference Site: | S27-T10N-R58W | MD Reference: | WELL @ 4780.5usft (Original Well Elev) |
| Site Error: | 0.0usft | North Reference: | True |
| Reference Well: | Razor #27J-3412B | Survey Calculation Method: | Minimum Curvature |
| Well Error: | 0.0usft | Output errors are at | 2.00 sigma |
| Reference Wellbore | HZ | Database: | USA EDM 5000 Multi Users DB |
| Reference Design: | Plan #3 | Offset TVD Reference: | Offset Datum |

| Offset Design S27-T10N-R58W - Razor #27J-3410B - HZ - Plan #3 | | | | | | | | | | | | | Offset Site Error: | 0.0 usft |
|---------------------------------------------------------------|-----------------------|-----------------------|-----------------------|------------------|---------------|-----------------------|-------------------------------------|--------------|------------------------|-------------------------|------------------------|-------------------|--------------------|----------|
| Survey Program: 0-ISCSWA MWD | | | | | | | | | | | | | Offset Well Error: | 0.0 usft |
| Reference | | Offset | | Semi Major Axis | | | Distance | | | | | | | Warning |
| Measured Depth (usft) | Vertical Depth (usft) | Measured Depth (usft) | Vertical Depth (usft) | Reference (usft) | Offset (usft) | Highside Toolface (°) | Offset Wellbore Centre +N/-S (usft) | +E/-W (usft) | Between Centres (usft) | Between Ellipses (usft) | Total Uncertainty Axis | Separation Factor | | |
| 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | -90.00 | 0.0 | -65.3 | 65.3 | | | | | |
| 100.0 | 100.0 | 100.0 | 100.0 | 0.1 | 0.1 | -90.00 | 0.0 | -65.3 | 65.3 | 65.1 | 0.19 | 348.105 | | |
| 200.0 | 200.0 | 200.0 | 200.0 | 0.3 | 0.3 | -90.00 | 0.0 | -65.3 | 65.3 | 64.7 | 0.64 | 102.529 | | |
| 300.0 | 300.0 | 300.0 | 300.0 | 0.5 | 0.5 | -90.00 | 0.0 | -65.3 | 65.3 | 64.2 | 1.09 | 60.118 | | |
| 400.0 | 400.0 | 400.0 | 400.0 | 0.8 | 0.8 | -90.00 | 0.0 | -65.3 | 65.3 | 63.8 | 1.54 | 42.526 | | |
| 500.0 | 500.0 | 500.0 | 500.0 | 1.0 | 1.0 | -90.00 | 0.0 | -65.3 | 65.3 | 63.3 | 1.99 | 32.900 CC, ES | | |
| 600.0 | 600.0 | 600.0 | 600.0 | 1.2 | 1.2 | 116.85 | 0.0 | -65.3 | 66.1 | 63.7 | 2.41 | 27.433 | | |
| 700.0 | 699.8 | 699.8 | 699.8 | 1.4 | 1.4 | 120.70 | 0.0 | -65.3 | 68.6 | 65.8 | 2.82 | 24.309 | | |
| 800.0 | 799.6 | 799.6 | 799.6 | 1.6 | 1.7 | 125.45 | 0.0 | -65.3 | 72.4 | 69.2 | 3.25 | 22.272 | | |
| 900.0 | 899.4 | 899.4 | 899.4 | 1.8 | 1.9 | 129.69 | 0.0 | -65.3 | 76.7 | 73.0 | 3.69 | 20.777 | | |
| 1,000.0 | 999.1 | 999.1 | 999.1 | 2.1 | 2.1 | 133.47 | 0.0 | -65.3 | 81.3 | 77.2 | 4.14 | 19.668 | | |
| 1,100.0 | 1,098.9 | 1,098.9 | 1,098.9 | 2.3 | 2.3 | 136.83 | 0.0 | -65.3 | 86.3 | 81.7 | 4.58 | 18.829 | | |
| 1,200.0 | 1,198.6 | 1,198.6 | 1,198.6 | 2.5 | 2.6 | 139.81 | 0.0 | -65.3 | 91.5 | 86.5 | 5.03 | 18.186 | | |
| 1,300.0 | 1,298.4 | 1,298.4 | 1,298.4 | 2.8 | 2.8 | 142.47 | 0.0 | -65.3 | 97.0 | 91.5 | 5.48 | 17.686 | | |
| 1,400.0 | 1,398.1 | 1,398.1 | 1,398.1 | 3.0 | 3.0 | 144.84 | 0.0 | -65.3 | 102.6 | 96.6 | 5.93 | 17.293 | | |
| 1,500.0 | 1,497.9 | 1,497.9 | 1,497.9 | 3.3 | 3.2 | 146.97 | 0.0 | -65.3 | 108.4 | 102.0 | 6.38 | 16.979 | | |
| 1,600.0 | 1,597.6 | 1,597.6 | 1,597.6 | 3.5 | 3.5 | 148.87 | 0.0 | -65.3 | 114.3 | 107.4 | 6.83 | 16.725 | | |
| 1,700.0 | 1,697.4 | 1,697.4 | 1,697.4 | 3.8 | 3.7 | 150.59 | 0.0 | -65.3 | 120.3 | 113.0 | 7.28 | 16.519 | | |
| 1,800.0 | 1,797.2 | 1,797.2 | 1,797.2 | 4.1 | 3.9 | 152.14 | 0.0 | -65.3 | 126.4 | 118.7 | 7.73 | 16.349 | | |
| 1,900.0 | 1,896.9 | 1,896.9 | 1,896.9 | 4.3 | 4.1 | 153.55 | 0.0 | -65.3 | 132.6 | 124.5 | 8.18 | 16.208 | | |
| 2,000.0 | 1,996.7 | 1,996.7 | 1,996.7 | 4.6 | 4.4 | 154.83 | 0.0 | -65.3 | 138.9 | 130.3 | 8.63 | 16.090 | | |
| 2,100.0 | 2,096.4 | 2,096.4 | 2,096.4 | 4.8 | 4.6 | 156.00 | 0.0 | -65.3 | 145.3 | 136.2 | 9.08 | 15.990 | | |
| 2,200.0 | 2,196.2 | 2,196.2 | 2,196.2 | 5.1 | 4.8 | 157.07 | 0.0 | -65.3 | 151.7 | 142.1 | 9.54 | 15.906 | | |
| 2,300.0 | 2,295.9 | 2,295.9 | 2,295.9 | 5.4 | 5.0 | 158.06 | 0.0 | -65.3 | 158.1 | 148.1 | 9.99 | 15.834 | | |
| 2,400.0 | 2,395.7 | 2,395.7 | 2,395.7 | 5.6 | 5.3 | 158.96 | 0.0 | -65.3 | 164.6 | 154.2 | 10.44 | 15.772 | | |
| 2,500.0 | 2,495.5 | 2,495.5 | 2,495.5 | 5.9 | 5.5 | 159.80 | 0.0 | -65.3 | 171.1 | 160.3 | 10.89 | 15.718 | | |
| 2,600.0 | 2,595.2 | 2,595.2 | 2,595.2 | 6.1 | 5.7 | 160.58 | 0.0 | -65.3 | 177.7 | 166.4 | 11.34 | 15.672 | | |
| 2,700.0 | 2,695.0 | 2,695.0 | 2,695.0 | 6.4 | 5.9 | 161.30 | 0.0 | -65.3 | 184.3 | 172.5 | 11.79 | 15.632 | | |
| 2,800.0 | 2,794.7 | 2,794.7 | 2,794.7 | 6.7 | 6.2 | 161.97 | 0.0 | -65.3 | 190.9 | 178.7 | 12.24 | 15.596 | | |
| 2,900.0 | 2,894.5 | 2,894.5 | 2,894.5 | 6.9 | 6.4 | 162.60 | 0.0 | -65.3 | 197.6 | 184.9 | 12.69 | 15.565 | | |
| 3,000.0 | 2,994.2 | 2,994.2 | 2,994.2 | 7.2 | 6.6 | 163.18 | 0.0 | -65.3 | 204.2 | 191.1 | 13.14 | 15.538 | | |
| 3,100.0 | 3,094.0 | 3,094.0 | 3,094.0 | 7.5 | 6.8 | 163.73 | 0.0 | -65.3 | 210.9 | 197.3 | 13.60 | 15.514 | | |
| 3,200.0 | 3,193.7 | 3,193.7 | 3,193.7 | 7.7 | 7.0 | 164.24 | 0.0 | -65.3 | 217.6 | 203.6 | 14.05 | 15.492 | | |
| 3,300.0 | 3,293.5 | 3,293.5 | 3,293.5 | 8.0 | 7.3 | 164.73 | 0.0 | -65.3 | 224.4 | 209.9 | 14.50 | 15.473 | | |
| 3,400.0 | 3,393.3 | 3,393.3 | 3,393.3 | 8.2 | 7.5 | 165.18 | 0.0 | -65.3 | 231.1 | 216.1 | 14.95 | 15.456 | | |
| 3,500.0 | 3,493.0 | 3,493.0 | 3,493.0 | 8.5 | 7.7 | 165.61 | 0.0 | -65.3 | 237.8 | 222.4 | 15.40 | 15.441 | | |
| 3,600.0 | 3,592.8 | 3,592.8 | 3,592.8 | 8.8 | 7.9 | 166.02 | 0.0 | -65.3 | 244.6 | 228.8 | 15.86 | 15.428 | | |
| 3,700.0 | 3,692.5 | 3,692.5 | 3,692.5 | 9.0 | 8.2 | 166.40 | 0.0 | -65.3 | 251.4 | 235.1 | 16.31 | 15.416 | | |
| 3,800.0 | 3,792.3 | 3,792.3 | 3,792.3 | 9.3 | 8.4 | 166.77 | 0.0 | -65.3 | 258.2 | 241.4 | 16.76 | 15.405 | | |
| 3,900.0 | 3,892.0 | 3,892.0 | 3,892.0 | 9.6 | 8.6 | 167.11 | 0.0 | -65.3 | 265.0 | 247.8 | 17.21 | 15.395 | | |
| 4,000.0 | 3,991.8 | 3,991.8 | 3,991.8 | 9.8 | 8.8 | 167.44 | 0.0 | -65.3 | 271.8 | 254.1 | 17.66 | 15.386 | | |
| 4,100.0 | 4,091.6 | 4,091.6 | 4,091.6 | 10.1 | 9.1 | 167.75 | 0.0 | -65.3 | 278.6 | 260.5 | 18.12 | 15.378 | | |
| 4,200.0 | 4,191.3 | 4,191.3 | 4,191.3 | 10.4 | 9.3 | 168.05 | 0.0 | -65.3 | 285.4 | 266.8 | 18.57 | 15.370 | | |
| 4,300.0 | 4,291.1 | 4,291.1 | 4,291.1 | 10.6 | 9.5 | 168.33 | 0.0 | -65.3 | 292.2 | 273.2 | 19.02 | 15.364 | | |
| 4,400.0 | 4,390.8 | 4,390.8 | 4,390.8 | 10.9 | 9.7 | 168.60 | 0.0 | -65.3 | 299.1 | 279.6 | 19.47 | 15.358 | | |
| 4,500.0 | 4,490.6 | 4,490.6 | 4,490.6 | 11.1 | 10.0 | 168.86 | 0.0 | -65.3 | 305.9 | 286.0 | 19.93 | 15.352 | | |
| 4,600.0 | 4,590.3 | 4,590.3 | 4,590.3 | 11.4 | 10.2 | 169.11 | 0.0 | -65.3 | 312.8 | 292.4 | 20.38 | 15.348 | | |
| 4,700.0 | 4,690.1 | 4,690.1 | 4,690.1 | 11.7 | 10.4 | 169.34 | 0.0 | -65.3 | 319.6 | 298.8 | 20.83 | 15.343 | | |
| 4,800.0 | 4,789.9 | 4,789.9 | 4,789.9 | 11.9 | 10.6 | 169.57 | 0.0 | -65.3 | 326.5 | 305.2 | 21.28 | 15.339 | | |
| 4,900.0 | 4,889.6 | 4,889.6 | 4,889.6 | 12.2 | 10.9 | 169.79 | 0.0 | -65.3 | 333.3 | 311.6 | 21.74 | 15.335 | | |
| 5,000.0 | 4,989.4 | 4,989.4 | 4,989.4 | 12.5 | 11.1 | 169.99 | 0.0 | -65.3 | 340.2 | 318.0 | 22.19 | 15.332 | | |
| 5,100.0 | 5,089.1 | 5,089.1 | 5,089.1 | 12.7 | 11.3 | 170.19 | 0.0 | -65.3 | 347.1 | 324.4 | 22.64 | 15.329 | | |

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Cathedral Energy Services

Anticollision Report

| | | | |
|---------------------------|-------------------------------|-------------------------------------|----------------------------------------|
| Company: | Whiting Petroleum Corporation | Local Co-ordinate Reference: | Well Razor #27J-3412B |
| Project: | Weld County, CO | TVD Reference: | WELL @ 4780.5usft (Original Well Elev) |
| Reference Site: | S27-T10N-R58W | MD Reference: | WELL @ 4780.5usft (Original Well Elev) |
| Site Error: | 0.0usft | North Reference: | True |
| Reference Well: | Razor #27J-3412B | Survey Calculation Method: | Minimum Curvature |
| Well Error: | 0.0usft | Output errors are at | 2.00 sigma |
| Reference Wellbore | HZ | Database: | USA EDM 5000 Multi Users DB |
| Reference Design: | Plan #3 | Offset TVD Reference: | Offset Datum |

| Offset Design S27-T10N-R58W - Razor #27J-3410B - HZ - Plan #3 | | | | | | | | | | | | | Offset Site Error: 0.0 usft | |
|---------------------------------------------------------------|-----------------------|-----------------------|-----------------------|------------------|---------------|-----------------------|-------------------------------------|--------------|------------------------|-------------------------|------------------------|-------------------|-----------------------------|---------|
| Survey Program: 0-ISCWSA MWD | | | | | | | | | | | | | Offset Well Error: 0.0 usft | |
| Reference | | Offset | | Semi Major Axis | | | Distance | | | | | | | Warning |
| Measured Depth (usft) | Vertical Depth (usft) | Measured Depth (usft) | Vertical Depth (usft) | Reference (usft) | Offset (usft) | Highside Toolface (°) | Offset Wellbore Centre +N/-S (usft) | +E/-W (usft) | Between Centres (usft) | Between Ellipses (usft) | Total Uncertainty Axis | Separation Factor | | |
| 5,200.0 | 5,188.9 | 5,188.9 | 5,188.9 | 13.0 | 11.5 | 170.39 | 0.0 | -65.3 | 354.0 | 330.9 | 23.10 | 15.326 | | |
| 5,280.0 | 5,268.7 | 5,312.6 | 5,312.2 | 13.2 | 11.8 | 170.01 | -6.2 | -65.6 | 357.2 | 333.7 | 23.52 | 15.189 | | |
| 5,300.0 | 5,288.6 | 5,355.9 | 5,354.7 | 13.3 | 11.8 | 169.19 | -14.6 | -65.9 | 355.9 | 332.3 | 23.60 | 15.081 | | |
| 5,350.0 | 5,338.0 | 5,459.9 | 5,452.7 | 13.4 | 12.0 | 166.14 | -49.0 | -67.3 | 350.4 | 326.7 | 23.69 | 14.791 | | |
| 5,400.0 | 5,386.4 | 5,555.9 | 5,535.4 | 13.7 | 12.2 | 161.77 | -97.4 | -69.3 | 342.8 | 319.1 | 23.68 | 14.473 | | |
| 5,450.0 | 5,433.4 | 5,642.5 | 5,601.3 | 13.9 | 12.5 | 156.43 | -153.4 | -71.6 | 334.3 | 310.7 | 23.68 | 14.118 | | |
| 5,500.0 | 5,478.5 | 5,720.0 | 5,651.7 | 14.2 | 12.9 | 150.54 | -212.1 | -74.0 | 326.6 | 302.8 | 23.83 | 13.705 | | |
| 5,550.0 | 5,521.3 | 5,789.3 | 5,688.9 | 14.6 | 13.3 | 144.39 | -270.4 | -76.4 | 320.8 | 296.6 | 24.23 | 13.240 | | |
| 5,600.0 | 5,561.6 | 5,851.7 | 5,715.6 | 15.0 | 13.8 | 138.16 | -326.8 | -78.7 | 318.1 | 293.2 | 24.95 | 12.749 | | |
| 5,610.8 | 5,569.9 | 5,864.4 | 5,720.1 | 15.1 | 13.9 | 136.81 | -338.6 | -79.2 | 318.0 | 292.9 | 25.16 | 12.639 | | |
| 5,650.0 | 5,598.7 | 5,908.3 | 5,733.7 | 15.5 | 14.2 | 131.95 | -380.4 | -80.9 | 319.3 | 293.3 | 26.02 | 12.271 | | |
| 5,700.0 | 5,632.5 | 5,960.4 | 5,745.2 | 16.0 | 14.8 | 125.77 | -431.1 | -83.0 | 324.7 | 297.3 | 27.39 | 11.856 | | |
| 5,750.0 | 5,662.6 | 6,008.7 | 5,751.3 | 16.6 | 15.3 | 119.62 | -479.0 | -85.0 | 334.4 | 305.4 | 28.98 | 11.538 | | |
| 5,800.0 | 5,688.8 | 6,053.6 | 5,753.0 | 17.2 | 15.8 | 113.57 | -523.8 | -86.8 | 348.0 | 317.2 | 30.74 | 11.320 | | |
| 5,850.0 | 5,710.7 | 6,093.4 | 5,753.0 | 17.9 | 16.3 | 108.08 | -563.6 | -88.4 | 365.2 | 332.7 | 32.50 | 11.238 | | |
| 5,900.0 | 5,728.3 | 6,135.0 | 5,753.0 | 18.6 | 16.8 | 102.85 | -605.0 | -90.1 | 385.1 | 350.9 | 34.26 | 11.241 | | |
| 5,950.0 | 5,741.3 | 6,177.8 | 5,753.0 | 19.3 | 17.3 | 98.12 | -647.8 | -91.9 | 406.8 | 370.9 | 35.94 | 11.320 | | |
| 6,000.0 | 5,749.5 | 6,221.5 | 5,753.0 | 20.1 | 17.9 | 94.04 | -691.5 | -93.7 | 429.4 | 391.9 | 37.52 | 11.445 | | |
| 6,050.0 | 5,753.1 | 6,265.7 | 5,753.0 | 20.9 | 18.5 | 90.66 | -735.7 | -95.5 | 452.4 | 413.4 | 39.03 | 11.590 | | |
| 6,061.8 | 5,753.2 | 6,276.2 | 5,753.0 | 21.1 | 18.7 | 89.97 | -746.2 | -95.9 | 457.9 | 418.5 | 39.38 | 11.626 | | |
| 6,100.0 | 5,753.2 | 6,310.2 | 5,753.0 | 21.7 | 19.2 | 89.97 | -780.2 | -97.3 | 475.2 | 434.6 | 40.55 | 11.719 | | |
| 6,200.0 | 5,753.2 | 6,401.0 | 5,753.0 | 23.2 | 20.5 | 89.97 | -870.8 | -101.0 | 517.2 | 473.6 | 43.58 | 11.866 | | |
| 6,300.0 | 5,753.2 | 6,493.8 | 5,753.0 | 24.7 | 21.9 | 89.97 | -963.6 | -104.8 | 554.4 | 507.7 | 46.75 | 11.859 | | |
| 6,400.0 | 5,753.2 | 6,588.4 | 5,753.0 | 26.3 | 23.5 | 89.98 | -1,058.1 | -108.7 | 586.7 | 536.7 | 49.99 | 11.736 | | |
| 6,500.0 | 5,753.2 | 6,684.6 | 5,753.0 | 27.9 | 25.0 | 89.98 | -1,154.2 | -112.7 | 614.0 | 560.8 | 53.26 | 11.529 | | |
| 6,600.0 | 5,753.2 | 6,789.2 | 5,753.0 | 29.5 | 26.8 | 89.98 | -1,258.7 | -116.8 | 636.2 | 579.6 | 56.61 | 11.239 | | |
| 6,700.0 | 5,753.2 | 6,907.3 | 5,753.0 | 31.1 | 28.6 | 89.98 | -1,376.8 | -117.7 | 649.8 | 589.8 | 59.98 | 10.835 | | |
| 6,800.0 | 5,753.2 | 7,006.9 | 5,753.0 | 32.6 | 30.4 | 89.98 | -1,476.5 | -117.7 | 657.7 | 594.6 | 63.09 | 10.425 | | |
| 6,900.3 | 5,753.2 | 7,107.2 | 5,753.0 | 34.2 | 32.1 | 89.98 | -1,576.7 | -117.7 | 660.3 | 594.2 | 66.07 | 9.993 | | |
| 7,000.0 | 5,753.2 | 7,206.9 | 5,753.0 | 35.8 | 33.9 | 89.98 | -1,676.4 | -117.7 | 660.3 | 590.8 | 69.52 | 9.497 | | |
| 7,100.0 | 5,753.2 | 7,306.9 | 5,753.0 | 37.5 | 35.7 | 89.98 | -1,776.4 | -117.7 | 660.3 | 587.2 | 73.05 | 9.039 | | |
| 7,200.0 | 5,753.2 | 7,406.9 | 5,753.0 | 39.2 | 37.5 | 89.98 | -1,876.4 | -117.7 | 660.3 | 583.7 | 76.60 | 8.620 | | |
| 7,300.0 | 5,753.2 | 7,506.9 | 5,753.0 | 40.9 | 39.3 | 89.98 | -1,976.4 | -117.7 | 660.3 | 580.1 | 80.18 | 8.235 | | |
| 7,400.0 | 5,753.2 | 7,606.9 | 5,753.0 | 42.6 | 41.1 | 89.98 | -2,076.4 | -117.7 | 660.3 | 576.5 | 83.79 | 7.880 | | |
| 7,500.0 | 5,753.2 | 7,706.9 | 5,753.0 | 44.3 | 42.9 | 89.99 | -2,176.4 | -117.7 | 660.2 | 572.8 | 87.41 | 7.553 | | |
| 7,600.0 | 5,753.2 | 7,806.9 | 5,753.0 | 46.1 | 44.8 | 89.99 | -2,276.4 | -117.7 | 660.2 | 569.2 | 91.05 | 7.251 | | |
| 7,700.0 | 5,753.2 | 7,906.9 | 5,753.0 | 47.9 | 46.6 | 89.99 | -2,376.4 | -117.7 | 660.2 | 565.5 | 94.71 | 6.971 | | |
| 7,800.0 | 5,753.2 | 8,006.9 | 5,753.0 | 49.6 | 48.5 | 89.99 | -2,476.4 | -117.7 | 660.2 | 561.8 | 98.39 | 6.710 | | |
| 7,900.0 | 5,753.2 | 8,106.9 | 5,753.0 | 51.4 | 50.3 | 89.99 | -2,576.4 | -117.7 | 660.2 | 558.1 | 102.07 | 6.468 | | |
| 8,000.0 | 5,753.2 | 8,206.9 | 5,753.0 | 53.2 | 52.2 | 89.99 | -2,676.4 | -117.7 | 660.2 | 554.4 | 105.77 | 6.242 | | |
| 8,100.0 | 5,753.1 | 8,306.9 | 5,753.0 | 55.0 | 54.1 | 89.99 | -2,776.4 | -117.7 | 660.2 | 550.7 | 109.48 | 6.030 | | |
| 8,200.0 | 5,753.1 | 8,406.9 | 5,753.0 | 56.9 | 55.9 | 89.99 | -2,876.4 | -117.7 | 660.2 | 547.0 | 113.19 | 5.832 | | |
| 8,300.0 | 5,753.1 | 8,506.9 | 5,753.0 | 58.7 | 57.8 | 89.99 | -2,976.4 | -117.7 | 660.2 | 543.3 | 116.92 | 5.646 | | |
| 8,400.0 | 5,753.1 | 8,606.9 | 5,753.0 | 60.5 | 59.7 | 89.99 | -3,076.4 | -117.7 | 660.2 | 539.5 | 120.65 | 5.472 | | |
| 8,500.0 | 5,753.1 | 8,706.9 | 5,753.0 | 62.3 | 61.6 | 89.99 | -3,176.4 | -117.7 | 660.2 | 535.8 | 124.39 | 5.307 | | |
| 8,600.0 | 5,753.1 | 8,806.9 | 5,753.0 | 64.2 | 63.4 | 89.99 | -3,276.4 | -117.7 | 660.2 | 532.0 | 128.14 | 5.152 | | |
| 8,700.0 | 5,753.1 | 8,906.9 | 5,753.0 | 66.0 | 65.3 | 89.99 | -3,376.4 | -117.7 | 660.2 | 528.3 | 131.89 | 5.005 | | |
| 8,800.0 | 5,753.1 | 9,006.9 | 5,753.0 | 67.9 | 67.2 | 89.99 | -3,476.4 | -117.7 | 660.1 | 524.5 | 135.64 | 4.867 | | |
| 8,900.0 | 5,753.1 | 9,106.9 | 5,753.0 | 69.7 | 69.1 | 89.99 | -3,576.4 | -117.7 | 660.1 | 520.7 | 139.40 | 4.735 | | |
| 9,000.0 | 5,753.1 | 9,206.9 | 5,753.0 | 71.6 | 71.0 | 89.99 | -3,676.4 | -117.7 | 660.1 | 517.0 | 143.17 | 4.611 | | |
| 9,100.0 | 5,753.1 | 9,306.9 | 5,753.0 | 73.4 | 72.9 | 89.99 | -3,776.4 | -117.7 | 660.1 | 513.2 | 146.94 | 4.493 | | |
| 9,200.0 | 5,753.1 | 9,406.9 | 5,753.0 | 75.3 | 74.8 | 89.99 | -3,876.4 | -117.7 | 660.1 | 509.4 | 150.71 | 4.380 | | |

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Cathedral Energy Services

Anticollision Report

| | | | |
|---------------------------|-------------------------------|-------------------------------------|----------------------------------------|
| Company: | Whiting Petroleum Corporation | Local Co-ordinate Reference: | Well Razor #27J-3412B |
| Project: | Weld County, CO | TVD Reference: | WELL @ 4780.5usft (Original Well Elev) |
| Reference Site: | S27-T10N-R58W | MD Reference: | WELL @ 4780.5usft (Original Well Elev) |
| Site Error: | 0.0usft | North Reference: | True |
| Reference Well: | Razor #27J-3412B | Survey Calculation Method: | Minimum Curvature |
| Well Error: | 0.0usft | Output errors are at | 2.00 sigma |
| Reference Wellbore | HZ | Database: | USA EDM 5000 Multi Users DB |
| Reference Design: | Plan #3 | Offset TVD Reference: | Offset Datum |

| Offset Design S27-T10N-R58W - Razor #27J-3410B - HZ - Plan #3 | | | | | | | | | | | | Offset Site Error: | 0.0 usft |
|---------------------------------------------------------------|-----------------------|-----------------------|-----------------------|------------------|---------------|-----------------------|-------------------------------------|--------------|------------------------|-------------------------|------------------------|--------------------|----------|
| Survey Program: 0-ISCWSA MWD | | | | | | | | | | | | Offset Well Error: | 0.0 usft |
| Reference | | Offset | | Semi Major Axis | | Distance | | | | | | | |
| Measured Depth (usft) | Vertical Depth (usft) | Measured Depth (usft) | Vertical Depth (usft) | Reference (usft) | Offset (usft) | Highside Toolface (°) | Offset Wellbore Centre +N/-S (usft) | +E/-W (usft) | Between Centres (usft) | Between Ellipses (usft) | Total Uncertainty Axis | Separation Factor | Warning |
| 9,300.0 | 5,753.1 | 9,506.9 | 5,753.0 | 77.2 | 76.7 | 89.99 | -3,976.4 | -117.7 | 660.1 | 505.6 | 154.48 | 4.273 | |
| 9,400.0 | 5,753.1 | 9,606.9 | 5,753.0 | 79.0 | 78.6 | 89.99 | -4,076.4 | -117.7 | 660.1 | 501.8 | 158.26 | 4.171 | |
| 9,500.0 | 5,753.1 | 9,706.9 | 5,753.0 | 80.9 | 80.4 | 89.99 | -4,176.4 | -117.7 | 660.1 | 498.0 | 162.05 | 4.073 | |
| 9,600.0 | 5,753.1 | 9,806.9 | 5,753.0 | 82.8 | 82.3 | 89.99 | -4,276.4 | -117.7 | 660.1 | 494.3 | 165.83 | 3.980 | |
| 9,700.0 | 5,753.1 | 9,906.9 | 5,753.0 | 84.6 | 84.2 | 89.99 | -4,376.4 | -117.7 | 660.1 | 490.5 | 169.62 | 3.892 | |
| 9,800.0 | 5,753.1 | 10,006.9 | 5,753.0 | 86.5 | 86.1 | 89.99 | -4,476.4 | -117.7 | 660.1 | 486.7 | 173.41 | 3.806 | |
| 9,900.0 | 5,753.1 | 10,106.9 | 5,753.0 | 88.4 | 88.0 | 89.99 | -4,576.4 | -117.7 | 660.1 | 482.9 | 177.20 | 3.725 | |
| 10,000.0 | 5,753.1 | 10,206.9 | 5,753.0 | 90.3 | 89.9 | 89.99 | -4,676.4 | -117.7 | 660.1 | 479.1 | 181.00 | 3.647 | |
| 10,100.0 | 5,753.1 | 10,306.9 | 5,753.0 | 92.1 | 91.8 | 89.99 | -4,776.4 | -117.7 | 660.0 | 475.3 | 184.79 | 3.572 | |
| 10,200.0 | 5,753.1 | 10,406.9 | 5,753.0 | 94.0 | 93.8 | 89.99 | -4,876.4 | -117.7 | 660.0 | 471.4 | 188.59 | 3.500 | |
| 10,300.0 | 5,753.1 | 10,506.9 | 5,753.0 | 95.9 | 95.7 | 89.99 | -4,976.4 | -117.7 | 660.0 | 467.6 | 192.39 | 3.431 | |
| 10,400.0 | 5,753.1 | 10,606.9 | 5,753.0 | 97.8 | 97.6 | 89.99 | -5,076.4 | -117.7 | 660.0 | 463.8 | 196.19 | 3.364 | |
| 10,500.0 | 5,753.1 | 10,706.9 | 5,753.0 | 99.7 | 99.5 | 89.99 | -5,176.4 | -117.7 | 660.0 | 460.0 | 200.00 | 3.300 | |
| 10,600.0 | 5,753.1 | 10,806.9 | 5,753.0 | 101.6 | 101.4 | 89.99 | -5,276.4 | -117.7 | 660.0 | 456.2 | 203.80 | 3.238 | |
| 10,700.0 | 5,753.1 | 10,906.9 | 5,753.0 | 103.5 | 103.3 | 90.00 | -5,376.4 | -117.7 | 660.0 | 452.4 | 207.61 | 3.179 | |
| 10,800.0 | 5,753.1 | 11,006.9 | 5,753.0 | 105.4 | 105.2 | 90.00 | -5,476.4 | -117.7 | 660.0 | 448.6 | 211.41 | 3.122 | |
| 10,900.0 | 5,753.0 | 11,106.9 | 5,753.0 | 107.3 | 107.1 | 90.00 | -5,576.4 | -117.7 | 660.0 | 444.8 | 215.22 | 3.067 | |
| 11,000.0 | 5,753.0 | 11,206.9 | 5,753.0 | 109.1 | 109.0 | 90.00 | -5,676.4 | -117.7 | 660.0 | 440.9 | 219.03 | 3.013 | |
| 11,100.0 | 5,753.0 | 11,306.9 | 5,753.0 | 111.0 | 110.9 | 90.00 | -5,776.4 | -117.7 | 660.0 | 437.1 | 222.84 | 2.962 | |
| 11,200.0 | 5,753.0 | 11,406.9 | 5,753.0 | 112.9 | 112.8 | 90.00 | -5,876.4 | -117.7 | 660.0 | 433.3 | 226.65 | 2.912 | |
| 11,300.0 | 5,753.0 | 11,506.9 | 5,753.0 | 114.8 | 114.7 | 90.00 | -5,976.4 | -117.7 | 660.0 | 429.5 | 230.47 | 2.864 | |
| 11,400.0 | 5,753.0 | 11,606.9 | 5,753.0 | 116.7 | 116.6 | 90.00 | -6,076.4 | -117.7 | 659.9 | 425.7 | 234.28 | 2.817 | |
| 11,500.0 | 5,753.0 | 11,706.9 | 5,753.0 | 118.6 | 118.5 | 90.00 | -6,176.4 | -117.7 | 659.9 | 421.8 | 238.10 | 2.772 | |
| 11,600.0 | 5,753.0 | 11,806.9 | 5,753.0 | 120.5 | 120.5 | 90.00 | -6,276.4 | -117.7 | 659.9 | 418.0 | 241.91 | 2.728 | |
| 11,700.0 | 5,753.0 | 11,906.9 | 5,753.0 | 122.4 | 122.4 | 90.00 | -6,376.4 | -117.7 | 659.9 | 414.2 | 245.73 | 2.686 | |
| 11,800.0 | 5,753.0 | 12,006.9 | 5,753.0 | 124.3 | 124.3 | 90.00 | -6,476.4 | -117.7 | 659.9 | 410.4 | 249.55 | 2.644 | |
| 11,900.0 | 5,753.0 | 12,106.9 | 5,753.0 | 126.2 | 126.2 | 90.00 | -6,576.4 | -117.7 | 659.9 | 406.5 | 253.36 | 2.605 | |
| 12,000.0 | 5,753.0 | 12,206.9 | 5,753.0 | 128.1 | 128.1 | 90.00 | -6,676.4 | -117.7 | 659.9 | 402.7 | 257.18 | 2.566 | |
| 12,100.0 | 5,753.0 | 12,306.9 | 5,753.0 | 130.0 | 130.0 | 90.00 | -6,776.4 | -117.7 | 659.9 | 398.9 | 261.00 | 2.528 | |
| 12,200.0 | 5,753.0 | 12,406.9 | 5,753.0 | 131.9 | 131.9 | 90.00 | -6,876.4 | -117.7 | 659.9 | 395.1 | 264.82 | 2.492 | |
| 12,277.3 | 5,753.0 | 12,484.2 | 5,753.0 | 133.1 | 133.4 | 90.00 | -6,953.7 | -117.7 | 659.9 | 392.4 | 267.51 | 2.467 | |
| 12,277.6 | 5,753.0 | 12,484.5 | 5,753.0 | 133.1 | 133.4 | 90.00 | -6,954.1 | -117.7 | 659.9 | 392.4 | 267.52 | 2.467 SF | |

Cathedral Energy Services

Anticollision Report

| | | | |
|---------------------------|-------------------------------|-------------------------------------|----------------------------------------|
| Company: | Whiting Petroleum Corporation | Local Co-ordinate Reference: | Well Razor #27J-3412B |
| Project: | Weld County, CO | TVD Reference: | WELL @ 4780.5usft (Original Well Elev) |
| Reference Site: | S27-T10N-R58W | MD Reference: | WELL @ 4780.5usft (Original Well Elev) |
| Site Error: | 0.0usft | North Reference: | True |
| Reference Well: | Razor #27J-3412B | Survey Calculation Method: | Minimum Curvature |
| Well Error: | 0.0usft | Output errors are at | 2.00 sigma |
| Reference Wellbore | HZ | Database: | USA EDM 5000 Multi Users DB |
| Reference Design: | Plan #3 | Offset TVD Reference: | Offset Datum |

| Offset Design S27-T10N-R58W - Razor #27J-3411A - HZ - Plan #3 | | | | | | | | | | | | | Offset Site Error: 0.0 usft | |
|---------------------------------------------------------------|-----------------------|-----------------------|-----------------------|------------------|---------------|-----------------------|-------------------------------------|--------------|------------------------|-------------------------|------------------------|-------------------|-----------------------------|---------|
| Survey Program: 0-ISCSA MWD | | | | | | | | | | | | | Offset Well Error: 0.0 usft | |
| Reference | | Offset | | Semi Major Axis | | | Distance | | | | | | | Warning |
| Measured Depth (usft) | Vertical Depth (usft) | Measured Depth (usft) | Vertical Depth (usft) | Reference (usft) | Offset (usft) | Highside Toolface (°) | Offset Wellbore Centre +N/-S (usft) | +E/-W (usft) | Between Centres (usft) | Between Ellipses (usft) | Total Uncertainty Axis | Separation Factor | | |
| 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | -23.70 | 75.1 | -32.9 | 82.0 | | | | | |
| 100.0 | 100.0 | 103.0 | 103.0 | 0.1 | 0.1 | -23.70 | 75.1 | -32.9 | 82.0 | 81.8 | 0.19 | 421.583 | | |
| 200.0 | 200.0 | 203.0 | 203.0 | 0.3 | 0.3 | -23.70 | 75.1 | -32.9 | 82.0 | 81.3 | 0.64 | 127.284 | | |
| 300.0 | 300.0 | 303.0 | 303.0 | 0.5 | 0.6 | -23.70 | 75.1 | -32.9 | 82.0 | 80.9 | 1.09 | 74.958 | | |
| 400.0 | 400.0 | 403.0 | 403.0 | 0.8 | 0.8 | -23.70 | 75.1 | -32.9 | 82.0 | 80.4 | 1.54 | 53.120 | | |
| 500.0 | 500.0 | 503.1 | 503.1 | 1.0 | 1.0 | -23.70 | 75.1 | -32.9 | 82.0 | 80.0 | 1.99 | 41.147 | | |
| 600.0 | 600.0 | 606.0 | 606.0 | 1.2 | 1.2 | -178.48 | 73.1 | -32.5 | 81.8 | 79.4 | 2.40 | 34.168 | | |
| 686.3 | 686.2 | 694.8 | 694.7 | 1.4 | 1.4 | -179.17 | 68.6 | -31.4 | 81.7 | 79.0 | 2.72 | 30.052 | | |
| 700.0 | 699.8 | 708.6 | 708.4 | 1.4 | 1.4 | -179.31 | 67.7 | -31.2 | 81.7 | 78.9 | 2.77 | 29.497 CC | | |
| 800.0 | 799.6 | 808.6 | 808.2 | 1.6 | 1.6 | 179.66 | 60.9 | -29.6 | 81.8 | 78.7 | 3.16 | 25.881 | | |
| 900.0 | 899.4 | 908.6 | 907.9 | 1.8 | 1.8 | 178.63 | 54.1 | -28.0 | 82.0 | 78.4 | 3.57 | 22.961 | | |
| 1,000.0 | 999.1 | 1,008.6 | 1,007.7 | 2.1 | 2.1 | 177.61 | 47.3 | -26.4 | 82.2 | 78.2 | 3.99 | 20.587 | | |
| 1,100.0 | 1,098.9 | 1,108.6 | 1,107.4 | 2.3 | 2.3 | 176.59 | 40.5 | -24.8 | 82.5 | 78.0 | 4.43 | 18.634 | | |
| 1,200.0 | 1,198.6 | 1,208.6 | 1,207.2 | 2.5 | 2.6 | 175.58 | 33.7 | -23.2 | 82.7 | 77.9 | 4.86 | 17.009 | | |
| 1,300.0 | 1,298.4 | 1,308.5 | 1,306.9 | 2.8 | 2.8 | 174.58 | 27.0 | -21.5 | 83.0 | 77.7 | 5.31 | 15.641 | | |
| 1,400.0 | 1,398.1 | 1,408.5 | 1,406.6 | 3.0 | 3.1 | 173.58 | 20.2 | -19.9 | 83.3 | 77.5 | 5.75 | 14.476 | | |
| 1,500.0 | 1,497.9 | 1,508.5 | 1,506.4 | 3.3 | 3.3 | 172.59 | 13.4 | -18.3 | 83.6 | 77.4 | 6.21 | 13.475 | | |
| 1,600.0 | 1,597.6 | 1,608.5 | 1,606.1 | 3.5 | 3.6 | 171.61 | 6.6 | -16.7 | 84.0 | 77.3 | 6.66 | 12.607 | | |
| 1,700.0 | 1,697.4 | 1,708.5 | 1,705.9 | 3.8 | 3.8 | 170.64 | -0.2 | -15.1 | 84.4 | 77.3 | 7.12 | 11.848 | | |
| 1,800.0 | 1,797.2 | 1,808.5 | 1,805.6 | 4.1 | 4.1 | 169.68 | -7.0 | -13.5 | 84.8 | 77.2 | 7.58 | 11.179 | | |
| 1,900.0 | 1,896.9 | 1,908.5 | 1,905.4 | 4.3 | 4.3 | 168.72 | -13.8 | -11.9 | 85.2 | 77.2 | 8.05 | 10.587 | | |
| 2,000.0 | 1,996.7 | 2,008.5 | 2,005.1 | 4.6 | 4.6 | 167.78 | -20.6 | -10.3 | 85.7 | 77.1 | 8.52 | 10.059 | | |
| 2,100.0 | 2,096.4 | 2,108.5 | 2,104.9 | 4.8 | 4.9 | 166.84 | -27.3 | -8.7 | 86.1 | 77.2 | 8.99 | 9.586 | | |
| 2,200.0 | 2,196.2 | 2,208.4 | 2,204.6 | 5.1 | 5.1 | 165.92 | -34.1 | -7.1 | 86.6 | 77.2 | 9.46 | 9.159 | | |
| 2,300.0 | 2,295.9 | 2,308.4 | 2,304.4 | 5.4 | 5.4 | 165.01 | -40.9 | -5.5 | 87.2 | 77.2 | 9.93 | 8.774 | | |
| 2,400.0 | 2,395.7 | 2,408.4 | 2,404.1 | 5.6 | 5.6 | 164.11 | -47.7 | -3.9 | 87.7 | 77.3 | 10.41 | 8.423 | | |
| 2,500.0 | 2,495.5 | 2,508.4 | 2,503.8 | 5.9 | 5.9 | 163.22 | -54.5 | -2.2 | 88.3 | 77.4 | 10.89 | 8.104 | | |
| 2,600.0 | 2,595.2 | 2,608.4 | 2,603.6 | 6.1 | 6.2 | 162.34 | -61.3 | -0.6 | 88.8 | 77.5 | 11.37 | 7.812 | | |
| 2,700.0 | 2,695.0 | 2,708.4 | 2,703.3 | 6.4 | 6.4 | 161.47 | -68.1 | 1.0 | 89.5 | 77.6 | 11.86 | 7.544 | | |
| 2,800.0 | 2,794.7 | 2,808.4 | 2,803.1 | 6.7 | 6.7 | 160.61 | -74.8 | 2.6 | 90.1 | 77.7 | 12.34 | 7.298 | | |
| 2,900.0 | 2,894.5 | 2,908.4 | 2,902.8 | 6.9 | 6.9 | 159.77 | -81.6 | 4.2 | 90.7 | 77.9 | 12.83 | 7.071 | | |
| 3,000.0 | 2,994.2 | 3,008.4 | 3,002.6 | 7.2 | 7.2 | 158.94 | -88.4 | 5.8 | 91.4 | 78.1 | 13.32 | 6.860 | | |
| 3,100.0 | 3,094.0 | 3,108.3 | 3,102.3 | 7.5 | 7.5 | 158.12 | -95.2 | 7.4 | 92.1 | 78.3 | 13.81 | 6.665 | | |
| 3,200.0 | 3,193.7 | 3,208.3 | 3,202.1 | 7.7 | 7.7 | 157.31 | -102.0 | 9.0 | 92.8 | 78.5 | 14.31 | 6.484 | | |
| 3,300.0 | 3,293.5 | 3,308.3 | 3,301.8 | 8.0 | 8.0 | 156.52 | -108.8 | 10.6 | 93.5 | 78.7 | 14.80 | 6.315 | | |
| 3,400.0 | 3,393.3 | 3,408.3 | 3,401.6 | 8.2 | 8.3 | 155.74 | -115.6 | 12.2 | 94.2 | 78.9 | 15.30 | 6.158 | | |
| 3,500.0 | 3,493.0 | 3,508.3 | 3,501.3 | 8.5 | 8.5 | 154.97 | -122.4 | 13.8 | 95.0 | 79.2 | 15.80 | 6.011 | | |
| 3,600.0 | 3,592.8 | 3,608.3 | 3,601.0 | 8.8 | 8.8 | 154.21 | -129.1 | 15.4 | 95.8 | 79.5 | 16.30 | 5.874 | | |
| 3,700.0 | 3,692.5 | 3,708.3 | 3,700.8 | 9.0 | 9.1 | 153.46 | -135.9 | 17.0 | 96.6 | 79.7 | 16.81 | 5.745 | | |
| 3,800.0 | 3,792.3 | 3,808.3 | 3,800.5 | 9.3 | 9.3 | 152.73 | -142.7 | 18.7 | 97.4 | 80.0 | 17.31 | 5.624 | | |
| 3,900.0 | 3,892.0 | 3,908.3 | 3,900.3 | 9.6 | 9.6 | 152.01 | -149.5 | 20.3 | 98.2 | 80.4 | 17.82 | 5.510 | | |
| 4,000.0 | 3,991.8 | 4,008.2 | 4,000.0 | 9.8 | 9.8 | 151.30 | -156.3 | 21.9 | 99.0 | 80.7 | 18.33 | 5.403 | | |
| 4,100.0 | 4,091.6 | 4,108.2 | 4,099.8 | 10.1 | 10.1 | 150.60 | -163.1 | 23.5 | 99.9 | 81.0 | 18.84 | 5.302 | | |
| 4,200.0 | 4,191.3 | 4,208.2 | 4,199.5 | 10.4 | 10.4 | 149.92 | -169.9 | 25.1 | 100.7 | 81.4 | 19.35 | 5.207 | | |
| 4,300.0 | 4,291.1 | 4,308.2 | 4,299.3 | 10.6 | 10.6 | 149.25 | -176.7 | 26.7 | 101.6 | 81.7 | 19.86 | 5.117 | | |
| 4,400.0 | 4,390.8 | 4,408.2 | 4,399.0 | 10.9 | 10.9 | 148.58 | -183.4 | 28.3 | 102.5 | 82.1 | 20.37 | 5.032 | | |
| 4,500.0 | 4,490.6 | 4,508.2 | 4,498.8 | 11.1 | 11.2 | 147.93 | -190.2 | 29.9 | 103.4 | 82.5 | 20.89 | 4.951 | | |
| 4,600.0 | 4,590.3 | 4,608.2 | 4,598.5 | 11.4 | 11.4 | 147.30 | -197.0 | 31.5 | 104.3 | 82.9 | 21.40 | 4.875 | | |
| 4,700.0 | 4,690.1 | 4,708.2 | 4,698.2 | 11.7 | 11.7 | 146.67 | -203.8 | 33.1 | 105.3 | 83.3 | 21.92 | 4.802 | | |
| 4,800.0 | 4,789.9 | 4,808.2 | 4,798.0 | 11.9 | 12.0 | 146.05 | -210.6 | 34.7 | 106.2 | 83.8 | 22.44 | 4.733 | | |
| 4,900.0 | 4,889.6 | 4,908.1 | 4,897.7 | 12.2 | 12.2 | 145.45 | -217.4 | 36.3 | 107.2 | 84.2 | 22.96 | 4.668 | | |
| 5,000.0 | 4,989.4 | 5,008.1 | 4,997.5 | 12.5 | 12.5 | 144.85 | -224.2 | 38.0 | 108.1 | 84.7 | 23.48 | 4.606 | | |

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Cathedral Energy Services

Anticollision Report

| | | | |
|---------------------------|-------------------------------|-------------------------------------|----------------------------------------|
| Company: | Whiting Petroleum Corporation | Local Co-ordinate Reference: | Well Razor #27J-3412B |
| Project: | Weld County, CO | TVD Reference: | WELL @ 4780.5usft (Original Well Elev) |
| Reference Site: | S27-T10N-R58W | MD Reference: | WELL @ 4780.5usft (Original Well Elev) |
| Site Error: | 0.0usft | North Reference: | True |
| Reference Well: | Razor #27J-3412B | Survey Calculation Method: | Minimum Curvature |
| Well Error: | 0.0usft | Output errors are at | 2.00 sigma |
| Reference Wellbore | HZ | Database: | USA EDM 5000 Multi Users DB |
| Reference Design: | Plan #3 | Offset TVD Reference: | Offset Datum |

| Offset Design S27-T10N-R58W - Razor #27J-3411A - HZ - Plan #3 | | | | | | | | | | | | | Offset Site Error: 0.0 usft | |
|---------------------------------------------------------------|-----------------------|-----------------------|-----------------------|------------------|---------------|-----------------------|-------------------------------------|--------------|------------------------|-------------------------|------------------------|-------------------|-----------------------------|---------|
| Survey Program: 0-ISCSWA MWD | | | | | | | | | | | | | Offset Well Error: 0.0 usft | |
| Reference | | Offset | | Semi Major Axis | | | Distance | | | | | | | Warning |
| Measured Depth (usft) | Vertical Depth (usft) | Measured Depth (usft) | Vertical Depth (usft) | Reference (usft) | Offset (usft) | Highside Toolface (°) | Offset Wellbore Centre +N/-S (usft) | +E/-W (usft) | Between Centres (usft) | Between Ellipses (usft) | Total Uncertainty Axis | Separation Factor | | |
| 5,100.0 | 5,089.1 | 5,108.1 | 5,097.2 | 12.7 | 12.7 | 144.27 | -230.9 | 39.6 | 109.1 | 85.1 | 24.00 | 4.547 | | |
| 5,200.0 | 5,188.9 | 5,210.4 | 5,199.2 | 13.0 | 13.0 | 143.58 | -238.1 | 41.3 | 110.0 | 85.4 | 24.53 | 4.482 | | |
| 5,280.0 | 5,268.7 | 5,301.8 | 5,288.9 | 13.2 | 13.4 | 138.54 | -254.8 | 45.2 | 104.7 | 79.4 | 25.29 | 4.142 | | |
| 5,300.0 | 5,288.6 | 5,324.0 | 5,310.1 | 13.3 | 13.5 | 136.35 | -261.2 | 46.7 | 102.6 | 77.0 | 25.53 | 4.018 | | |
| 5,350.0 | 5,338.0 | 5,378.4 | 5,360.7 | 13.4 | 13.8 | 130.31 | -280.4 | 51.3 | 98.1 | 72.0 | 26.16 | 3.752 | | |
| 5,400.0 | 5,386.4 | 5,431.3 | 5,407.8 | 13.7 | 14.1 | 123.42 | -303.9 | 56.9 | 95.5 | 68.6 | 26.90 | 3.551 | | |
| 5,434.7 | 5,419.2 | 5,467.3 | 5,438.3 | 13.8 | 14.4 | 118.27 | -322.5 | 61.3 | 94.9 | 67.5 | 27.49 | 3.453 | | |
| 5,450.0 | 5,433.4 | 5,482.9 | 5,451.1 | 13.9 | 14.5 | 115.94 | -331.2 | 63.3 | 95.1 | 67.3 | 27.77 | 3.423 ES | | |
| 5,500.0 | 5,478.5 | 5,533.2 | 5,490.4 | 14.2 | 14.9 | 108.30 | -361.7 | 70.5 | 97.0 | 68.3 | 28.76 | 3.373 | | |
| 5,550.0 | 5,521.3 | 5,582.3 | 5,525.7 | 14.6 | 15.4 | 100.92 | -394.8 | 78.4 | 101.4 | 71.6 | 29.79 | 3.403 | | |
| 5,600.0 | 5,561.6 | 5,630.2 | 5,556.9 | 15.0 | 15.9 | 94.14 | -430.2 | 86.8 | 107.9 | 77.1 | 30.78 | 3.505 | | |
| 5,650.0 | 5,598.7 | 5,677.0 | 5,584.0 | 15.5 | 16.4 | 88.13 | -467.3 | 95.6 | 116.2 | 84.5 | 31.70 | 3.667 | | |
| 5,700.0 | 5,632.5 | 5,722.8 | 5,607.2 | 16.0 | 17.0 | 82.95 | -505.8 | 104.7 | 126.0 | 93.5 | 32.53 | 3.873 | | |
| 5,750.0 | 5,662.6 | 5,767.8 | 5,626.4 | 16.6 | 17.6 | 78.55 | -545.3 | 114.0 | 136.8 | 103.5 | 33.29 | 4.110 | | |
| 5,800.0 | 5,688.8 | 5,812.0 | 5,641.9 | 17.2 | 18.2 | 74.85 | -585.6 | 123.6 | 148.4 | 114.4 | 34.01 | 4.363 | | |
| 5,850.0 | 5,710.7 | 5,855.5 | 5,653.6 | 17.9 | 18.8 | 71.75 | -626.3 | 133.2 | 160.4 | 125.7 | 34.72 | 4.619 | | |
| 5,900.0 | 5,728.3 | 5,900.0 | 5,661.9 | 18.6 | 19.5 | 69.12 | -668.9 | 143.3 | 172.6 | 137.1 | 35.47 | 4.865 | | |
| 5,950.0 | 5,741.3 | 5,940.7 | 5,666.2 | 19.3 | 20.1 | 67.01 | -708.2 | 152.6 | 184.8 | 148.6 | 36.25 | 5.099 | | |
| 6,000.0 | 5,749.5 | 5,983.0 | 5,667.4 | 20.1 | 20.8 | 65.23 | -749.4 | 162.4 | 196.9 | 159.8 | 37.15 | 5.302 | | |
| 6,050.0 | 5,753.1 | 6,027.4 | 5,667.4 | 20.9 | 21.4 | 64.46 | -792.7 | 172.0 | 208.4 | 170.1 | 38.31 | 5.439 | | |
| 6,061.8 | 5,753.2 | 6,037.8 | 5,667.4 | 21.1 | 21.6 | 64.47 | -803.0 | 174.1 | 210.9 | 172.3 | 38.64 | 5.458 | | |
| 6,100.0 | 5,753.2 | 6,071.5 | 5,667.4 | 21.7 | 22.0 | 65.49 | -836.0 | 180.5 | 219.1 | 179.1 | 39.97 | 5.482 | | |
| 6,200.0 | 5,753.2 | 6,159.1 | 5,667.4 | 23.2 | 23.3 | 67.80 | -922.5 | 194.4 | 240.4 | 197.1 | 43.27 | 5.556 | | |
| 6,300.0 | 5,753.2 | 6,245.9 | 5,667.4 | 24.7 | 24.5 | 69.68 | -1,008.7 | 204.2 | 261.4 | 214.9 | 46.50 | 5.622 | | |
| 6,400.0 | 5,753.2 | 6,331.9 | 5,667.4 | 26.3 | 25.8 | 71.24 | -1,094.5 | 210.2 | 282.0 | 232.3 | 49.64 | 5.681 | | |
| 6,500.0 | 5,753.2 | 6,417.2 | 5,667.4 | 27.9 | 27.1 | 72.55 | -1,179.8 | 212.2 | 302.0 | 249.3 | 52.66 | 5.735 | | |
| 6,600.0 | 5,753.2 | 6,515.1 | 5,667.4 | 29.5 | 28.7 | 73.67 | -1,277.7 | 212.2 | 319.5 | 263.6 | 55.84 | 5.721 | | |
| 6,700.0 | 5,753.2 | 6,614.2 | 5,667.4 | 31.1 | 30.4 | 74.40 | -1,376.8 | 212.2 | 332.0 | 273.1 | 58.90 | 5.637 | | |
| 6,800.0 | 5,753.2 | 6,713.9 | 5,667.4 | 32.6 | 32.1 | 74.82 | -1,476.5 | 212.2 | 339.6 | 277.8 | 61.77 | 5.498 | | |
| 6,900.3 | 5,753.2 | 6,814.2 | 5,667.4 | 34.2 | 33.9 | 74.95 | -1,576.7 | 212.2 | 342.1 | 277.7 | 64.43 | 5.310 | | |
| 7,000.0 | 5,753.2 | 6,913.9 | 5,667.4 | 35.8 | 35.6 | 74.95 | -1,676.4 | 212.2 | 342.1 | 274.3 | 67.79 | 5.047 | | |
| 7,100.0 | 5,753.2 | 7,013.9 | 5,667.4 | 37.5 | 37.4 | 74.95 | -1,776.4 | 212.2 | 342.1 | 270.9 | 71.21 | 4.804 | | |
| 7,200.0 | 5,753.2 | 7,113.9 | 5,667.4 | 39.2 | 39.2 | 74.95 | -1,876.4 | 212.2 | 342.1 | 267.4 | 74.67 | 4.582 | | |
| 7,300.0 | 5,753.2 | 7,213.9 | 5,667.3 | 40.9 | 41.0 | 74.95 | -1,976.4 | 212.2 | 342.1 | 263.9 | 78.15 | 4.378 | | |
| 7,400.0 | 5,753.2 | 7,313.9 | 5,667.3 | 42.6 | 42.8 | 74.95 | -2,076.4 | 212.2 | 342.1 | 260.4 | 81.65 | 4.190 | | |
| 7,500.0 | 5,753.2 | 7,413.9 | 5,667.3 | 44.3 | 44.6 | 74.95 | -2,176.4 | 212.2 | 342.1 | 256.9 | 85.17 | 4.016 | | |
| 7,600.0 | 5,753.2 | 7,513.9 | 5,667.3 | 46.1 | 46.5 | 74.95 | -2,276.4 | 212.2 | 342.1 | 253.4 | 88.71 | 3.856 | | |
| 7,700.0 | 5,753.2 | 7,613.9 | 5,667.3 | 47.9 | 48.3 | 74.95 | -2,376.4 | 212.2 | 342.1 | 249.8 | 92.27 | 3.707 | | |
| 7,800.0 | 5,753.2 | 7,713.9 | 5,667.3 | 49.6 | 50.2 | 74.94 | -2,476.4 | 212.2 | 342.0 | 246.2 | 95.83 | 3.569 | | |
| 7,900.0 | 5,753.2 | 7,813.9 | 5,667.3 | 51.4 | 52.0 | 74.94 | -2,576.4 | 212.2 | 342.0 | 242.6 | 99.41 | 3.441 | | |
| 8,000.0 | 5,753.2 | 7,913.9 | 5,667.3 | 53.2 | 53.9 | 74.94 | -2,676.4 | 212.2 | 342.0 | 239.0 | 103.00 | 3.321 | | |
| 8,100.0 | 5,753.1 | 8,013.9 | 5,667.3 | 55.0 | 55.7 | 74.94 | -2,776.4 | 212.2 | 342.0 | 235.4 | 106.60 | 3.208 | | |
| 8,200.0 | 5,753.1 | 8,113.9 | 5,667.3 | 56.9 | 57.6 | 74.94 | -2,876.4 | 212.3 | 342.0 | 231.8 | 110.21 | 3.103 | | |
| 8,300.0 | 5,753.1 | 8,213.9 | 5,667.3 | 58.7 | 59.5 | 74.94 | -2,976.4 | 212.3 | 342.0 | 228.2 | 113.83 | 3.005 | | |
| 8,400.0 | 5,753.1 | 8,313.9 | 5,667.3 | 60.5 | 61.3 | 74.94 | -3,076.4 | 212.3 | 342.0 | 224.5 | 117.45 | 2.912 | | |
| 8,500.0 | 5,753.1 | 8,413.9 | 5,667.3 | 62.3 | 63.2 | 74.94 | -3,176.4 | 212.3 | 342.0 | 220.9 | 121.08 | 2.824 | | |
| 8,600.0 | 5,753.1 | 8,513.9 | 5,667.3 | 64.2 | 65.1 | 74.94 | -3,276.4 | 212.3 | 342.0 | 217.3 | 124.71 | 2.742 | | |
| 8,700.0 | 5,753.1 | 8,613.9 | 5,667.2 | 66.0 | 67.0 | 74.93 | -3,376.4 | 212.3 | 342.0 | 213.6 | 128.35 | 2.664 | | |
| 8,800.0 | 5,753.1 | 8,713.9 | 5,667.2 | 67.9 | 68.8 | 74.93 | -3,476.4 | 212.3 | 341.9 | 209.9 | 132.00 | 2.591 | | |
| 8,900.0 | 5,753.1 | 8,813.9 | 5,667.2 | 69.7 | 70.7 | 74.93 | -3,576.4 | 212.3 | 341.9 | 206.3 | 135.65 | 2.521 | | |
| 9,000.0 | 5,753.1 | 8,913.9 | 5,667.2 | 71.6 | 72.6 | 74.93 | -3,676.4 | 212.3 | 341.9 | 202.6 | 139.30 | 2.455 | | |
| 9,100.0 | 5,753.1 | 9,013.9 | 5,667.2 | 73.4 | 74.5 | 74.93 | -3,776.4 | 212.3 | 341.9 | 199.0 | 142.96 | 2.392 | | |

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Cathedral Energy Services

Anticollision Report

| | | | |
|---------------------------|-------------------------------|-------------------------------------|----------------------------------------|
| Company: | Whiting Petroleum Corporation | Local Co-ordinate Reference: | Well Razor #27J-3412B |
| Project: | Weld County, CO | TVD Reference: | WELL @ 4780.5usft (Original Well Elev) |
| Reference Site: | S27-T10N-R58W | MD Reference: | WELL @ 4780.5usft (Original Well Elev) |
| Site Error: | 0.0usft | North Reference: | True |
| Reference Well: | Razor #27J-3412B | Survey Calculation Method: | Minimum Curvature |
| Well Error: | 0.0usft | Output errors are at | 2.00 sigma |
| Reference Wellbore | HZ | Database: | USA EDM 5000 Multi Users DB |
| Reference Design: | Plan #3 | Offset TVD Reference: | Offset Datum |

| Offset Design S27-T10N-R58W - Razor #27J-3411A - HZ - Plan #3 | | | | | | | | | | | | Offset Site Error: | 0.0 usft |
|---------------------------------------------------------------|-----------------------|-----------------------|-----------------------|------------------|---------------|-----------------------|-------------------------------------|--------------|------------------------|-------------------------|------------------------|--------------------|-------------|
| Survey Program: 0-ISCWSA MWD | | | | | | | | | | | | Offset Well Error: | 0.0 usft |
| Reference | | Offset | | Semi Major Axis | | Distance | | | | | | | |
| Measured Depth (usft) | Vertical Depth (usft) | Measured Depth (usft) | Vertical Depth (usft) | Reference (usft) | Offset (usft) | Highside Toolface (°) | Offset Wellbore Centre +N/-S (usft) | +E/-W (usft) | Between Centres (usft) | Between Ellipses (usft) | Total Uncertainty Axis | Separation Factor | Warning |
| 9,200.0 | 5,753.1 | 9,113.9 | 5,667.2 | 75.3 | 76.4 | 74.93 | -3,876.4 | 212.3 | 341.9 | 195.3 | 146.62 | 2.332 | |
| 9,300.0 | 5,753.1 | 9,213.9 | 5,667.2 | 77.2 | 78.3 | 74.93 | -3,976.4 | 212.3 | 341.9 | 191.6 | 150.29 | 2.275 | |
| 9,400.0 | 5,753.1 | 9,313.9 | 5,667.2 | 79.0 | 80.2 | 74.93 | -4,076.4 | 212.3 | 341.9 | 187.9 | 153.96 | 2.221 | |
| 9,500.0 | 5,753.1 | 9,413.9 | 5,667.2 | 80.9 | 82.1 | 74.93 | -4,176.4 | 212.3 | 341.9 | 184.2 | 157.63 | 2.169 | |
| 9,600.0 | 5,753.1 | 9,513.9 | 5,667.2 | 82.8 | 84.0 | 74.93 | -4,276.4 | 212.3 | 341.9 | 180.6 | 161.30 | 2.119 | |
| 9,700.0 | 5,753.1 | 9,613.9 | 5,667.2 | 84.6 | 85.9 | 74.92 | -4,376.4 | 212.3 | 341.9 | 176.9 | 164.98 | 2.072 | |
| 9,800.0 | 5,753.1 | 9,713.9 | 5,667.2 | 86.5 | 87.7 | 74.92 | -4,476.4 | 212.3 | 341.8 | 173.2 | 168.65 | 2.027 | |
| 9,900.0 | 5,753.1 | 9,813.9 | 5,667.2 | 88.4 | 89.6 | 74.92 | -4,576.4 | 212.3 | 341.8 | 169.5 | 172.33 | 1.984 | |
| 10,000.0 | 5,753.1 | 9,913.9 | 5,667.2 | 90.3 | 91.5 | 74.92 | -4,676.4 | 212.3 | 341.8 | 165.8 | 176.02 | 1.942 | |
| 10,100.0 | 5,753.1 | 10,013.9 | 5,667.2 | 92.1 | 93.4 | 74.92 | -4,776.4 | 212.3 | 341.8 | 162.1 | 179.70 | 1.902 | |
| 10,200.0 | 5,753.1 | 10,113.9 | 5,667.1 | 94.0 | 95.3 | 74.92 | -4,876.4 | 212.3 | 341.8 | 158.4 | 183.39 | 1.864 | |
| 10,300.0 | 5,753.1 | 10,213.9 | 5,667.1 | 95.9 | 97.2 | 74.92 | -4,976.4 | 212.3 | 341.8 | 154.7 | 187.07 | 1.827 | |
| 10,400.0 | 5,753.1 | 10,313.9 | 5,667.1 | 97.8 | 99.2 | 74.92 | -5,076.4 | 212.3 | 341.8 | 151.0 | 190.76 | 1.792 | |
| 10,500.0 | 5,753.1 | 10,413.9 | 5,667.1 | 99.7 | 101.1 | 74.92 | -5,176.4 | 212.3 | 341.8 | 147.3 | 194.45 | 1.758 | |
| 10,600.0 | 5,753.1 | 10,513.9 | 5,667.1 | 101.6 | 103.0 | 74.92 | -5,276.4 | 212.3 | 341.8 | 143.6 | 198.14 | 1.725 | |
| 10,700.0 | 5,753.1 | 10,613.9 | 5,667.1 | 103.5 | 104.9 | 74.91 | -5,376.4 | 212.3 | 341.8 | 139.9 | 201.84 | 1.693 | |
| 10,800.0 | 5,753.1 | 10,713.9 | 5,667.1 | 105.4 | 106.8 | 74.91 | -5,476.4 | 212.3 | 341.7 | 136.2 | 205.53 | 1.663 | |
| 10,900.0 | 5,753.0 | 10,813.9 | 5,667.1 | 107.3 | 108.7 | 74.91 | -5,576.4 | 212.3 | 341.7 | 132.5 | 209.23 | 1.633 | |
| 11,000.0 | 5,753.0 | 10,913.9 | 5,667.1 | 109.1 | 110.6 | 74.91 | -5,676.4 | 212.3 | 341.7 | 128.8 | 212.92 | 1.605 | |
| 11,100.0 | 5,753.0 | 11,013.9 | 5,667.1 | 111.0 | 112.5 | 74.91 | -5,776.4 | 212.4 | 341.7 | 125.1 | 216.62 | 1.577 | |
| 11,200.0 | 5,753.0 | 11,113.9 | 5,667.1 | 112.9 | 114.4 | 74.91 | -5,876.4 | 212.4 | 341.7 | 121.4 | 220.32 | 1.551 | |
| 11,300.0 | 5,753.0 | 11,213.9 | 5,667.1 | 114.8 | 116.3 | 74.91 | -5,976.4 | 212.4 | 341.7 | 117.7 | 224.02 | 1.525 | |
| 11,400.0 | 5,753.0 | 11,313.9 | 5,667.1 | 116.7 | 118.2 | 74.91 | -6,076.4 | 212.4 | 341.7 | 114.0 | 227.72 | 1.500 | |
| 11,500.0 | 5,753.0 | 11,413.9 | 5,667.1 | 118.6 | 120.1 | 74.91 | -6,176.4 | 212.4 | 341.7 | 110.3 | 231.42 | 1.476 | Level 3 |
| 11,600.0 | 5,753.0 | 11,513.9 | 5,667.0 | 120.5 | 122.0 | 74.90 | -6,276.4 | 212.4 | 341.7 | 106.5 | 235.12 | 1.453 | Level 3 |
| 11,700.0 | 5,753.0 | 11,613.9 | 5,667.0 | 122.4 | 123.9 | 74.90 | -6,376.4 | 212.4 | 341.7 | 102.8 | 238.83 | 1.431 | Level 3 |
| 11,800.0 | 5,753.0 | 11,713.9 | 5,667.0 | 124.3 | 125.8 | 74.90 | -6,476.4 | 212.4 | 341.6 | 99.1 | 242.53 | 1.409 | Level 3 |
| 11,900.0 | 5,753.0 | 11,813.9 | 5,667.0 | 126.2 | 127.8 | 74.90 | -6,576.4 | 212.4 | 341.6 | 95.4 | 246.23 | 1.387 | Level 3 |
| 12,000.0 | 5,753.0 | 11,913.9 | 5,667.0 | 128.1 | 129.7 | 74.90 | -6,676.4 | 212.4 | 341.6 | 91.7 | 249.94 | 1.367 | Level 3 |
| 12,100.0 | 5,753.0 | 12,013.9 | 5,667.0 | 130.0 | 131.6 | 74.90 | -6,776.4 | 212.4 | 341.6 | 88.0 | 253.64 | 1.347 | Level 3 |
| 12,200.0 | 5,753.0 | 12,113.9 | 5,667.0 | 131.9 | 133.4 | 74.90 | -6,876.4 | 212.4 | 341.6 | 84.3 | 257.30 | 1.328 | Level 3 |
| 12,277.3 | 5,753.0 | 12,191.2 | 5,667.0 | 133.1 | 134.6 | 74.90 | -6,953.7 | 212.4 | 341.6 | 82.0 | 259.63 | 1.316 | Level 3 |
| 12,277.6 | 5,753.0 | 12,191.5 | 5,667.0 | 133.1 | 134.6 | 74.90 | -6,954.1 | 212.4 | 341.6 | 82.0 | 259.64 | 1.316 | Level 3, SF |

Cathedral Energy Services

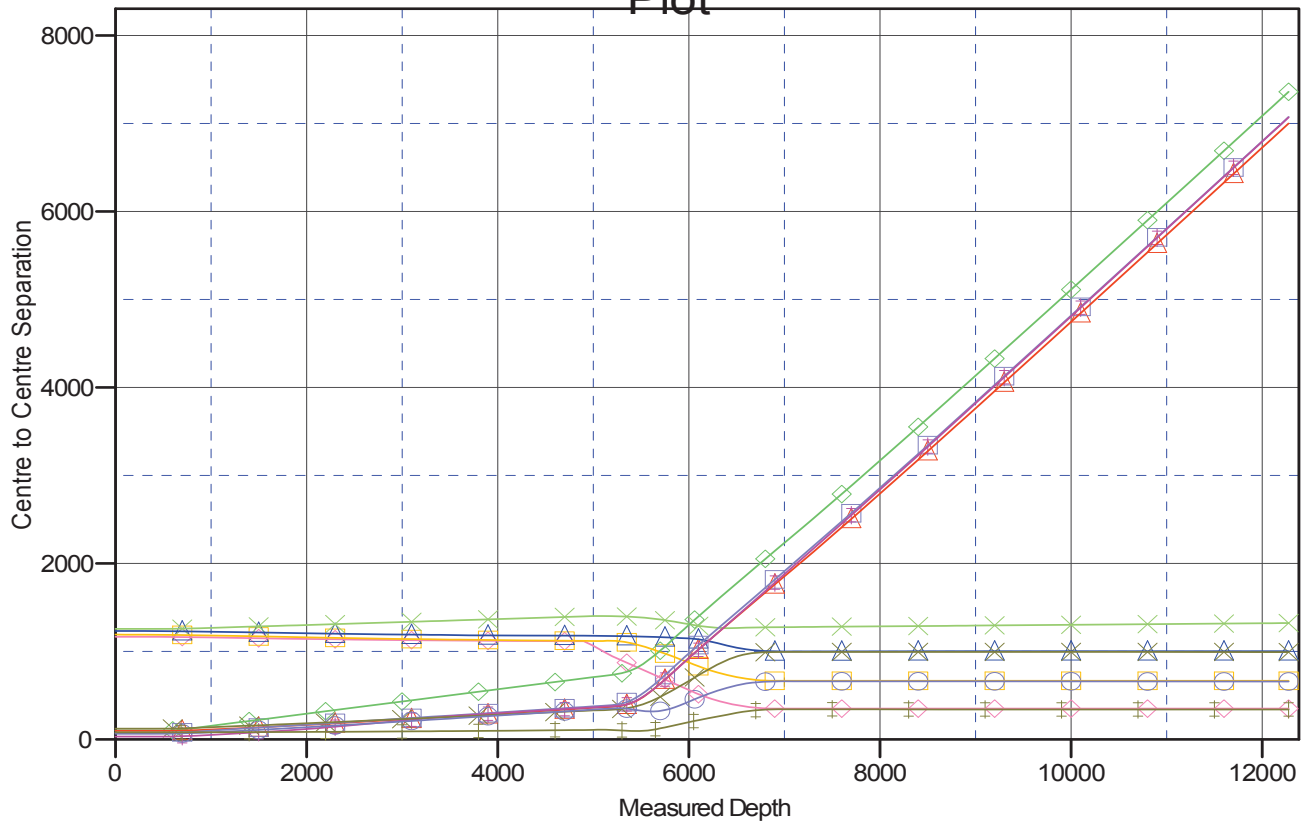
Anticollision Report

| | | | |
|---------------------------|-------------------------------|-------------------------------------|----------------------------------------|
| Company: | Whiting Petroleum Corporation | Local Co-ordinate Reference: | Well Razor #27J-3412B |
| Project: | Weld County, CO | TVD Reference: | WELL @ 4780.5usft (Original Well Elev) |
| Reference Site: | S27-T10N-R58W | MD Reference: | WELL @ 4780.5usft (Original Well Elev) |
| Site Error: | 0.0usft | North Reference: | True |
| Reference Well: | Razor #27J-3412B | Survey Calculation Method: | Minimum Curvature |
| Well Error: | 0.0usft | Output errors are at | 2.00 sigma |
| Reference Wellbore | HZ | Database: | USA EDM 5000 Multi Users DB |
| Reference Design: | Plan #3 | Offset TVD Reference: | Offset Datum |

Reference Depths are relative to WELL @ 4780.5usft (Original Well Elev)
Offset Depths are relative to Offset Datum
Central Meridian is 105° 30' 0.00 W °

Coordinates are relative to: Razor #27J-3412B
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 1.07°

Ladder Plot



LEGEND

- Razor #27I-3413A, HZ, Plan #1 V0
- Razor #27J-2209A, HZ, Plan #2 V0
- Razor #27J-3409A, HZ, Plan #3 V0
- Razor #27I-3414B, HZ, Plan #1 V0
- Razor #27J-2210B, HZ, Plan #2 V0
- Razor #27J-3410B, HZ, Plan #3 V0
- Razor #27I-3415A, HZ, Plan #1 V0
- Razor #27J-2211A, HZ, Plan #2 V0
- Razor #27J-3411A, HZ, Plan #3 V0
- Razor #27I-3416B, HZ, Plan #2 V0
- Razor #27J-2212B, HZ, Plan #2 V0