

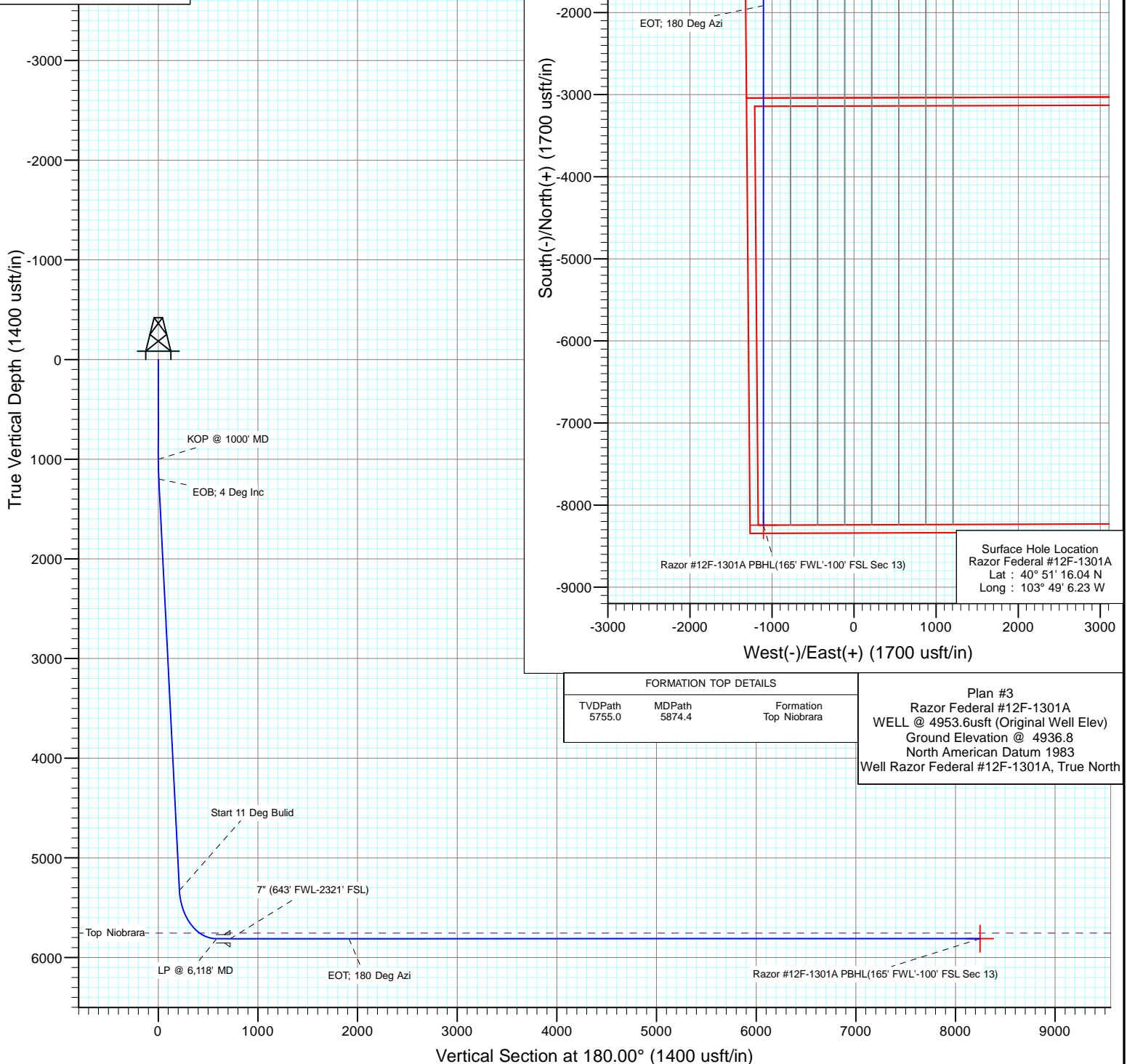
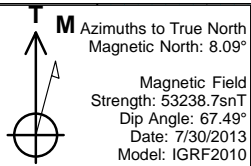


Project: Weld County, CO  
Site: S12-T10N-R58W  
Well: Razor Federal #12F-1301A  
Wellbore: HZ  
Design: Plan #3



#### SECTION DETAILS

| Sec     | MD    | Inc        | Azi     | TVD     | +N/-S | +E/-W | Dleg  | TFace     | VSec | Annotation           |
|---------|-------|------------|---------|---------|-------|-------|-------|-----------|------|----------------------|
| 1       | 0.0   | 0.00       | 0.00    | 0.0     | 0.0   | 0.0   | 0.00  | 0.000.0   |      | KOP @ 1000' MD       |
| 1020.0  | 0.00  | 0.0000.0   | 0.0     | 0.0     | 0.0   | 0.0   | 0.00  | 0.000.0   |      | EOB; 4 Deg Inc       |
| 1280.0  | 4.00  | 224.0699.8 | -5.0    | -4.9    |       |       | 2.00  | 224.065.0 |      | Start 11 Deg Build   |
| 537.0   | 4.00  | 224.0626.8 | -212.4  | -205.5  |       |       | 0.00  | 0.002.4   |      | LP @ 6,118' MD       |
| 6158.8  | 90.00 | 224.0611.3 | -585.8  | -566.9  |       |       | 11.00 | 0.005.8   |      | EOT; 180 Deg Azi     |
| 7587.6  | 90.00 | 180.0611.3 | -1914.0 | -1104.3 |       |       | 3.00  | -90.004.0 |      | PBHL @ 13,919.83' MD |
| 13979.8 | 90.00 | 180.0611.0 | -8246.3 | -1103.9 |       |       | 0.00  | 0.006.3   |      |                      |



# Cathedral Energy Services

## Planning Report

|                  |                               |                                     |  |
|------------------|-------------------------------|-------------------------------------|--|
| <b>Database:</b> | USA EDM 5000 Multi Users DB   | <b>Local Co-ordinate Reference:</b> | Well Razor Federal #12F-1301A          |
| <b>Company:</b>  | Whiting Petroleum Corporation | <b>TVD Reference:</b>               | WELL @ 4953.6usft (Original Well Elev) |
| <b>Project:</b>  | Weld County, CO               | <b>MD Reference:</b>                | WELL @ 4953.6usft (Original Well Elev) |
| <b>Site:</b>     | S12-T10N-R58W                 | <b>North Reference:</b>             | True                                   |
| <b>Well:</b>     | Razor Federal #12F-1301A      | <b>Survey Calculation Method:</b>   | Minimum Curvature                      |
| <b>Wellbore:</b> | HZ                            |                                     |  |
| <b>Design:</b>   | Plan #3                       |                                     |  |

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

|                       |          |               |                   |                   |                 |
|-----------------------|----------|---------------|-------------------|-------------------|-----------------|
| Site                  |          | S12-T10N-R58W |                   |                   |                 |
| Site Position:        |          | Northing:     | 1,558,537.97 usft | Latitude:         | 40° 51' 16.04 N |
| From:                 | Lat/Long | Easting:      | 3,465,176.15 usft | Longitude:        | 103° 49' 6.23 W |
| Position Uncertainty: | 0.0 usft | Slot Radius:  | 13-3/16"          | Grid Convergence: | 1.09 °          |

| Well                 | Razor Federal #12F-1301A |          |                     |                   |               |                 |
|----------------------|--------------------------|----------|---------------------|-------------------|---------------|-----------------|
| Well Position        | +N/-S                    | 0.0 usft | Northing:           | 1,558,537.96 usft | Latitude:     | 40° 51' 16.04 N |
|                      | +E/-W                    | 0.0 usft | Easting:            | 3,465,176.15 usft | Longitude:    | 103° 49' 6.23 W |
| Position Uncertainty |                          | 0.0 usft | Wellhead Elevation: | usft              | Ground Level: | 4,936.8 usft    |

|                  |                   |                    |                        |                      |                            |
|------------------|-------------------|--------------------|------------------------|----------------------|----------------------------|
| <b>Wellbore</b>  | HZ                |                    |                        |                      |                            |
| <b>Magnetics</b> | <b>Model Name</b> | <b>Sample Date</b> | <b>Declination (°)</b> | <b>Dip Angle (°)</b> | <b>Field Strength (nT)</b> |
|                  | IGRF2010          | 7/30/2013          | 8.09                   | 67.49                | 53,239                     |

|                          |                                |                     |                      |                      |  |
|--------------------------|--------------------------------|---------------------|----------------------|----------------------|--|
| <b>Design</b>            | Plan #3                        |                     |                      |                      |  |
| <b>Audit Notes:</b>      |                                |                     |                      |                      |  |
| <b>Version:</b>          | <b>Phase:</b>                  | PLAN                | <b>Tie On Depth:</b> | 0.0                  |  |
| <b>Vertical Section:</b> | <b>Depth From (TVD) (usft)</b> | <b>+N/-S (usft)</b> | <b>+E/-W (usft)</b>  | <b>Direction (°)</b> |  |
|                          | 0.0                            | 0.0                 | 0.0                  | 180.00               |  |

| <b>Plan Sections</b>  |                 |             |                       |              |              |                         |                        |                       |         |                     |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|------------------------|-----------------------|---------|---------------------|
| 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    |                     |
| 1,000.0               | 0.00            | 0.00        | 1,000.0               | 0.0          | 0.0          | 0.00                    | 0.00                   | 0.00                  | 0.00    |                     |
| 1,200.0               | 4.00            | 224.06      | 1,199.8               | -5.0         | -4.9         | 2.00                    | 2.00                   | 0.00                  | 224.06  |                     |
| 5,337.0               | 4.00            | 224.06      | 5,326.8               | -212.4       | -205.5       | 0.00                    | 0.00                   | 0.00                  | 0.00    |                     |
| 6,118.8               | 90.00           | 224.06      | 5,811.3               | -585.8       | -566.9       | 11.00                   | 11.00                  | 0.00                  | 0.00    |                     |
| 7,587.6               | 90.00           | 180.00      | 5,811.3               | -1,914.0     | -1,104.3     | 3.00                    | 0.00                   | -3.00                 | -90.00  |                     |
| 13,919.8              | 90.00           | 180.00      | 5,811.0               | -8,246.3     | -1,103.9     | 0.00                    | 0.00                   | 0.00                  | 0.00    | Razor #12F-1301A Pf |

# Cathedral Energy Services

## Planning Report

|                  |                               |                                     |  |
|------------------|-------------------------------|-------------------------------------|--|
| <b>Database:</b> | USA EDM 5000 Multi Users DB   | <b>Local Co-ordinate Reference:</b> | Well Razor Federal #12F-1301A          |
| <b>Company:</b>  | Whiting Petroleum Corporation | <b>TVD Reference:</b>               | WELL @ 4953.6usft (Original Well Elev) |
| <b>Project:</b>  | Weld County, CO               | <b>MD Reference:</b>                | WELL @ 4953.6usft (Original Well Elev) |
| <b>Site:</b>     | S12-T10N-R58W                 | <b>North Reference:</b>             | True                                   |
| <b>Well:</b>     | Razor Federal #12F-1301A      | <b>Survey Calculation Method:</b>   | Minimum Curvature                      |
| <b>Wellbore:</b> | HZ                            |                                     |  |
| <b>Design:</b>   | 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                |                       |
| 600.0                 | 0.00            | 0.00        | 600.0                 | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                |                       |
| 700.0                 | 0.00            | 0.00        | 700.0                 | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                |                       |
| 800.0                 | 0.00            | 0.00        | 800.0                 | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                |                       |
| 900.0                 | 0.00            | 0.00        | 900.0                 | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                |                       |
| 1,000.0               | 0.00            | 0.00        | 1,000.0               | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                | KOP @ 1000' MD        |
| 1,100.0               | 2.00            | 224.06      | 1,100.0               | -1.3         | -1.2         | 1.3                     | 2.00                    | 2.00                |                       |
| 1,200.0               | 4.00            | 224.06      | 1,199.8               | -5.0         | -4.9         | 5.0                     | 2.00                    | 2.00                | EOB; 4 Deg Inc        |
| 1,300.0               | 4.00            | 224.06      | 1,299.6               | -10.0        | -9.7         | 10.0                    | 0.00                    | 0.00                |                       |
| 1,400.0               | 4.00            | 224.06      | 1,399.4               | -15.0        | -14.6        | 15.0                    | 0.00                    | 0.00                |                       |
| 1,500.0               | 4.00            | 224.06      | 1,499.1               | -20.1        | -19.4        | 20.1                    | 0.00                    | 0.00                |                       |
| 1,600.0               | 4.00            | 224.06      | 1,598.9               | -25.1        | -24.3        | 25.1                    | 0.00                    | 0.00                |                       |
| 1,700.0               | 4.00            | 224.06      | 1,698.6               | -30.1        | -29.1        | 30.1                    | 0.00                    | 0.00                |                       |
| 1,800.0               | 4.00            | 224.06      | 1,798.4               | -35.1        | -34.0        | 35.1                    | 0.00                    | 0.00                |                       |
| 1,900.0               | 4.00            | 224.06      | 1,898.1               | -40.1        | -38.8        | 40.1                    | 0.00                    | 0.00                |                       |
| 2,000.0               | 4.00            | 224.06      | 1,997.9               | -45.1        | -43.7        | 45.1                    | 0.00                    | 0.00                |                       |
| 2,100.0               | 4.00            | 224.06      | 2,097.6               | -50.1        | -48.5        | 50.1                    | 0.00                    | 0.00                |                       |
| 2,200.0               | 4.00            | 224.06      | 2,197.4               | -55.1        | -53.4        | 55.1                    | 0.00                    | 0.00                |                       |
| 2,300.0               | 4.00            | 224.06      | 2,297.2               | -60.2        | -58.2        | 60.2                    | 0.00                    | 0.00                |                       |
| 2,400.0               | 4.00            | 224.06      | 2,396.9               | -65.2        | -63.1        | 65.2                    | 0.00                    | 0.00                |                       |
| 2,500.0               | 4.00            | 224.06      | 2,496.7               | -70.2        | -67.9        | 70.2                    | 0.00                    | 0.00                |                       |
| 2,600.0               | 4.00            | 224.06      | 2,596.4               | -75.2        | -72.8        | 75.2                    | 0.00                    | 0.00                |                       |
| 2,700.0               | 4.00            | 224.06      | 2,696.2               | -80.2        | -77.6        | 80.2                    | 0.00                    | 0.00                |                       |
| 2,800.0               | 4.00            | 224.06      | 2,795.9               | -85.2        | -82.5        | 85.2                    | 0.00                    | 0.00                |                       |
| 2,900.0               | 4.00            | 224.06      | 2,895.7               | -90.2        | -87.3        | 90.2                    | 0.00                    | 0.00                |                       |
| 3,000.0               | 4.00            | 224.06      | 2,995.5               | -95.2        | -92.2        | 95.2                    | 0.00                    | 0.00                |                       |
| 3,100.0               | 4.00            | 224.06      | 3,095.2               | -100.3       | -97.0        | 100.3                   | 0.00                    | 0.00                |                       |
| 3,200.0               | 4.00            | 224.06      | 3,195.0               | -105.3       | -101.9       | 105.3                   | 0.00                    | 0.00                |                       |
| 3,300.0               | 4.00            | 224.06      | 3,294.7               | -110.3       | -106.7       | 110.3                   | 0.00                    | 0.00                |                       |
| 3,400.0               | 4.00            | 224.06      | 3,394.5               | -115.3       | -111.6       | 115.3                   | 0.00                    | 0.00                |                       |
| 3,500.0               | 4.00            | 224.06      | 3,494.2               | -120.3       | -116.4       | 120.3                   | 0.00                    | 0.00                |                       |
| 3,600.0               | 4.00            | 224.06      | 3,594.0               | -125.3       | -121.3       | 125.3                   | 0.00                    | 0.00                |                       |
| 3,700.0               | 4.00            | 224.06      | 3,693.7               | -130.3       | -126.1       | 130.3                   | 0.00                    | 0.00                |                       |
| 3,800.0               | 4.00            | 224.06      | 3,793.5               | -135.3       | -131.0       | 135.3                   | 0.00                    | 0.00                |                       |
| 3,900.0               | 4.00            | 224.06      | 3,893.3               | -140.4       | -135.8       | 140.4                   | 0.00                    | 0.00                |                       |
| 4,000.0               | 4.00            | 224.06      | 3,993.0               | -145.4       | -140.7       | 145.4                   | 0.00                    | 0.00                |                       |
| 4,100.0               | 4.00            | 224.06      | 4,092.8               | -150.4       | -145.5       | 150.4                   | 0.00                    | 0.00                |                       |
| 4,200.0               | 4.00            | 224.06      | 4,192.5               | -155.4       | -150.4       | 155.4                   | 0.00                    | 0.00                |                       |
| 4,300.0               | 4.00            | 224.06      | 4,292.3               | -160.4       | -155.2       | 160.4                   | 0.00                    | 0.00                |                       |
| 4,400.0               | 4.00            | 224.06      | 4,392.0               | -165.4       | -160.1       | 165.4                   | 0.00                    | 0.00                |                       |
| 4,500.0               | 4.00            | 224.06      | 4,491.8               | -170.4       | -164.9       | 170.4                   | 0.00                    | 0.00                |                       |
| 4,600.0               | 4.00            | 224.06      | 4,591.6               | -175.4       | -169.8       | 175.4                   | 0.00                    | 0.00                |                       |
| 4,700.0               | 4.00            | 224.06      | 4,691.3               | -180.5       | -174.6       | 180.5                   | 0.00                    | 0.00                |                       |
| 4,800.0               | 4.00            | 224.06      | 4,791.1               | -185.5       | -179.5       | 185.5                   | 0.00                    | 0.00                |                       |
| 4,900.0               | 4.00            | 224.06      | 4,890.8               | -190.5       | -184.3       | 190.5                   | 0.00                    | 0.00                |                       |
| 5,000.0               | 4.00            | 224.06      | 4,990.6               | -195.5       | -189.2       | 195.5                   | 0.00                    | 0.00                |                       |
| 5,100.0               | 4.00            | 224.06      | 5,090.3               | -200.5       | -194.0       | 200.5                   | 0.00                    | 0.00                |                       |

# Cathedral Energy Services

## Planning Report

|                  |                               |                                     |  |
|------------------|-------------------------------|-------------------------------------|--|
| <b>Database:</b> | USA EDM 5000 Multi Users DB   | <b>Local Co-ordinate Reference:</b> | Well Razor Federal #12F-1301A          |
| <b>Company:</b>  | Whiting Petroleum Corporation | <b>TVD Reference:</b>               | WELL @ 4953.6usft (Original Well Elev) |
| <b>Project:</b>  | Weld County, CO               | <b>MD Reference:</b>                | WELL @ 4953.6usft (Original Well Elev) |
| <b>Site:</b>     | S12-T10N-R58W                 | <b>North Reference:</b>             | True                                   |
| <b>Well:</b>     | Razor Federal #12F-1301A      | <b>Survey Calculation Method:</b>   | Minimum Curvature                      |
| <b>Wellbore:</b> | HZ                            |                                     |  |
| <b>Design:</b>   | 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            | 224.06      | 5,190.1               | -205.5       | -198.9       | 205.5                   | 0.00                    | 0.00                |                         |
| 5,300.0               | 4.00            | 224.06      | 5,289.9               | -210.5       | -203.7       | 210.5                   | 0.00                    | 0.00                |                         |
| 5,337.0               | 4.00            | 224.06      | 5,326.8               | -212.4       | -205.5       | 212.4                   | 0.00                    | 0.00                | Start 11 Deg Build      |
| 5,400.0               | 10.93           | 224.06      | 5,389.2               | -218.3       | -211.2       | 218.3                   | 11.00                   | 11.00               |                         |
| 5,500.0               | 21.93           | 224.06      | 5,485.0               | -238.6       | -230.9       | 238.6                   | 11.00                   | 11.00               |                         |
| 5,600.0               | 32.93           | 224.06      | 5,573.6               | -271.6       | -262.9       | 271.6                   | 11.00                   | 11.00               |                         |
| 5,700.0               | 43.93           | 224.06      | 5,651.8               | -316.2       | -306.0       | 316.2                   | 11.00                   | 11.00               |                         |
| 5,800.0               | 54.93           | 224.06      | 5,716.7               | -370.7       | -358.8       | 370.7                   | 11.00                   | 11.00               |                         |
| 5,874.4               | 63.11           | 224.06      | 5,755.0               | -416.5       | -403.1       | 416.5                   | 11.00                   | 11.00               | Top Niobrara            |
| 5,900.0               | 65.93           | 224.06      | 5,766.0               | -433.1       | -419.1       | 433.1                   | 11.00                   | 11.00               |                         |
| 6,000.0               | 76.93           | 224.06      | 5,797.8               | -501.1       | -485.0       | 501.1                   | 11.00                   | 11.00               |                         |
| 6,100.0               | 87.93           | 224.06      | 5,811.0               | -572.3       | -553.8       | 572.3                   | 11.00                   | 11.00               |                         |
| 6,118.8               | 90.00           | 224.06      | 5,811.3               | -585.8       | -566.9       | 585.8                   | 11.00                   | 11.00               | LP @ 6,118' MD          |
| 6,200.0               | 90.00           | 221.62      | 5,811.3               | -645.3       | -622.1       | 645.3                   | 3.00                    | 0.00                |                         |
| 6,300.0               | 90.00           | 218.62      | 5,811.3               | -721.8       | -686.5       | 721.8                   | 3.00                    | 0.00                | 7" (643' FWL-2321' FSL) |
| 6,400.0               | 90.00           | 215.62      | 5,811.3               | -801.5       | -746.9       | 801.5                   | 3.00                    | 0.00                |                         |
| 6,500.0               | 90.00           | 212.62      | 5,811.3               | -884.3       | -803.0       | 884.3                   | 3.00                    | 0.00                |                         |
| 6,600.0               | 90.00           | 209.62      | 5,811.3               | -969.9       | -854.6       | 969.9                   | 3.00                    | 0.00                |                         |
| 6,700.0               | 90.00           | 206.62      | 5,811.3               | -1,058.0     | -901.8       | 1,058.0                 | 3.00                    | 0.00                |                         |
| 6,800.0               | 90.00           | 203.62      | 5,811.3               | -1,148.6     | -944.2       | 1,148.6                 | 3.00                    | 0.00                |                         |
| 6,900.0               | 90.00           | 200.62      | 5,811.3               | -1,241.2     | -981.9       | 1,241.2                 | 3.00                    | 0.00                |                         |
| 7,000.0               | 90.00           | 197.62      | 5,811.3               | -1,335.7     | -1,014.6     | 1,335.7                 | 3.00                    | 0.00                |                         |
| 7,100.0               | 90.00           | 194.62      | 5,811.3               | -1,431.7     | -1,042.4     | 1,431.7                 | 3.00                    | 0.00                |                         |
| 7,200.0               | 90.00           | 191.62      | 5,811.3               | -1,529.1     | -1,065.1     | 1,529.1                 | 3.00                    | 0.00                |                         |
| 7,300.0               | 90.00           | 188.62      | 5,811.3               | -1,627.5     | -1,082.7     | 1,627.5                 | 3.00                    | 0.00                |                         |
| 7,400.0               | 90.00           | 185.62      | 5,811.3               | -1,726.7     | -1,095.1     | 1,726.7                 | 3.00                    | 0.00                |                         |
| 7,500.0               | 90.00           | 182.62      | 5,811.3               | -1,826.5     | -1,102.3     | 1,826.5                 | 3.00                    | 0.00                |                         |
| 7,587.6               | 90.00           | 180.00      | 5,811.3               | -1,914.0     | -1,104.3     | 1,914.0                 | 3.00                    | 0.00                | EOT; 180 Deg Azi        |
| 7,600.0               | 90.00           | 180.00      | 5,811.3               | -1,926.4     | -1,104.3     | 1,926.4                 | 0.00                    | 0.00                |                         |
| 7,700.0               | 90.00           | 180.00      | 5,811.3               | -2,026.4     | -1,104.3     | 2,026.4                 | 0.00                    | 0.00                |                         |
| 7,800.0               | 90.00           | 180.00      | 5,811.3               | -2,126.4     | -1,104.3     | 2,126.4                 | 0.00                    | 0.00                |                         |
| 7,900.0               | 90.00           | 180.00      | 5,811.2               | -2,226.4     | -1,104.3     | 2,226.4                 | 0.00                    | 0.00                |                         |
| 8,000.0               | 90.00           | 180.00      | 5,811.2               | -2,326.4     | -1,104.3     | 2,326.4                 | 0.00                    | 0.00                |                         |
| 8,100.0               | 90.00           | 180.00      | 5,811.2               | -2,426.4     | -1,104.2     | 2,426.4                 | 0.00                    | 0.00                |                         |
| 8,200.0               | 90.00           | 180.00      | 5,811.2               | -2,526.4     | -1,104.2     | 2,526.4                 | 0.00                    | 0.00                |                         |
| 8,300.0               | 90.00           | 180.00      | 5,811.2               | -2,626.4     | -1,104.2     | 2,626.4                 | 0.00                    | 0.00                |                         |
| 8,400.0               | 90.00           | 180.00      | 5,811.2               | -2,726.4     | -1,104.2     | 2,726.4                 | 0.00                    | 0.00                |                         |
| 8,500.0               | 90.00           | 180.00      | 5,811.2               | -2,826.4     | -1,104.2     | 2,826.4                 | 0.00                    | 0.00                |                         |
| 8,600.0               | 90.00           | 180.00      | 5,811.2               | -2,926.4     | -1,104.2     | 2,926.4                 | 0.00                    | 0.00                |                         |
| 8,700.0               | 90.00           | 180.00      | 5,811.2               | -3,026.4     | -1,104.2     | 3,026.4                 | 0.00                    | 0.00                |                         |
| 8,800.0               | 90.00           | 180.00      | 5,811.2               | -3,126.4     | -1,104.2     | 3,126.4                 | 0.00                    | 0.00                |                         |
| 8,900.0               | 90.00           | 180.00      | 5,811.2               | -3,226.4     | -1,104.2     | 3,226.4                 | 0.00                    | 0.00                |                         |
| 9,000.0               | 90.00           | 180.00      | 5,811.2               | -3,326.4     | -1,104.2     | 3,326.4                 | 0.00                    | 0.00                |                         |
| 9,100.0               | 90.00           | 180.00      | 5,811.2               | -3,426.4     | -1,104.2     | 3,426.4                 | 0.00                    | 0.00                |                         |
| 9,200.0               | 90.00           | 180.00      | 5,811.2               | -3,526.4     | -1,104.2     | 3,526.4                 | 0.00                    | 0.00                |                         |
| 9,300.0               | 90.00           | 180.00      | 5,811.2               | -3,626.4     | -1,104.2     | 3,626.4                 | 0.00                    | 0.00                |                         |
| 9,400.0               | 90.00           | 180.00      | 5,811.2               | -3,726.4     | -1,104.2     | 3,726.4                 | 0.00                    | 0.00                |                         |
| 9,500.0               | 90.00           | 180.00      | 5,811.2               | -3,826.4     | -1,104.2     | 3,826.4                 | 0.00                    | 0.00                |                         |
| 9,600.0               | 90.00           | 180.00      | 5,811.2               | -3,926.4     | -1,104.2     | 3,926.4                 | 0.00                    | 0.00                |                         |
| 9,700.0               | 90.00           | 180.00      | 5,811.2               | -4,026.4     | -1,104.1     | 4,026.4                 | 0.00                    | 0.00                |                         |
| 9,800.0               | 90.00           | 180.00      | 5,811.2               | -4,126.4     | -1,104.1     | 4,126.4                 | 0.00                    | 0.00                |                         |
| 9,900.0               | 90.00           | 180.00      | 5,811.2               | -4,226.4     | -1,104.1     | 4,226.4                 | 0.00                    | 0.00                |                         |

# Cathedral Energy Services

## Planning Report

|                  |                               |                                     |  |
|------------------|-------------------------------|-------------------------------------|--|
| <b>Database:</b> | USA EDM 5000 Multi Users DB   | <b>Local Co-ordinate Reference:</b> | Well Razor Federal #12F-1301A          |
| <b>Company:</b>  | Whiting Petroleum Corporation | <b>TVD Reference:</b>               | WELL @ 4953.6usft (Original Well Elev) |
| <b>Project:</b>  | Weld County, CO               | <b>MD Reference:</b>                | WELL @ 4953.6usft (Original Well Elev) |
| <b>Site:</b>     | S12-T10N-R58W                 | <b>North Reference:</b>             | True                                   |
| <b>Well:</b>     | Razor Federal #12F-1301A      | <b>Survey Calculation Method:</b>   | Minimum Curvature                      |
| <b>Wellbore:</b> | HZ                            |                                     |  |
| <b>Design:</b>   | 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 |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|---------------------|-----------------------|
| 10,000.0              | 90.00           | 180.00      | 5,811.2               | -4,326.4     | -1,104.1     | 4,326.4                 | 0.00                    | 0.00                |                       |
| 10,100.0              | 90.00           | 180.00      | 5,811.2               | -4,426.4     | -1,104.1     | 4,426.4                 | 0.00                    | 0.00                |                       |
| 10,200.0              | 90.00           | 180.00      | 5,811.1               | -4,526.4     | -1,104.1     | 4,526.4                 | 0.00                    | 0.00                |                       |
| 10,300.0              | 90.00           | 180.00      | 5,811.1               | -4,626.4     | -1,104.1     | 4,626.4                 | 0.00                    | 0.00                |                       |
| 10,400.0              | 90.00           | 180.00      | 5,811.1               | -4,726.4     | -1,104.1     | 4,726.4                 | 0.00                    | 0.00                |                       |
| 10,500.0              | 90.00           | 180.00      | 5,811.1               | -4,826.4     | -1,104.1     | 4,826.4                 | 0.00                    | 0.00                |                       |
| 10,600.0              | 90.00           | 180.00      | 5,811.1               | -4,926.4     | -1,104.1     | 4,926.4                 | 0.00                    | 0.00                |                       |
| 10,700.0              | 90.00           | 180.00      | 5,811.1               | -5,026.4     | -1,104.1     | 5,026.4                 | 0.00                    | 0.00                |                       |
| 10,800.0              | 90.00           | 180.00      | 5,811.1               | -5,126.4     | -1,104.1     | 5,126.4                 | 0.00                    | 0.00                |                       |
| 10,900.0              | 90.00           | 180.00      | 5,811.1               | -5,226.4     | -1,104.1     | 5,226.4                 | 0.00                    | 0.00                |                       |
| 11,000.0              | 90.00           | 180.00      | 5,811.1               | -5,326.4     | -1,104.1     | 5,326.4                 | 0.00                    | 0.00                |                       |
| 11,100.0              | 90.00           | 180.00      | 5,811.1               | -5,426.4     | -1,104.1     | 5,426.4                 | 0.00                    | 0.00                |                       |
| 11,200.0              | 90.00           | 180.00      | 5,811.1               | -5,526.4     | -1,104.0     | 5,526.4                 | 0.00                    | 0.00                |                       |
| 11,300.0              | 90.00           | 180.00      | 5,811.1               | -5,626.4     | -1,104.0     | 5,626.4                 | 0.00                    | 0.00                |                       |
| 11,400.0              | 90.00           | 180.00      | 5,811.1               | -5,726.4     | -1,104.0     | 5,726.4                 | 0.00                    | 0.00                |                       |
| 11,500.0              | 90.00           | 180.00      | 5,811.1               | -5,826.4     | -1,104.0     | 5,826.4                 | 0.00                    | 0.00                |                       |
| 11,600.0              | 90.00           | 180.00      | 5,811.1               | -5,926.4     | -1,104.0     | 5,926.4                 | 0.00                    | 0.00                |                       |
| 11,700.0              | 90.00           | 180.00      | 5,811.1               | -6,026.4     | -1,104.0     | 6,026.4                 | 0.00                    | 0.00                |                       |
| 11,800.0              | 90.00           | 180.00      | 5,811.1               | -6,126.4     | -1,104.0     | 6,126.4                 | 0.00                    | 0.00                |                       |
| 11,900.0              | 90.00           | 180.00      | 5,811.1               | -6,226.4     | -1,104.0     | 6,226.4                 | 0.00                    | 0.00                |                       |
| 12,000.0              | 90.00           | 180.00      | 5,811.1               | -6,326.4     | -1,104.0     | 6,326.4                 | 0.00                    | 0.00                |                       |
| 12,100.0              | 90.00           | 180.00      | 5,811.1               | -6,426.4     | -1,104.0     | 6,426.4                 | 0.00                    | 0.00                |                       |
| 12,200.0              | 90.00           | 180.00      | 5,811.1               | -6,526.4     | -1,104.0     | 6,526.4                 | 0.00                    | 0.00                |                       |
| 12,300.0              | 90.00           | 180.00      | 5,811.1               | -6,626.4     | -1,104.0     | 6,626.4                 | 0.00                    | 0.00                |                       |
| 12,400.0              | 90.00           | 180.00      | 5,811.1               | -6,726.4     | -1,104.0     | 6,726.4                 | 0.00                    | 0.00                |                       |
| 12,500.0              | 90.00           | 180.00      | 5,811.0               | -6,826.4     | -1,104.0     | 6,826.4                 | 0.00                    | 0.00                |                       |
| 12,600.0              | 90.00           | 180.00      | 5,811.0               | -6,926.4     | -1,104.0     | 6,926.4                 | 0.00                    | 0.00                |                       |
| 12,700.0              | 90.00           | 180.00      | 5,811.0               | -7,026.4     | -1,103.9     | 7,026.4                 | 0.00                    | 0.00                |                       |
| 12,800.0              | 90.00           | 180.00      | 5,811.0               | -7,126.4     | -1,103.9     | 7,126.4                 | 0.00                    | 0.00                |                       |
| 12,900.0              | 90.00           | 180.00      | 5,811.0               | -7,226.4     | -1,103.9     | 7,226.4                 | 0.00                    | 0.00                |                       |
| 13,000.0              | 90.00           | 180.00      | 5,811.0               | -7,326.4     | -1,103.9     | 7,326.4                 | 0.00                    | 0.00                |                       |
| 13,100.0              | 90.00           | 180.00      | 5,811.0               | -7,426.4     | -1,103.9     | 7,426.4                 | 0.00                    | 0.00                |                       |
| 13,200.0              | 90.00           | 180.00      | 5,811.0               | -7,526.4     | -1,103.9     | 7,526.4                 | 0.00                    | 0.00                |                       |
| 13,300.0              | 90.00           | 180.00      | 5,811.0               | -7,626.4     | -1,103.9     | 7,626.4                 | 0.00                    | 0.00                |                       |
| 13,400.0              | 90.00           | 180.00      | 5,811.0               | -7,726.4     | -1,103.9     | 7,726.4                 | 0.00                    | 0.00                |                       |
| 13,500.0              | 90.00           | 180.00      | 5,811.0               | -7,826.4     | -1,103.9     | 7,826.4                 | 0.00                    | 0.00                |                       |
| 13,600.0              | 90.00           | 180.00      | 5,811.0               | -7,926.4     | -1,103.9     | 7,926.4                 | 0.00                    | 0.00                |                       |
| 13,700.0              | 90.00           | 180.00      | 5,811.0               | -8,026.4     | -1,103.9     | 8,026.4                 | 0.00                    | 0.00                |                       |
| 13,800.0              | 90.00           | 180.00      | 5,811.0               | -8,126.4     | -1,103.9     | 8,126.4                 | 0.00                    | 0.00                |                       |
| 13,900.0              | 90.00           | 180.00      | 5,811.0               | -8,226.4     | -1,103.9     | 8,226.4                 | 0.00                    | 0.00                |                       |
| 13,919.8              | 90.00           | 180.00      | 5,811.0               | -8,246.3     | -1,103.9     | 8,246.3                 | 0.00                    | 0.00                | PBHL @ 13,919.83' MD  |

### Targets

| Target Name               | Dip Angle (°) | Dip Dir. (°) | TVD (usft) | +N/-S (usft) | +E/-W (usft) | Northing (usft) | Easting (usft) | Latitude        | Longitude        |
|---------------------------|---------------|--------------|------------|--------------|--------------|-----------------|----------------|-----------------|------------------|
| - hit/miss target         |               |              |            |              |              |                 |                |                 |                  |
| - Shape                   |               |              |            |              |              |                 |                |                 |                  |
| Razor #12F-1301A PBH      | 0.00          | 0.00         | 5,811.0    | -8,246.3     | -1,103.9     | 1,550,272.25    | 3,464,228.85   | 40° 49' 54.56 N | 103° 49' 20.59 W |
| - plan hits target center |               |              |            |              |              |                 |                |                 |                  |
| - Point                   |               |              |            |              |              |                 |                |                 |                  |

# Cathedral Energy Services

## Planning Report

|                  |                               |                                     |  |
|------------------|-------------------------------|-------------------------------------|--|
| <b>Database:</b> | USA EDM 5000 Multi Users DB   | <b>Local Co-ordinate Reference:</b> | Well Razor Federal #12F-1301A          |
| <b>Company:</b>  | Whiting Petroleum Corporation | <b>TVD Reference:</b>               | WELL @ 4953.6usft (Original Well Elev) |
| <b>Project:</b>  | Weld County, CO               | <b>MD Reference:</b>                | WELL @ 4953.6usft (Original Well Elev) |
| <b>Site:</b>     | S12-T10N-R58W                 | <b>North Reference:</b>             | True                                   |
| <b>Well:</b>     | Razor Federal #12F-1301A      | <b>Survey Calculation Method:</b>   | Minimum Curvature                      |
| <b>Wellbore:</b> | HZ                            |                                     |  |
| <b>Design:</b>   | Plan #3                       |                                     |  |

| Casing Points         |                       |                         |                     |                   |  |
|-----------------------|-----------------------|-------------------------|---------------------|-------------------|--|
| Measured Depth (usft) | Vertical Depth (usft) | Name                    | Casing Diameter (") | Hole Diameter (") |  |
| 6,300.0               | 5,811.3               | 7" (643' FWL-2321' FSL) | 0                   | 0                 |  |

| Formations            |                       |              |           |         |                   |
|-----------------------|-----------------------|--------------|-----------|---------|-------------------|
| Measured Depth (usft) | Vertical Depth (usft) | Name         | Lithology | Dip (°) | Dip Direction (°) |
| 5,874.4               | 5,755.0               | Top Niobrara |           | 0.00    |                   |

| Plan Annotations      |                       |                   |              |                      |  |
|-----------------------|-----------------------|-------------------|--------------|----------------------|--|
| Measured Depth (usft) | Vertical Depth (usft) | Local Coordinates |              |                      |  |
|                       |                       | +N/-S (usft)      | +E/-W (usft) | Comment              |  |
| 1,000.0               | 1,000.0               | 0.0               | 0.0          | KOP @ 1000' MD       |  |
| 1,200.0               | 1,199.8               | -5.0              | -4.9         | EOB; 4 Deg Inc       |  |
| 5,337.0               | 5,326.8               | -212.4            | -205.5       | Start 11 Deg Bulid   |  |
| 6,118.8               | 5,811.3               | -585.8            | -566.9       | LP @ 6,118' MD       |  |
| 7,587.6               | 5,811.3               | -1,914.0          | -1,104.3     | EOT; 180 Deg Azi     |  |
| 13,919.8              | 5,811.0               | -8,246.3          | -1,103.9     | PBHL @ 13,919.83' MD |  |

# **Whiting Petroleum Corporation**

**Weld County, CO**

**S12-T10N-R58W**

**Razor Federal #12F-1301A**

**HZ**

**Plan #3**

## **Anticollision Report**

**21 November, 2013**

# Cathedral Energy Services

## Anticollision Report

|                           |                               |                                     |  |
|---------------------------|-------------------------------|-------------------------------------|--|
| <b>Company:</b>           | Whiting Petroleum Corporation | <b>Local Co-ordinate Reference:</b> | Well Razor Federal #12F-1301A          |
| <b>Project:</b>           | Weld County, CO               | <b>TVD Reference:</b>               | WELL @ 4953.6usft (Original Well Elev) |
| <b>Reference Site:</b>    | S12-T10N-R58W                 | <b>MD Reference:</b>                | WELL @ 4953.6usft (Original Well Elev) |
| <b>Site Error:</b>        | 0.0usft                       | <b>North Reference:</b>             | True                                   |
| <b>Reference Well:</b>    | Razor Federal #12F-1301A      | <b>Survey Calculation Method:</b>   | Minimum Curvature                      |
| <b>Well Error:</b>        | 0.0usft                       | <b>Output errors are at</b>         | 2.00 sigma                             |
| <b>Reference Wellbore</b> | HZ                            | <b>Database:</b>                    | USA EDM 5000 Multi Users DB            |
| <b>Reference Design:</b>  | Plan #3                       | <b>Offset TVD Reference:</b>        | Offset Datum                           |

|                                     |   |                       |                     |
|-------------------------------------|---|-----------------------|---------------------|
| <b>Reference</b>                    | Plan #3   |                       |                     |
| <b>Filter type:</b>                 | NO GLOBAL FILTER: Using user defined selection & filtering criteria |                       |                     |
| <b>Interpolation Method:</b>        | MD Interval 100.0usft   | <b>Error Model:</b>   | Systematic Ellipse  |
| <b>Depth Range:</b>                 | Unlimited   | <b>Scan Method:</b>   | Closest Approach 3D |
| <b>Results Limited by:</b>          | Maximum center-center distance of 10,000.0usft                      | <b>Error Surface:</b> | Elliptical Conic    |
| <b>Warning Levels Evaluated at:</b> | 2.00 Sigma  |                       |                     |

|                            |                  |                          |                  |                    |
|----------------------------|------------------|--------------------------|------------------|--------------------|
| <b>Survey Tool Program</b> | <b>Date</b>      | 11/21/2013               |                  |                    |
| <b>From (usft)</b>         | <b>To (usft)</b> | <b>Survey (Wellbore)</b> | <b>Tool Name</b> | <b>Description</b> |
| 0.0                        | 13,919.8         | Plan #3 (HZ)             | ISCWSA MWD       | MWD - ISCWSA       |



# Cathedral Energy Services

## Anticollision Report

|                           |                               |                                     |  |
|---------------------------|-------------------------------|-------------------------------------|--|
| <b>Company:</b>           | Whiting Petroleum Corporation | <b>Local Co-ordinate Reference:</b> | Well Razor Federal #12F-1301A          |
| <b>Project:</b>           | Weld County, CO               | <b>TVD Reference:</b>               | WELL @ 4953.6usft (Original Well Elev) |
| <b>Reference Site:</b>    | S12-T10N-R58W                 | <b>MD Reference:</b>                | WELL @ 4953.6usft (Original Well Elev) |
| <b>Site Error:</b>        | 0.0usft                       | <b>North Reference:</b>             | True                                   |
| <b>Reference Well:</b>    | Razor Federal #12F-1301A      | <b>Survey Calculation Method:</b>   | Minimum Curvature                      |
| <b>Well Error:</b>        | 0.0usft                       | <b>Output errors are at</b>         | 2.00 sigma                             |
| <b>Reference Wellbore</b> | HZ                            | <b>Database:</b>                    | USA EDM 5000 Multi Users DB            |
| <b>Reference Design:</b>  | Plan #3                       | <b>Offset TVD Reference:</b>        | Offset Datum                           |

### Summary

| Site Name<br>Offset Well - Wellbore - Design | Reference<br>Measured<br>Depth | Offset<br>Measured<br>Depth | Distance                     |                               | Separation<br>Factor | Warning         |
|--|--------------------------------|-----------------------------|------------------------------|-------------------------------|----------------------|-----------------|
|  | (usft)                         | (usft)                      | Between<br>Centres<br>(usft) | Between<br>Ellipses<br>(usft) |                      |                 |
| S11-T10N-R58W                                |                                |                             |                              |                               |                      |                 |
| Razor #11H-1413A - HZ - Plan #1              | 7,599.8                        | 7,473.5                     | 1,319.1                      | 1,241.3                       | 16.952               | CC              |
| Razor #11H-1413A - HZ - Plan #1              | 13,919.8                       | 13,793.5                    | 1,319.9                      | 1,007.2                       | 4.221                | ES, SF          |
| Razor #11H-1415A - HZ - Plan #1              | 13,919.8                       | 13,651.3                    | 623.0                        | 307.9                         | 1.977                | CC, ES, SF      |
| Razor #11H-1416B - HZ - Plan #1              | 7,599.9                        | 7,411.2                     | 345.2                        | 271.3                         | 4.673                | CC              |
| Razor #11H-1416B - HZ - Plan #1              | 13,919.8                       | 13,731.2                    | 345.9                        | 45.4                          | 1.151                | Level 2, ES, SF |
| S12-T10N-R58W                                |                                |                             |                              |                               |                      |                 |
| Razor #12F-0101A - HZ - Plan #2              | 466.7                          | 466.7                       | 74.9                         | 73.0                          | 40.800               | CC              |
| Razor #12F-0101A - HZ - Plan #2              | 500.0                          | 500.0                       | 74.9                         | 72.9                          | 37.721               | ES              |
| Razor #12F-0101A - HZ - Plan #2              | 5,300.0                        | 5,275.5                     | 507.0                        | 482.2                         | 20.470               | SF              |
| Razor #12F-0102B - HZ - Plan #2              | 466.7                          | 466.7                       | 81.9                         | 80.0                          | 44.602               | CC              |
| Razor #12F-0102B - HZ - Plan #2              | 500.0                          | 500.0                       | 81.9                         | 79.9                          | 41.236               | ES              |
| Razor #12F-0102B - HZ - Plan #2              | 1,200.0                        | 1,195.4                     | 114.1                        | 109.0                         | 22.322               | SF              |
| Razor #12F-0103A - HZ - Plan #2              | 966.7                          | 966.7                       | 99.9                         | 95.8                          | 24.460               | CC              |
| Razor #12F-0103A - HZ - Plan #2              | 1,000.0                        | 1,000.0                     | 99.9                         | 95.6                          | 23.594               | ES              |
| Razor #12F-0103A - HZ - Plan #2              | 1,200.0                        | 1,197.2                     | 109.2                        | 104.2                         | 21.607               | SF              |
| Razor #12F-0104B - HZ - Plan #2              | 766.7                          | 766.7                       | 124.2                        | 121.1                         | 39.022               | CC              |
| Razor #12F-0104B - HZ - Plan #2              | 800.0                          | 800.0                       | 124.2                        | 120.9                         | 37.268               | ES              |
| Razor #12F-0104B - HZ - Plan #2              | 5,300.0                        | 5,265.6                     | 620.3                        | 596.3                         | 25.903               | SF              |
| Razor #12F-0105A - HZ - Plan #2              | 1,000.0                        | 1,000.0                     | 151.9                        | 147.7                         | 35.888               | CC, ES          |
| Razor #12F-0105A - HZ - Plan #2              | 5,300.0                        | 5,261.7                     | 650.6                        | 626.9                         | 27.474               | SF              |
| Razor #12F-0106B - HZ - Plan #2              | 666.7                          | 666.7                       | 180.7                        | 178.0                         | 66.085               | CC              |
| Razor #12F-0106B - HZ - Plan #2              | 700.0                          | 700.0                       | 180.7                        | 177.8                         | 62.651               | ES              |
| Razor #12F-0106B - HZ - Plan #2              | 5,300.0                        | 5,252.8                     | 740.3                        | 716.9                         | 31.537               | SF              |
| Razor #12F-0107A - HZ - Plan #2              | 1,000.0                        | 1,000.0                     | 211.2                        | 207.0                         | 49.899               | CC, ES          |
| Razor #12F-0107A - HZ - Plan #2              | 5,300.0                        | 5,250.1                     | 746.8                        | 723.5                         | 32.012               | SF              |
| Razor #12F-0108B - HZ - Plan #2              | 766.7                          | 766.7                       | 242.4                        | 239.2                         | 76.118               | CC              |
| Razor #12F-0108B - HZ - Plan #2              | 800.0                          | 800.0                       | 242.4                        | 239.0                         | 72.697               | ES              |
| Razor #12F-0108B - HZ - Plan #2              | 5,300.0                        | 5,244.9                     | 813.5                        | 790.2                         | 34.897               | SF              |
| Razor Federal #12F-1302B - HZ - Plan #2      | 1,000.0                        | 1,000.0                     | 33.0                         | 28.8                          | 7.806                | CC, ES          |
| Razor Federal #12F-1302B - HZ - Plan #2      | 13,919.8                       | 13,872.5                    | 344.9                        | 45.7                          | 1.153                | Level 2, SF     |
| Razor Federal #12F-1303A - HZ - Plan #3      | 982.9                          | 983.8                       | 60.4                         | 56.4                          | 14.872               | CC              |
| Razor Federal #12F-1303A - HZ - Plan #3      | 1,000.0                        | 1,000.8                     | 60.4                         | 56.3                          | 14.597               | ES              |
| Razor Federal #12F-1303A - HZ - Plan #3      | 13,919.8                       | 13,609.3                    | 660.3                        | 347.9                         | 2.114                | SF              |
| Razor Federal #12F-1304B - HZ - Plan #2      | 1,000.0                        | 1,000.0                     | 99.1                         | 94.9                          | 23.419               | CC, ES          |
| Razor Federal #12F-1304B - HZ - Plan #2      | 13,919.8                       | 13,667.9                    | 995.2                        | 681.9                         | 3.177                | SF              |
| Razor Federal #12F-1305A - HZ - Plan #2      | 900.0                          | 900.0                       | 132.2                        | 128.4                         | 34.936               | CC              |
| Razor Federal #12F-1305A - HZ - Plan #2      | 1,000.0                        | 999.5                       | 132.3                        | 128.1                         | 31.483               | ES              |
| Razor Federal #12F-1305A - HZ - Plan #2      | 13,919.8                       | 13,541.6                    | 1,319.9                      | 1,003.6                       | 4.173                | SF              |
| Razor Federal #12F-1306B - HZ - Plan #2      | 966.7                          | 966.7                       | 164.4                        | 160.4                         | 40.277               | CC              |
| Razor Federal #12F-1306B - HZ - Plan #2      | 1,000.0                        | 1,000.0                     | 164.4                        | 160.2                         | 38.851               | ES              |
| Razor Federal #12F-1306B - HZ - Plan #2      | 13,919.8                       | 13,695.8                    | 1,652.8                      | 1,337.3                       | 5.240                | SF              |
| Razor Federal #12F-1307A - HZ - Plan #2      | 366.7                          | 366.7                       | 197.5                        | 196.1                         | 142.514              | CC              |
| Razor Federal #12F-1307A - HZ - Plan #2      | 400.0                          | 400.0                       | 197.5                        | 196.0                         | 128.608              | ES              |
| Razor Federal #12F-1307A - HZ - Plan #2      | 13,919.8                       | 13,658.4                    | 1,979.4                      | 1,662.8                       | 6.251                | SF              |
| Razor Federal #12F-1308B - HZ - Plan #2      | 866.7                          | 866.7                       | 230.5                        | 226.9                         | 63.449               | CC              |
| Razor Federal #12F-1308B - HZ - Plan #2      | 900.0                          | 900.0                       | 230.5                        | 226.8                         | 60.936               | ES              |
| Razor Federal #12F-1308B - HZ - Plan #2      | 13,919.8                       | 13,925.4                    | 2,312.2                      | 1,995.3                       | 7.297                | SF              |

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

# Cathedral Energy Services

## Anticollision Report

|                           |                               |                                     |  |
|---------------------------|-------------------------------|-------------------------------------|--|
| <b>Company:</b>           | Whiting Petroleum Corporation | <b>Local Co-ordinate Reference:</b> | Well Razor Federal #12F-1301A          |
| <b>Project:</b>           | Weld County, CO               | <b>TVD Reference:</b>               | WELL @ 4953.6usft (Original Well Elev) |
| <b>Reference Site:</b>    | S12-T10N-R58W                 | <b>MD Reference:</b>                | WELL @ 4953.6usft (Original Well Elev) |
| <b>Site Error:</b>        | 0.0usft                       | <b>North Reference:</b>             | True                                   |
| <b>Reference Well:</b>    | Razor Federal #12F-1301A      | <b>Survey Calculation Method:</b>   | Minimum Curvature                      |
| <b>Well Error:</b>        | 0.0usft                       | <b>Output errors are at</b>         | 2.00 sigma                             |
| <b>Reference Wellbore</b> | HZ                            | <b>Database:</b>                    | USA EDM 5000 Multi Users DB            |
| <b>Reference Design:</b>  | Plan #3                       | <b>Offset TVD Reference:</b>        | Offset Datum                           |

| Summary                                      |           |          |          |          |            |            |
|--|-----------|----------|----------|----------|------------|------------|
| Site Name<br>Offset Well - Wellbore - Design | Reference | Offset   | Distance |          | Separation | Warning    |
|  | Measured  | Measured | Between  | Between  |            |            |
|  | Depth     | Depth    | Centres  | Ellipses | Factor     |            |
|  | (usft)    | (usft)   | (usft)   | (usft)   |            |            |
| S26-T10N-R58W                                |           |          |          |          |            |            |
| Razor Federal #26I-2313A - HZ - Plan #1      | 13,919.8  | 13,495.1 | 1,334.6  | 1,023.2  | 4.285      | CC, ES, SF |
| Razor Federal #26I-2314B - HZ - Plan #1      | 13,919.8  | 13,550.8 | 1,012.4  | 700.0    | 3.241      | CC, ES, SF |
| Razor Federal #26I-2315A - HZ - Plan #2      | 13,919.8  | 12,867.8 | 961.0    | 658.0    | 3.171      | CC, ES, SF |
| Razor Federal #26I-2316B - HZ - Plan #2      | 13,919.8  | 13,066.1 | 776.3    | 479.6    | 2.617      | CC, ES, SF |

# Cathedral Energy Services

## Anticollision Report

|                           |                               |                                     |  |
|---------------------------|-------------------------------|-------------------------------------|--|
| <b>Company:</b>           | Whiting Petroleum Corporation | <b>Local Co-ordinate Reference:</b> | Well Razor Federal #12F-1301A          |
| <b>Project:</b>           | Weld County, CO               | <b>TVD Reference:</b>               | WELL @ 4953.6usft (Original Well Elev) |
| <b>Reference Site:</b>    | S12-T10N-R58W                 | <b>MD Reference:</b>                | WELL @ 4953.6usft (Original Well Elev) |
| <b>Site Error:</b>        | 0.0usft                       | <b>North Reference:</b>             | True                                   |
| <b>Reference Well:</b>    | Razor Federal #12F-1301A      | <b>Survey Calculation Method:</b>   | Minimum Curvature                      |
| <b>Well Error:</b>        | 0.0usft                       | <b>Output errors are at</b>         | 2.00 sigma                             |
| <b>Reference Wellbore</b> | HZ                            | <b>Database:</b>                    | USA EDM 5000 Multi Users DB            |
| <b>Reference Design:</b>  | Plan #3                       | <b>Offset TVD Reference:</b>        | Offset Datum                           |

| Offset Design S11-T10N-R58W - Razor #11H-1413A - 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) | Centre +E/-W (usft) | Between Centres (usft) | Between Ellipses (usft) | Total Uncertainty Axis | Separation Factor |                             |  |
| 0.0   | 0.0                   | 17.7                  | 17.7                  | 0.0              | 0.0           | -86.27                | 116.5                               | -1,784.3            | 1,788.1                |                         |                        |                   |                             |  |
| 100.0   | 100.0                 | 117.7                 | 117.7                 | 0.1              | 0.1           | -86.27                | 116.5                               | -1,784.3            | 1,788.1                | 1,787.9                 | 0.23                   | 7,884.185         |                             |  |
| 200.0   | 200.0                 | 217.7                 | 217.7                 | 0.3              | 0.4           | -86.27                | 116.5                               | -1,784.3            | 1,788.1                | 1,787.5                 | 0.68                   | 2,643.872         |                             |  |
| 300.0   | 300.0                 | 317.7                 | 317.7                 | 0.5              | 0.6           | -86.27                | 116.5                               | -1,784.3            | 1,788.1                | 1,787.0                 | 1.13                   | 1,588.234         |                             |  |
| 400.0   | 400.0                 | 417.7                 | 417.7                 | 0.8              | 0.8           | -86.27                | 116.5                               | -1,784.3            | 1,788.1                | 1,786.6                 | 1.58                   | 1,135.039         |                             |  |
| 459.5   | 459.5                 | 477.2                 | 477.2                 | 0.9              | 0.9           | -86.27                | 116.5                               | -1,784.3            | 1,788.1                | 1,786.3                 | 1.84                   | 970.307           |                             |  |
| 500.0   | 500.0                 | 514.0                 | 514.0                 | 1.0              | 1.0           | -86.27                | 116.4                               | -1,784.4            | 1,788.2                | 1,786.1                 | 2.01                   | 888.222           |                             |  |
| 600.0   | 600.0                 | 600.0                 | 600.0                 | 1.2              | 1.2           | -86.32                | 114.9                               | -1,785.2            | 1,789.0                | 1,786.5                 | 2.41                   | 742.247           |                             |  |
| 700.0   | 700.0                 | 672.3                 | 672.2                 | 1.4              | 1.3           | -86.42                | 111.9                               | -1,786.8            | 1,790.9                | 1,788.1                 | 2.77                   | 645.700           |                             |  |
| 800.0   | 800.0                 | 764.7                 | 764.4                 | 1.7              | 1.5           | -86.60                | 106.4                               | -1,789.8            | 1,793.8                | 1,790.6                 | 3.18                   | 563.485           |                             |  |
| 900.0   | 900.0                 | 864.5                 | 863.9                 | 1.9              | 1.7           | -86.80                | 100.2                               | -1,793.2            | 1,796.8                | 1,793.2                 | 3.61                   | 497.450           |                             |  |
| 1,000.0   | 1,000.0               | 964.2                 | 963.4                 | 2.1              | 2.0           | -87.00                | 94.1                                | -1,796.5            | 1,799.8                | 1,795.7                 | 4.05                   | 444.701           |                             |  |
| 1,100.0   | 1,100.0               | 1,064.1               | 1,063.0               | 2.3              | 2.2           | 48.75                 | 88.0                                | -1,799.8            | 1,801.6                | 1,797.1                 | 4.51                   | 399.704           |                             |  |
| 1,200.0   | 1,199.8               | 1,164.1               | 1,162.8               | 2.5              | 2.5           | 48.68                 | 81.9                                | -1,803.1            | 1,801.2                | 1,796.3                 | 4.93                   | 365.580           |                             |  |
| 1,300.0   | 1,299.6               | 1,264.0               | 1,262.5               | 2.7              | 2.7           | 48.65                 | 75.8                                | -1,806.5            | 1,799.7                | 1,794.3                 | 5.36                   | 335.571           |                             |  |
| 1,400.0   | 1,399.4               | 1,364.0               | 1,362.2               | 2.9              | 3.0           | 48.62                 | 69.6                                | -1,809.8            | 1,798.1                | 1,792.3                 | 5.81                   | 309.440           |                             |  |
| 1,500.0   | 1,499.1               | 1,464.0               | 1,462.0               | 3.1              | 3.2           | 48.59                 | 63.5                                | -1,813.2            | 1,796.5                | 1,790.3                 | 6.27                   | 286.630           |                             |  |
| 1,600.0   | 1,598.9               | 1,564.0               | 1,561.7               | 3.4              | 3.5           | 48.55                 | 57.4                                | -1,816.5            | 1,795.0                | 1,788.2                 | 6.73                   | 266.607           |                             |  |
| 1,700.0   | 1,698.6               | 1,664.0               | 1,661.5               | 3.6              | 3.7           | 48.52                 | 51.3                                | -1,819.8            | 1,793.4                | 1,786.2                 | 7.20                   | 248.962           |                             |  |
| 1,800.0   | 1,798.4               | 1,764.0               | 1,761.2               | 3.8              | 4.0           | 48.48                 | 45.1                                | -1,823.2            | 1,791.8                | 1,784.2                 | 7.68                   | 233.330           |                             |  |
| 1,900.0   | 1,898.1               | 1,863.9               | 1,860.9               | 4.1              | 4.2           | 48.45                 | 39.0                                | -1,826.5            | 1,790.3                | 1,782.1                 | 8.16                   | 219.411           |                             |  |
| 2,000.0   | 1,997.9               | 1,963.9               | 1,960.7               | 4.3              | 4.5           | 48.42                 | 32.9                                | -1,829.8            | 1,788.7                | 1,780.1                 | 8.64                   | 206.955           |                             |  |
| 2,100.0   | 2,097.6               | 2,063.9               | 2,060.4               | 4.5              | 4.8           | 48.38                 | 26.8                                | -1,833.2            | 1,787.1                | 1,778.0                 | 9.13                   | 195.756           |                             |  |
| 2,200.0   | 2,197.4               | 2,163.9               | 2,160.2               | 4.8              | 5.0           | 48.35                 | 20.6                                | -1,836.5            | 1,785.6                | 1,776.0                 | 9.62                   | 185.643           |                             |  |
| 2,300.0   | 2,297.2               | 2,263.9               | 2,259.9               | 5.0              | 5.3           | 48.32                 | 14.5                                | -1,839.8            | 1,784.0                | 1,773.9                 | 10.11                  | 176.471           |                             |  |
| 2,400.0   | 2,396.9               | 2,363.8               | 2,359.6               | 5.3              | 5.5           | 48.28                 | 8.4                                 | -1,843.2            | 1,782.5                | 1,771.9                 | 10.60                  | 168.120           |                             |  |
| 2,500.0   | 2,496.7               | 2,463.8               | 2,459.4               | 5.5              | 5.8           | 48.25                 | 2.3                                 | -1,846.5            | 1,780.9                | 1,769.8                 | 11.10                  | 160.488           |                             |  |
| 2,600.0   | 2,596.4               | 2,563.8               | 2,559.1               | 5.8              | 6.1           | 48.22                 | -3.9                                | -1,849.8            | 1,779.3                | 1,767.7                 | 11.59                  | 153.490           |                             |  |
| 2,700.0   | 2,696.2               | 2,663.8               | 2,658.8               | 6.0              | 6.3           | 48.18                 | -10.0                               | -1,853.2            | 1,777.8                | 1,765.7                 | 12.09                  | 147.050           |                             |  |
| 2,800.0   | 2,795.9               | 2,763.8               | 2,758.6               | 6.3              | 6.6           | 48.15                 | -16.1                               | -1,856.5            | 1,776.2                | 1,763.6                 | 12.59                  | 141.108           |                             |  |
| 2,900.0   | 2,895.7               | 2,863.8               | 2,858.3               | 6.5              | 6.8           | 48.11                 | -22.3                               | -1,859.8            | 1,774.7                | 1,761.6                 | 13.09                  | 135.608           |                             |  |
| 3,000.0   | 2,995.5               | 2,963.7               | 2,958.1               | 6.8              | 7.1           | 48.08                 | -28.4                               | -1,863.2            | 1,773.1                | 1,759.5                 | 13.59                  | 130.505           |                             |  |
| 3,100.0   | 3,095.2               | 3,063.7               | 3,057.8               | 7.1              | 7.4           | 48.05                 | -34.5                               | -1,866.5            | 1,771.5                | 1,757.5                 | 14.09                  | 125.757           |                             |  |
| 3,200.0   | 3,195.0               | 3,163.7               | 3,157.5               | 7.3              | 7.6           | 48.01                 | -40.6                               | -1,869.8            | 1,770.0                | 1,755.4                 | 14.59                  | 121.329           |                             |  |
| 3,300.0   | 3,294.7               | 3,263.7               | 3,257.3               | 7.6              | 7.9           | 47.98                 | -46.8                               | -1,873.2            | 1,768.4                | 1,753.3                 | 15.09                  | 117.192           |                             |  |
| 3,400.0   | 3,394.5               | 3,363.7               | 3,357.0               | 7.8              | 8.2           | 47.94                 | -52.9                               | -1,876.5            | 1,766.9                | 1,751.3                 | 15.59                  | 113.316           |                             |  |
| 3,500.0   | 3,494.2               | 3,463.7               | 3,456.8               | 8.1              | 8.4           | 47.91                 | -59.0                               | -1,879.8            | 1,765.3                | 1,749.2                 | 16.10                  | 109.680           |                             |  |
| 3,600.0   | 3,594.0               | 3,563.6               | 3,556.5               | 8.3              | 8.7           | 47.87                 | -65.1                               | -1,883.2            | 1,763.8                | 1,747.2                 | 16.60                  | 106.261           |                             |  |
| 3,700.0   | 3,693.7               | 3,663.6               | 3,656.2               | 8.6              | 8.9           | 47.84                 | -71.3                               | -1,886.5            | 1,762.2                | 1,745.1                 | 17.10                  | 103.041           |                             |  |
| 3,800.0   | 3,793.5               | 3,763.6               | 3,756.0               | 8.9              | 9.2           | 47.80                 | -77.4                               | -1,889.8            | 1,760.7                | 1,743.1                 | 17.61                  | 100.003           |                             |  |
| 3,900.0   | 3,893.3               | 3,863.6               | 3,855.7               | 9.1              | 9.5           | 47.77                 | -83.5                               | -1,893.2            | 1,759.1                | 1,741.0                 | 18.11                  | 97.133            |                             |  |
| 4,000.0   | 3,993.0               | 3,963.6               | 3,955.5               | 9.4              | 9.7           | 47.73                 | -89.6                               | -1,896.5            | 1,757.6                | 1,739.0                 | 18.61                  | 94.417            |                             |  |
| 4,100.0   | 4,092.8               | 4,063.5               | 4,055.2               | 9.6              | 10.0          | 47.70                 | -95.8                               | -1,899.8            | 1,756.0                | 1,736.9                 | 19.12                  | 91.843            |                             |  |
| 4,200.0   | 4,192.5               | 4,163.5               | 4,154.9               | 9.9              | 10.3          | 47.66                 | -101.9                              | -1,903.2            | 1,754.5                | 1,734.8                 | 19.62                  | 89.400            |                             |  |
| 4,300.0   | 4,292.3               | 4,263.5               | 4,254.7               | 10.2             | 10.5          | 47.63                 | -108.0                              | -1,906.5            | 1,752.9                | 1,732.8                 | 20.13                  | 87.079            |                             |  |
| 4,400.0   | 4,392.0               | 4,363.5               | 4,354.4               | 10.4             | 10.8          | 47.59                 | -114.1                              | -1,909.8            | 1,751.4                | 1,730.7                 | 20.64                  | 84.871            |                             |  |
| 4,500.0   | 4,491.8               | 4,463.5               | 4,454.1               | 10.7             | 11.1          | 47.56                 | -120.3                              | -1,913.2            | 1,749.8                | 1,728.7                 | 21.14                  | 82.768            |                             |  |
| 4,600.0   | 4,591.6               | 4,563.5               | 4,553.9               | 11.0             | 11.3          | 47.52                 | -126.4                              | -1,916.5            | 1,748.3                | 1,726.6                 | 21.65                  | 80.762            |                             |  |
| 4,700.0   | 4,691.3               | 4,663.4               | 4,653.6               | 11.2             | 11.6          | 47.49                 | -132.5                              | -1,919.8            | 1,746.7                | 1,724.6                 | 22.15                  | 78.848            |                             |  |
| 4,800.0   | 4,791.1               | 4,763.4               | 4,753.4               | 11.5             | 11.8          | 47.45                 | -138.6                              | -1,923.2            | 1,745.2                | 1,722.5                 | 22.66                  | 77.019            |                             |  |
| 4,900.0   | 4,890.8               | 4,863.4               | 4,853.1               | 11.7             | 12.1          | 47.42                 | -144.8                              | -1,926.5            | 1,743.6                | 1,720.5                 | 23.17                  | 75.269            |                             |  |
| 5,000.0   | 4,990.6               | 4,963.4               | 4,952.8               | 12.0             | 12.4          | 47.38                 | -150.9                              | -1,929.8            | 1,742.1                | 1,718.4                 | 23.67                  | 73.593            |                             |  |

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

# Cathedral Energy Services

## Anticollision Report

|                           |                               |                                     |  |
|---------------------------|-------------------------------|-------------------------------------|--|
| <b>Company:</b>           | Whiting Petroleum Corporation | <b>Local Co-ordinate Reference:</b> | Well Razor Federal #12F-1301A          |
| <b>Project:</b>           | Weld County, CO               | <b>TVD Reference:</b>               | WELL @ 4953.6usft (Original Well Elev) |
| <b>Reference Site:</b>    | S12-T10N-R58W                 | <b>MD Reference:</b>                | WELL @ 4953.6usft (Original Well Elev) |
| <b>Site Error:</b>        | 0.0usft                       | <b>North Reference:</b>             | True                                   |
| <b>Reference Well:</b>    | Razor Federal #12F-1301A      | <b>Survey Calculation Method:</b>   | Minimum Curvature                      |
| <b>Well Error:</b>        | 0.0usft                       | <b>Output errors are at</b>         | 2.00 sigma                             |
| <b>Reference Wellbore</b> | HZ                            | <b>Database:</b>                    | USA EDM 5000 Multi Users DB            |
| <b>Reference Design:</b>  | Plan #3                       | <b>Offset TVD Reference:</b>        | Offset Datum                           |

| Offset Design S11-T10N-R58W - Razor #11H-1413A - 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  |
| 5,100.0   | 5,090.3               | 5,063.4               | 5,052.6               | 12.3             | 12.6          | 47.35                 | -157.0                              | -1,933.2     | 1,740.6                | 1,716.4                 | 24.18                  | 71.988             |          |
| 5,200.0   | 5,190.1               | 5,163.4               | 5,152.3               | 12.5             | 12.9          | 47.31                 | -163.2                              | -1,936.5     | 1,739.0                | 1,714.3                 | 24.68                  | 70.448             |          |
| 5,300.0   | 5,289.9               | 5,263.3               | 5,252.1               | 12.8             | 13.2          | 47.28                 | -169.3                              | -1,939.8     | 1,737.5                | 1,712.3                 | 25.19                  | 68.970             |          |
| 5,400.0   | 5,389.2               | 5,358.0               | 5,346.5               | 13.1             | 13.4          | 47.61                 | -175.1                              | -1,943.0     | 1,733.4                | 1,707.7                 | 25.62                  | 67.649             |          |
| 5,500.0   | 5,485.0               | 5,400.0               | 5,388.2               | 13.5             | 13.5          | 48.94                 | -179.1                              | -1,945.2     | 1,719.2                | 1,693.4                 | 25.74                  | 66.787             |          |
| 5,600.0   | 5,573.6               | 5,450.0               | 5,437.2               | 14.2             | 13.7          | 51.30                 | -187.8                              | -1,949.9     | 1,696.1                | 1,670.2                 | 25.92                  | 65.431             |          |
| 5,700.0   | 5,651.8               | 5,475.8               | 5,462.1               | 15.0             | 13.9          | 54.48                 | -193.9                              | -1,953.2     | 1,664.7                | 1,638.4                 | 26.30                  | 63.295             |          |
| 5,800.0   | 5,716.7               | 5,500.0               | 5,485.0               | 16.1             | 14.0          | 58.63                 | -200.5                              | -1,956.8     | 1,626.4                | 1,599.1                 | 27.21                  | 59.769             |          |
| 5,900.0   | 5,766.0               | 5,550.0               | 5,531.3               | 17.3             | 14.3          | 64.35                 | -217.2                              | -1,965.9     | 1,582.1                | 1,553.0                 | 29.09                  | 54.386             |          |
| 6,000.0   | 5,797.8               | 5,580.9               | 5,558.8               | 18.8             | 14.5          | 70.73                 | -229.5                              | -1,972.6     | 1,533.9                | 1,502.4                 | 31.47                  | 48.743             |          |
| 6,100.0   | 5,811.0               | 5,600.0               | 5,575.4               | 20.4             | 14.6          | 77.42                 | -237.8                              | -1,977.1     | 1,483.8                | 1,449.9                 | 33.99                  | 43.658             |          |
| 6,200.0   | 5,811.3               | 5,650.0               | 5,617.2               | 21.9             | 15.0          | 80.59                 | -261.9                              | -1,990.2     | 1,436.6                | 1,400.3                 | 36.29                  | 39.588             |          |
| 6,300.0   | 5,811.3               | 5,676.5               | 5,638.2               | 23.4             | 15.2          | 81.67                 | -276.1                              | -1,998.0     | 1,398.2                | 1,360.1                 | 38.11                  | 36.684             |          |
| 6,400.0   | 5,811.3               | 5,719.8               | 5,670.6               | 25.0             | 15.6          | 83.16                 | -301.2                              | -2,011.6     | 1,369.3                | 1,329.2                 | 40.14                  | 34.118             |          |
| 6,500.0   | 5,811.3               | 5,772.5               | 5,706.8               | 26.6             | 16.1          | 84.75                 | -334.9                              | -2,030.0     | 1,349.9                | 1,307.7                 | 42.26                  | 31.944             |          |
| 6,600.0   | 5,811.3               | 5,836.4               | 5,745.1               | 28.2             | 16.8          | 86.41                 | -379.8                              | -2,054.4     | 1,339.6                | 1,295.1                 | 44.50                  | 30.104             |          |
| 6,676.1   | 5,811.3               | 5,893.3               | 5,773.8               | 29.4             | 17.5          | 87.63                 | -423.0                              | -2,077.9     | 1,337.4                | 1,291.1                 | 46.30                  | 28.886             |          |
| 6,700.0   | 5,811.3               | 5,912.7               | 5,782.3               | 29.8             | 17.8          | 88.00                 | -438.3                              | -2,086.2     | 1,337.6                | 1,290.7                 | 46.88                  | 28.532             |          |
| 6,800.0   | 5,811.3               | 6,000.0               | 5,812.4               | 31.4             | 19.0          | 89.29                 | -510.1                              | -2,125.3     | 1,342.7                | 1,293.3                 | 49.39                  | 27.185             |          |
| 6,900.0   | 5,811.3               | 6,097.2               | 5,829.3               | 33.0             | 20.4          | 90.01                 | -594.1                              | -2,171.0     | 1,353.8                | 1,301.8                 | 52.02                  | 26.024             |          |
| 7,000.0   | 5,811.3               | 6,337.5               | 5,831.0               | 34.6             | 23.9          | 90.09                 | -809.7                              | -2,276.7     | 1,367.3                | 1,310.8                 | 56.47                  | 24.212             |          |
| 7,100.0   | 5,811.3               | 6,690.6               | 5,831.0               | 36.2             | 29.1          | 90.09                 | -1,146.3                            | -2,381.7     | 1,369.4                | 1,306.7                 | 62.65                  | 21.858             |          |
| 7,200.0   | 5,811.3               | 7,038.7               | 5,831.0               | 37.7             | 34.4          | 90.09                 | -1,491.5                            | -2,422.9     | 1,358.3                | 1,289.4                 | 68.90                  | 19.713             |          |
| 7,300.0   | 5,811.3               | 7,174.7               | 5,831.0               | 39.2             | 36.6          | 90.09                 | -1,627.5                            | -2,423.7     | 1,341.0                | 1,269.2                 | 71.73                  | 18.695             |          |
| 7,400.0   | 5,811.3               | 7,274.0               | 5,831.0               | 40.7             | 38.1          | 90.09                 | -1,726.7                            | -2,423.7     | 1,328.6                | 1,254.7                 | 73.84                  | 17.993             |          |
| 7,500.0   | 5,811.3               | 7,373.7               | 5,831.0               | 42.1             | 39.8          | 90.09                 | -1,826.5                            | -2,423.7     | 1,321.4                | 1,245.6                 | 75.81                  | 17.431             |          |
| 7,599.8   | 5,811.3               | 7,473.5               | 5,831.0               | 43.6             | 41.4          | 90.09                 | -1,926.2                            | -2,423.7     | 1,319.1                | 1,241.3                 | 77.81                  | 16.952 CC          |          |
| 7,600.0   | 5,811.3               | 7,473.7               | 5,831.0               | 43.6             | 41.4          | 90.09                 | -1,926.4                            | -2,423.7     | 1,319.4                | 1,241.6                 | 77.82                  | 16.955             |          |
| 7,700.0   | 5,811.3               | 7,573.7               | 5,831.0               | 45.0             | 43.1          | 90.09                 | -2,026.4                            | -2,423.7     | 1,319.4                | 1,238.2                 | 81.17                  | 16.255             |          |
| 7,800.0   | 5,811.3               | 7,673.7               | 5,831.0               | 46.4             | 44.8          | 90.09                 | -2,126.4                            | -2,423.7     | 1,319.4                | 1,234.8                 | 84.56                  | 15.603             |          |
| 7,900.0   | 5,811.2               | 7,773.7               | 5,831.0               | 47.9             | 46.5          | 90.09                 | -2,226.4                            | -2,423.7     | 1,319.4                | 1,231.4                 | 87.99                  | 14.995             |          |
| 8,000.0   | 5,811.2               | 7,873.7               | 5,831.0               | 49.4             | 48.2          | 90.09                 | -2,326.4                            | -2,423.7     | 1,319.4                | 1,228.0                 | 91.45                  | 14.428             |          |
| 8,100.0   | 5,811.2               | 7,973.7               | 5,831.0               | 50.9             | 50.0          | 90.09                 | -2,426.4                            | -2,423.7     | 1,319.4                | 1,224.5                 | 94.94                  | 13.897             |          |
| 8,200.0   | 5,811.2               | 8,073.7               | 5,831.0               | 52.5             | 51.7          | 90.09                 | -2,526.4                            | -2,423.7     | 1,319.4                | 1,221.0                 | 98.46                  | 13.401             |          |
| 8,300.0   | 5,811.2               | 8,173.7               | 5,831.0               | 54.0             | 53.5          | 90.09                 | -2,626.4                            | -2,423.7     | 1,319.4                | 1,217.4                 | 102.00                 | 12.936             |          |
| 8,400.0   | 5,811.2               | 8,273.7               | 5,831.0               | 55.6             | 55.3          | 90.09                 | -2,726.4                            | -2,423.7     | 1,319.4                | 1,213.9                 | 105.56                 | 12.499             |          |
| 8,500.0   | 5,811.2               | 8,373.7               | 5,831.0               | 57.2             | 57.0          | 90.09                 | -2,826.4                            | -2,423.7     | 1,319.5                | 1,210.3                 | 109.15                 | 12.089             |          |
| 8,600.0   | 5,811.2               | 8,473.7               | 5,831.0               | 58.9             | 58.8          | 90.09                 | -2,926.4                            | -2,423.7     | 1,319.5                | 1,206.7                 | 112.74                 | 11.703             |          |
| 8,700.0   | 5,811.2               | 8,573.7               | 5,831.0               | 60.5             | 60.6          | 90.09                 | -3,026.4                            | -2,423.7     | 1,319.5                | 1,203.1                 | 116.36                 | 11.340             |          |
| 8,800.0   | 5,811.2               | 8,673.7               | 5,831.0               | 62.2             | 62.5          | 90.09                 | -3,126.4                            | -2,423.7     | 1,319.5                | 1,199.5                 | 119.99                 | 10.997             |          |
| 8,900.0   | 5,811.2               | 8,773.7               | 5,831.0               | 63.9             | 64.3          | 90.09                 | -3,226.4                            | -2,423.7     | 1,319.5                | 1,195.9                 | 123.63                 | 10.673             |          |
| 9,000.0   | 5,811.2               | 8,873.7               | 5,831.0               | 65.6             | 66.1          | 90.09                 | -3,326.4                            | -2,423.7     | 1,319.5                | 1,192.2                 | 127.28                 | 10.367             |          |
| 9,100.0   | 5,811.2               | 8,973.7               | 5,831.0               | 67.3             | 67.9          | 90.09                 | -3,426.4                            | -2,423.7     | 1,319.5                | 1,188.5                 | 130.95                 | 10.076             |          |
| 9,200.0   | 5,811.2               | 9,073.7               | 5,831.0               | 69.0             | 69.7          | 90.09                 | -3,526.4                            | -2,423.7     | 1,319.5                | 1,184.9                 | 134.62                 | 9.801              |          |
| 9,300.0   | 5,811.2               | 9,173.7               | 5,831.0               | 70.7             | 71.6          | 90.09                 | -3,626.4                            | -2,423.7     | 1,319.5                | 1,181.2                 | 138.31                 | 9.540              |          |
| 9,400.0   | 5,811.2               | 9,273.7               | 5,831.0               | 72.5             | 73.4          | 90.09                 | -3,726.4                            | -2,423.7     | 1,319.5                | 1,177.5                 | 142.00                 | 9.292              |          |
| 9,500.0   | 5,811.2               | 9,373.7               | 5,831.0               | 74.2             | 75.3          | 90.09                 | -3,826.4                            | -2,423.7     | 1,319.5                | 1,173.8                 | 145.70                 | 9.056              |          |
| 9,600.0   | 5,811.2               | 9,473.7               | 5,831.0               | 76.0             | 77.1          | 90.09                 | -3,926.4                            | -2,423.7     | 1,319.5                | 1,170.1                 | 149.41                 | 8.832              |          |
| 9,700.0   | 5,811.2               | 9,573.7               | 5,831.0               | 77.7             | 79.0          | 90.09                 | -4,026.4                            | -2,423.7     | 1,319.5                | 1,166.4                 | 153.12                 | 8.618              |          |
| 9,800.0   | 5,811.2               | 9,673.7               | 5,831.0               | 79.5             | 80.8          | 90.09                 | -4,126.4                            | -2,423.7     | 1,319.6                | 1,162.7                 | 156.84                 | 8.413              |          |
| 9,900.0   | 5,811.2               | 9,773.7               | 5,831.0               | 81.3             | 82.7          | 90.09                 | -4,226.4                            | -2,423.7     | 1,319.6                | 1,159.0                 | 160.57                 | 8.218              |          |
| 10,000.0  | 5,811.2               | 9,873.7               | 5,831.0               | 83.1             | 84.6          | 90.09                 | -4,326.4                            | -2,423.7     | 1,319.6                | 1,155.3                 | 164.30                 | 8.031              |          |

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

# Cathedral Energy Services

## Anticollision Report

|                           |                               |                                     |  |
|---------------------------|-------------------------------|-------------------------------------|--|
| <b>Company:</b>           | Whiting Petroleum Corporation | <b>Local Co-ordinate Reference:</b> | Well Razor Federal #12F-1301A          |
| <b>Project:</b>           | Weld County, CO               | <b>TVD Reference:</b>               | WELL @ 4953.6usft (Original Well Elev) |
| <b>Reference Site:</b>    | S12-T10N-R58W                 | <b>MD Reference:</b>                | WELL @ 4953.6usft (Original Well Elev) |
| <b>Site Error:</b>        | 0.0usft                       | <b>North Reference:</b>             | True                                   |
| <b>Reference Well:</b>    | Razor Federal #12F-1301A      | <b>Survey Calculation Method:</b>   | Minimum Curvature                      |
| <b>Well Error:</b>        | 0.0usft                       | <b>Output errors are at</b>         | 2.00 sigma                             |
| <b>Reference Wellbore</b> | HZ                            | <b>Database:</b>                    | USA EDM 5000 Multi Users DB            |
| <b>Reference Design:</b>  | Plan #3                       | <b>Offset TVD Reference:</b>        | Offset Datum                           |

| Offset Design S11-T10N-R58W - Razor #11H-1413A - 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 |              |                    |          |
| 10,100.0  | 5,811.2               | 9,973.7               | 5,831.0               | 84.9             | 86.4          | 90.09                 | -4,426.4                            | -2,423.7     | 1,319.6                | 1,151.5                 | 168.04           | 7.853        |                    |          |
| 10,200.0  | 5,811.1               | 10,073.7              | 5,831.0               | 86.7             | 88.3          | 90.09                 | -4,526.4                            | -2,423.7     | 1,319.6                | 1,147.8                 | 171.78           | 7.682        |                    |          |
| 10,300.0  | 5,811.1               | 10,173.7              | 5,831.0               | 88.5             | 90.2          | 90.09                 | -4,626.4                            | -2,423.7     | 1,319.6                | 1,144.1                 | 175.52           | 7.518        |                    |          |
| 10,400.0  | 5,811.1               | 10,273.7              | 5,831.0               | 90.3             | 92.0          | 90.09                 | -4,726.4                            | -2,423.7     | 1,319.6                | 1,140.3                 | 179.27           | 7.361        |                    |          |
| 10,500.0  | 5,811.1               | 10,373.7              | 5,831.0               | 92.1             | 93.9          | 90.09                 | -4,826.4                            | -2,423.7     | 1,319.6                | 1,136.6                 | 183.03           | 7.210        |                    |          |
| 10,600.0  | 5,811.1               | 10,473.7              | 5,831.0               | 93.9             | 95.8          | 90.09                 | -4,926.4                            | -2,423.7     | 1,319.6                | 1,132.8                 | 186.79           | 7.065        |                    |          |
| 10,700.0  | 5,811.1               | 10,573.7              | 5,831.0               | 95.7             | 97.7          | 90.09                 | -5,026.4                            | -2,423.7     | 1,319.6                | 1,129.1                 | 190.55           | 6.925        |                    |          |
| 10,800.0  | 5,811.1               | 10,673.7              | 5,831.0               | 97.5             | 99.5          | 90.09                 | -5,126.4                            | -2,423.7     | 1,319.6                | 1,125.3                 | 194.31           | 6.791        |                    |          |
| 10,900.0  | 5,811.1               | 10,773.7              | 5,831.0               | 99.4             | 101.4         | 90.09                 | -5,226.4                            | -2,423.7     | 1,319.6                | 1,121.6                 | 198.08           | 6.662        |                    |          |
| 11,000.0  | 5,811.1               | 10,873.7              | 5,831.0               | 101.2            | 103.3         | 90.09                 | -5,326.4                            | -2,423.7     | 1,319.6                | 1,117.8                 | 201.85           | 6.538        |                    |          |
| 11,100.0  | 5,811.1               | 10,973.7              | 5,831.0               | 103.0            | 105.2         | 90.10                 | -5,426.4                            | -2,423.7     | 1,319.7                | 1,114.0                 | 205.62           | 6.418        |                    |          |
| 11,200.0  | 5,811.1               | 11,073.7              | 5,831.0               | 104.9            | 107.1         | 90.10                 | -5,526.4                            | -2,423.7     | 1,319.7                | 1,110.3                 | 209.40           | 6.302        |                    |          |
| 11,300.0  | 5,811.1               | 11,173.7              | 5,831.0               | 106.7            | 108.9         | 90.10                 | -5,626.4                            | -2,423.7     | 1,319.7                | 1,106.5                 | 213.18           | 6.191        |                    |          |
| 11,400.0  | 5,811.1               | 11,273.7              | 5,831.0               | 108.6            | 110.8         | 90.10                 | -5,726.4                            | -2,423.7     | 1,319.7                | 1,102.7                 | 216.96           | 6.083        |                    |          |
| 11,500.0  | 5,811.1               | 11,373.7              | 5,831.0               | 110.4            | 112.7         | 90.10                 | -5,826.4                            | -2,423.7     | 1,319.7                | 1,098.9                 | 220.74           | 5.978        |                    |          |
| 11,600.0  | 5,811.1               | 11,473.7              | 5,831.0               | 112.3            | 114.6         | 90.10                 | -5,926.4                            | -2,423.7     | 1,319.7                | 1,095.2                 | 224.52           | 5.878        |                    |          |
| 11,700.0  | 5,811.1               | 11,573.7              | 5,831.0               | 114.1            | 116.5         | 90.10                 | -6,026.4                            | -2,423.7     | 1,319.7                | 1,091.4                 | 228.31           | 5.780        |                    |          |
| 11,800.0  | 5,811.1               | 11,673.7              | 5,831.0               | 116.0            | 118.4         | 90.10                 | -6,126.4                            | -2,423.7     | 1,319.7                | 1,087.6                 | 232.10           | 5.686        |                    |          |
| 11,900.0  | 5,811.1               | 11,773.7              | 5,831.0               | 117.8            | 120.3         | 90.10                 | -6,226.4                            | -2,423.7     | 1,319.7                | 1,083.8                 | 235.89           | 5.595        |                    |          |
| 12,000.0  | 5,811.1               | 11,873.7              | 5,831.0               | 119.7            | 122.2         | 90.10                 | -6,326.4                            | -2,423.7     | 1,319.7                | 1,080.0                 | 239.68           | 5.506        |                    |          |
| 12,100.0  | 5,811.1               | 11,973.7              | 5,831.0               | 121.6            | 124.1         | 90.10                 | -6,426.4                            | -2,423.7     | 1,319.7                | 1,076.3                 | 243.47           | 5.420        |                    |          |
| 12,200.0  | 5,811.1               | 12,073.7              | 5,831.0               | 123.4            | 126.0         | 90.10                 | -6,526.4                            | -2,423.7     | 1,319.7                | 1,072.5                 | 247.27           | 5.337        |                    |          |
| 12,300.0  | 5,811.1               | 12,173.7              | 5,831.0               | 125.3            | 127.9         | 90.10                 | -6,626.4                            | -2,423.7     | 1,319.8                | 1,068.7                 | 251.07           | 5.257        |                    |          |
| 12,400.0  | 5,811.1               | 12,273.7              | 5,831.0               | 127.2            | 129.8         | 90.10                 | -6,726.4                            | -2,423.7     | 1,319.8                | 1,064.9                 | 254.86           | 5.178        |                    |          |
| 12,500.0  | 5,811.0               | 12,373.7              | 5,831.0               | 129.0            | 131.7         | 90.10                 | -6,826.4                            | -2,423.7     | 1,319.8                | 1,061.1                 | 258.66           | 5.102        |                    |          |
| 12,600.0  | 5,811.0               | 12,473.7              | 5,831.0               | 130.9            | 133.6         | 90.10                 | -6,926.4                            | -2,423.7     | 1,319.8                | 1,057.3                 | 262.46           | 5.028        |                    |          |
| 12,700.0  | 5,811.0               | 12,573.7              | 5,831.0               | 132.8            | 135.5         | 90.10                 | -7,026.4                            | -2,423.7     | 1,319.8                | 1,053.5                 | 266.27           | 4.957        |                    |          |
| 12,800.0  | 5,811.0               | 12,673.7              | 5,831.0               | 134.6            | 137.4         | 90.10                 | -7,126.4                            | -2,423.7     | 1,319.8                | 1,049.7                 | 270.07           | 4.887        |                    |          |
| 12,900.0  | 5,811.0               | 12,773.7              | 5,831.0               | 136.5            | 139.3         | 90.10                 | -7,226.4                            | -2,423.7     | 1,319.8                | 1,045.9                 | 273.87           | 4.819        |                    |          |
| 13,000.0  | 5,811.0               | 12,873.7              | 5,831.0               | 138.4            | 141.2         | 90.10                 | -7,326.4                            | -2,423.7     | 1,319.8                | 1,042.1                 | 277.68           | 4.753        |                    |          |
| 13,100.0  | 5,811.0               | 12,973.7              | 5,831.0               | 140.3            | 143.1         | 90.10                 | -7,426.4                            | -2,423.7     | 1,319.8                | 1,038.3                 | 281.48           | 4.689        |                    |          |
| 13,200.0  | 5,811.0               | 13,073.7              | 5,831.0               | 142.1            | 145.0         | 90.10                 | -7,526.4                            | -2,423.7     | 1,319.8                | 1,034.5                 | 285.29           | 4.626        |                    |          |
| 13,300.0  | 5,811.0               | 13,173.7              | 5,831.0               | 144.0            | 146.9         | 90.10                 | -7,626.4                            | -2,423.7     | 1,319.8                | 1,030.7                 | 289.10           | 4.565        |                    |          |
| 13,400.0  | 5,811.0               | 13,273.7              | 5,831.0               | 145.9            | 148.8         | 90.10                 | -7,726.4                            | -2,423.7     | 1,319.8                | 1,026.9                 | 292.91           | 4.506        |                    |          |
| 13,500.0  | 5,811.0               | 13,373.7              | 5,831.0               | 147.8            | 150.7         | 90.10                 | -7,826.4                            | -2,423.7     | 1,319.8                | 1,023.1                 | 296.72           | 4.448        |                    |          |
| 13,600.0  | 5,811.0               | 13,473.7              | 5,831.0               | 149.7            | 152.6         | 90.10                 | -7,926.4                            | -2,423.7     | 1,319.9                | 1,019.3                 | 300.53           | 4.392        |                    |          |
| 13,700.0  | 5,811.0               | 13,573.7              | 5,831.0               | 151.6            | 154.5         | 90.10                 | -8,026.4                            | -2,423.7     | 1,319.9                | 1,015.5                 | 304.34           | 4.337        |                    |          |
| 13,800.0  | 5,811.0               | 13,673.7              | 5,831.0               | 153.4            | 156.4         | 90.10                 | -8,126.4                            | -2,423.7     | 1,319.9                | 1,011.7                 | 308.15           | 4.283        |                    |          |
| 13,900.0  | 5,811.0               | 13,773.7              | 5,831.0               | 155.3            | 158.3         | 90.10                 | -8,226.4                            | -2,423.7     | 1,319.9                | 1,007.9                 | 311.97           | 4.231        |                    |          |
| 13,919.8  | 5,811.0               | 13,793.5              | 5,831.0               | 155.7            | 158.7         | 90.10                 | -8,246.2                            | -2,423.7     | 1,319.9                | 1,007.2                 | 312.72           | 4.221 ES, SF |                    |          |

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

# Cathedral Energy Services

## Anticollision Report

|                           |                               |                                     |  |
|---------------------------|-------------------------------|-------------------------------------|--|
| <b>Company:</b>           | Whiting Petroleum Corporation | <b>Local Co-ordinate Reference:</b> | Well Razor Federal #12F-1301A          |
| <b>Project:</b>           | Weld County, CO               | <b>TVD Reference:</b>               | WELL @ 4953.6usft (Original Well Elev) |
| <b>Reference Site:</b>    | S12-T10N-R58W                 | <b>MD Reference:</b>                | WELL @ 4953.6usft (Original Well Elev) |
| <b>Site Error:</b>        | 0.0usft                       | <b>North Reference:</b>             | True                                   |
| <b>Reference Well:</b>    | Razor Federal #12F-1301A      | <b>Survey Calculation Method:</b>   | Minimum Curvature                      |
| <b>Well Error:</b>        | 0.0usft                       | <b>Output errors are at</b>         | 2.00 sigma                             |
| <b>Reference Wellbore</b> | HZ                            | <b>Database:</b>                    | USA EDM 5000 Multi Users DB            |
| <b>Reference Design:</b>  | Plan #3                       | <b>Offset TVD Reference:</b>        | Offset Datum                           |

| Offset Design S11-T10N-R58W - Razor #11H-1415A - 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<br>Toolface<br>(°) | Distance                                  |                 | Total<br>Uncertainty<br>Axis | Separation<br>Factor | Warning |           |                    |          |
| Measured<br>Depth<br>(usft)                                   | Vertical<br>Depth<br>(usft) | Measured<br>Depth<br>(usft) | Vertical<br>Depth<br>(usft) | Reference<br>(usft) | Offset<br>(usft) |                             | Offset Wellbore Centre<br>+N/-S<br>(usft) | +E/-W<br>(usft) |                              |                      |         |           |                    |          |
| 0.0   | 0.0                         | 17.7                        | 17.7                        | 0.0                 | 0.0              | -87.09                      | 88.1                                      | -1,731.3        | 1,733.6                      |                      |         |           |                    |          |
| 100.0   | 100.0                       | 117.7                       | 117.7                       | 0.1                 | 0.1              | -87.09                      | 88.1                                      | -1,731.3        | 1,733.6                      | 1,733.3              | 0.23    | 7,643.555 |                    |          |
| 200.0   | 200.0                       | 217.7                       | 217.7                       | 0.3                 | 0.4              | -87.09                      | 88.1                                      | -1,731.3        | 1,733.6                      | 1,732.9              | 0.68    | 2,563.178 |                    |          |
| 300.0   | 300.0                       | 317.7                       | 317.7                       | 0.5                 | 0.6              | -87.09                      | 88.1                                      | -1,731.3        | 1,733.6                      | 1,732.4              | 1.13    | 1,539.759 |                    |          |
| 400.0   | 400.0                       | 417.7                       | 417.7                       | 0.8                 | 0.8              | -87.09                      | 88.1                                      | -1,731.3        | 1,733.6                      | 1,732.0              | 1.58    | 1,100.396 |                    |          |
| 500.0   | 500.0                       | 517.7                       | 517.7                       | 1.0                 | 1.0              | -87.09                      | 88.1                                      | -1,731.3        | 1,733.6                      | 1,731.5              | 2.02    | 856.109   |                    |          |
| 600.0   | 600.0                       | 617.7                       | 617.7                       | 1.2                 | 1.3              | -87.09                      | 88.1                                      | -1,731.3        | 1,733.6                      | 1,731.1              | 2.47    | 700.581   |                    |          |
| 700.0   | 700.0                       | 717.7                       | 717.7                       | 1.4                 | 1.5              | -87.09                      | 88.1                                      | -1,731.3        | 1,733.6                      | 1,730.6              | 2.92    | 592.874   |                    |          |
| 800.0   | 800.0                       | 817.7                       | 817.7                       | 1.7                 | 1.7              | -87.09                      | 88.1                                      | -1,731.3        | 1,733.6                      | 1,730.2              | 3.37    | 513.872   |                    |          |
| 900.0   | 900.0                       | 917.9                       | 917.9                       | 1.9                 | 1.9              | -87.09                      | 88.1                                      | -1,731.3        | 1,733.6                      | 1,729.7              | 3.82    | 454.003   |                    |          |
| 1,000.0   | 1,000.0                     | 1,018.6                     | 1,018.6                     | 2.1                 | 2.1              | -87.17                      | 85.7                                      | -1,731.4        | 1,733.5                      | 1,729.3              | 4.24    | 409.021   |                    |          |
| 1,100.0   | 1,100.0                     | 1,119.1                     | 1,118.9                     | 2.3                 | 2.3              | 48.64                       | 79.8                                      | -1,731.6        | 1,732.3                      | 1,727.7              | 4.62    | 375.241   |                    |          |
| 1,200.0   | 1,199.8                     | 1,219.0                     | 1,218.5                     | 2.5                 | 2.5              | 48.59                       | 72.8                                      | -1,731.9        | 1,728.8                      | 1,723.8              | 4.99    | 346.355   |                    |          |
| 1,300.0   | 1,299.6                     | 1,318.9                     | 1,318.2                     | 2.7                 | 2.7              | 48.53                       | 65.9                                      | -1,732.1        | 1,724.1                      | 1,718.7              | 5.39    | 319.889   |                    |          |
| 1,400.0   | 1,399.4                     | 1,418.7                     | 1,417.8                     | 2.9                 | 2.9              | 48.48                       | 58.9                                      | -1,732.4        | 1,719.4                      | 1,713.6              | 5.81    | 296.112   |                    |          |
| 1,500.0   | 1,499.1                     | 1,518.6                     | 1,517.4                     | 3.1                 | 3.1              | 48.42                       | 52.0                                      | -1,732.6        | 1,714.8                      | 1,708.5              | 6.24    | 274.863   |                    |          |
| 1,600.0   | 1,598.9                     | 1,618.5                     | 1,617.1                     | 3.4                 | 3.4              | 48.36                       | 45.0                                      | -1,732.9        | 1,710.1                      | 1,703.4              | 6.68    | 255.905   |                    |          |
| 1,700.0   | 1,698.6                     | 1,718.4                     | 1,716.7                     | 3.6                 | 3.6              | 48.30                       | 38.0                                      | -1,733.2        | 1,705.4                      | 1,698.3              | 7.14    | 238.981   |                    |          |
| 1,800.0   | 1,798.4                     | 1,818.2                     | 1,816.3                     | 3.8                 | 3.8              | 48.24                       | 31.1                                      | -1,733.4        | 1,700.7                      | 1,693.1              | 7.60    | 223.843   |                    |          |
| 1,900.0   | 1,898.1                     | 1,918.1                     | 1,916.0                     | 4.1                 | 4.1              | 48.18                       | 24.1                                      | -1,733.7        | 1,696.1                      | 1,688.0              | 8.07    | 210.266   |                    |          |
| 2,000.0   | 1,997.9                     | 2,018.0                     | 2,015.6                     | 4.3                 | 4.3              | 48.12                       | 17.1                                      | -1,733.9        | 1,691.4                      | 1,682.9              | 8.54    | 198.050   |                    |          |
| 2,100.0   | 2,097.6                     | 2,117.9                     | 2,115.2                     | 4.5                 | 4.6              | 48.06                       | 10.2                                      | -1,734.2        | 1,686.7                      | 1,677.7              | 9.02    | 187.021   |                    |          |
| 2,200.0   | 2,197.4                     | 2,217.7                     | 2,214.9                     | 4.8                 | 4.8              | 48.00                       | 3.2                                       | -1,734.4        | 1,682.1                      | 1,672.6              | 9.50    | 177.030   |                    |          |
| 2,300.0   | 2,297.2                     | 2,317.6                     | 2,314.5                     | 5.0                 | 5.1              | 47.94                       | -3.7                                      | -1,734.7        | 1,677.4                      | 1,667.4              | 9.99    | 167.947   |                    |          |
| 2,400.0   | 2,396.9                     | 2,417.5                     | 2,414.1                     | 5.3                 | 5.3              | 47.87                       | -10.7                                     | -1,734.9        | 1,672.8                      | 1,662.3              | 10.48   | 159.662   |                    |          |
| 2,500.0   | 2,496.7                     | 2,517.4                     | 2,513.8                     | 5.5                 | 5.6              | 47.81                       | -17.7                                     | -1,735.2        | 1,668.1                      | 1,657.1              | 10.97   | 152.081   |                    |          |
| 2,600.0   | 2,596.4                     | 2,617.3                     | 2,613.4                     | 5.8                 | 5.8              | 47.75                       | -24.6                                     | -1,735.5        | 1,663.5                      | 1,652.0              | 11.46   | 145.122   |                    |          |
| 2,700.0   | 2,696.2                     | 2,717.1                     | 2,713.0                     | 6.0                 | 6.1              | 47.69                       | -31.6                                     | -1,735.7        | 1,658.8                      | 1,646.9              | 11.96   | 138.716   |                    |          |
| 2,800.0   | 2,795.9                     | 2,817.0                     | 2,812.7                     | 6.3                 | 6.3              | 47.62                       | -38.6                                     | -1,736.0        | 1,654.2                      | 1,641.7              | 12.46   | 132.801   |                    |          |
| 2,900.0   | 2,895.7                     | 2,916.9                     | 2,912.3                     | 6.5                 | 6.6              | 47.56                       | -45.5                                     | -1,736.2        | 1,649.5                      | 1,636.6              | 12.96   | 127.325   |                    |          |
| 3,000.0   | 2,995.5                     | 3,016.8                     | 3,011.9                     | 6.8                 | 6.8              | 47.50                       | -52.5                                     | -1,736.5        | 1,644.9                      | 1,631.4              | 13.46   | 122.244   |                    |          |
| 3,100.0   | 3,095.2                     | 3,116.6                     | 3,111.6                     | 7.1                 | 7.1              | 47.43                       | -59.4                                     | -1,736.7        | 1,640.2                      | 1,626.3              | 13.96   | 117.517   |                    |          |
| 3,200.0   | 3,195.0                     | 3,216.5                     | 3,211.2                     | 7.3                 | 7.4              | 47.37                       | -66.4                                     | -1,737.0        | 1,635.6                      | 1,621.1              | 14.46   | 113.109   |                    |          |
| 3,300.0   | 3,294.7                     | 3,316.4                     | 3,310.8                     | 7.6                 | 7.6              | 47.30                       | -73.4                                     | -1,737.3        | 1,630.9                      | 1,616.0              | 14.96   | 108.991   |                    |          |
| 3,400.0   | 3,394.5                     | 3,416.3                     | 3,410.4                     | 7.8                 | 7.9              | 47.24                       | -80.3                                     | -1,737.5        | 1,626.3                      | 1,610.8              | 15.47   | 105.134   |                    |          |
| 3,500.0   | 3,494.2                     | 3,516.1                     | 3,510.1                     | 8.1                 | 8.1              | 47.17                       | -87.3                                     | -1,737.8        | 1,621.7                      | 1,605.7              | 15.97   | 101.517   |                    |          |
| 3,600.0   | 3,594.0                     | 3,616.0                     | 3,609.7                     | 8.3                 | 8.4              | 47.11                       | -94.3                                     | -1,738.0        | 1,617.0                      | 1,600.6              | 16.48   | 98.117    |                    |          |
| 3,700.0   | 3,693.7                     | 3,715.9                     | 3,709.3                     | 8.6                 | 8.7              | 47.04                       | -101.2                                    | -1,738.3        | 1,612.4                      | 1,595.4              | 16.99   | 94.916    |                    |          |
| 3,800.0   | 3,793.5                     | 3,815.8                     | 3,809.0                     | 8.9                 | 8.9              | 46.97                       | -108.2                                    | -1,738.5        | 1,607.8                      | 1,590.3              | 17.50   | 91.898    |                    |          |
| 3,900.0   | 3,893.3                     | 3,915.6                     | 3,908.6                     | 9.1                 | 9.2              | 46.91                       | -115.1                                    | -1,738.8        | 1,603.2                      | 1,585.2              | 18.00   | 89.047    |                    |          |
| 4,000.0   | 3,993.0                     | 4,015.5                     | 4,008.2                     | 9.4                 | 9.4              | 46.84                       | -122.1                                    | -1,739.0        | 1,598.5                      | 1,580.0              | 18.51   | 86.350    |                    |          |
| 4,100.0   | 4,092.8                     | 4,115.4                     | 4,107.9                     | 9.6                 | 9.7              | 46.77                       | -129.1                                    | -1,739.3        | 1,593.9                      | 1,574.9              | 19.02   | 83.795    |                    |          |
| 4,200.0   | 4,192.5                     | 4,215.3                     | 4,207.5                     | 9.9                 | 10.0             | 46.70                       | -136.0                                    | -1,739.6        | 1,589.3                      | 1,569.8              | 19.53   | 81.372    |                    |          |
| 4,300.0   | 4,292.3                     | 4,315.1                     | 4,307.1                     | 10.2                | 10.2             | 46.63                       | -143.0                                    | -1,739.8        | 1,584.7                      | 1,564.6              | 20.04   | 79.071    |                    |          |
| 4,400.0   | 4,392.0                     | 4,415.0                     | 4,406.8                     | 10.4                | 10.5             | 46.57                       | -150.0                                    | -1,740.1        | 1,580.1                      | 1,559.5              | 20.55   | 76.882    |                    |          |
| 4,500.0   | 4,491.8                     | 4,514.9                     | 4,506.4                     | 10.7                | 10.7             | 46.50                       | -156.9                                    | -1,740.3        | 1,575.4                      | 1,554.4              | 21.06   | 74.798    |                    |          |
| 4,600.0   | 4,591.6                     | 4,614.8                     | 4,606.0                     | 11.0                | 11.0             | 46.43                       | -163.9                                    | -1,740.6        | 1,570.8                      | 1,549.3              | 21.57   | 72.812    |                    |          |
| 4,700.0   | 4,691.3                     | 4,714.6                     | 4,705.7                     | 11.2                | 11.3             | 46.36                       | -170.8                                    | -1,740.8        | 1,566.2                      | 1,544.1              | 22.09   | 70.918    |                    |          |
| 4,800.0   | 4,791.1                     | 4,814.5                     | 4,805.3                     | 11.5                | 11.5             | 46.29                       | -177.8                                    | -1,741.1        | 1,561.6                      | 1,539.0              | 22.60   | 69.108    |                    |          |
| 4,900.0   | 4,890.8                     | 4,914.4                     | 4,904.9                     | 11.7                | 11.8             | 46.21                       | -184.8                                    | -1,741.3        | 1,557.0                      | 1,533.9              | 23.11   | 67.377    |                    |          |
| 5,000.0   | 4,990.6                     | 5,014.3                     | 5,004.6                     | 12.0                | 12.1             | 46.14                       | -191.7                                    | -1,741.6        | 1,552.4                      | 1,528.8              | 23.62   | 65.721    |                    |          |
| 5,100.0   | 5,090.3                     | 5,114.1                     | 5,104.2                     | 12.3                | 12.3             | 46.07                       | -198.7                                    | -1,741.9        | 1,547.8                      | 1,523.7              | 24.13   | 64.135    |                    |          |

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

# Cathedral Energy Services

## Anticollision Report

|                           |                               |                                     |  |
|---------------------------|-------------------------------|-------------------------------------|--|
| <b>Company:</b>           | Whiting Petroleum Corporation | <b>Local Co-ordinate Reference:</b> | Well Razor Federal #12F-1301A          |
| <b>Project:</b>           | Weld County, CO               | <b>TVD Reference:</b>               | WELL @ 4953.6usft (Original Well Elev) |
| <b>Reference Site:</b>    | S12-T10N-R58W                 | <b>MD Reference:</b>                | WELL @ 4953.6usft (Original Well Elev) |
| <b>Site Error:</b>        | 0.0usft                       | <b>North Reference:</b>             | True                                   |
| <b>Reference Well:</b>    | Razor Federal #12F-1301A      | <b>Survey Calculation Method:</b>   | Minimum Curvature                      |
| <b>Well Error:</b>        | 0.0usft                       | <b>Output errors are at</b>         | 2.00 sigma                             |
| <b>Reference Wellbore</b> | HZ                            | <b>Database:</b>                    | USA EDM 5000 Multi Users DB            |
| <b>Reference Design:</b>  | Plan #3                       | <b>Offset TVD Reference:</b>        | Offset Datum                           |

| Offset Design S11-T10N-R58W - Razor #11H-1415A - 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   | 5,190.1               | 5,214.0               | 5,203.8               | 12.5             | 12.6          | 46.00                 | -205.6                              | -1,742.1     | 1,543.2                | 1,518.6                 | 24.65                  | 62.614             |          |
| 5,300.0   | 5,289.9               | 5,313.9               | 5,303.5               | 12.8             | 12.8          | 45.93                 | -212.6                              | -1,742.4     | 1,538.6                | 1,513.5                 | 25.16                  | 61.155             |          |
| 5,400.0   | 5,389.2               | 5,407.7               | 5,396.8               | 13.1             | 13.1          | 46.29                 | -221.6                              | -1,742.7     | 1,531.5                | 1,505.9                 | 25.58                  | 59.868             |          |
| 5,500.0   | 5,485.0               | 5,495.4               | 5,481.6               | 13.5             | 13.5          | 47.68                 | -243.4                              | -1,743.5     | 1,512.8                | 1,486.9                 | 25.85                  | 58.530             |          |
| 5,600.0   | 5,573.6               | 5,579.7               | 5,558.6               | 14.2             | 14.0          | 50.13                 | -277.4                              | -1,744.7     | 1,482.3                | 1,456.2                 | 26.12                  | 56.754             |          |
| 5,700.0   | 5,651.8               | 5,659.7               | 5,625.7               | 15.0             | 14.5          | 53.84                 | -320.8                              | -1,746.3     | 1,441.0                | 1,414.4                 | 26.65                  | 54.064             |          |
| 5,800.0   | 5,716.7               | 5,735.2               | 5,682.3               | 16.1             | 15.2          | 59.09                 | -370.7                              | -1,748.2     | 1,390.4                | 1,362.5                 | 27.92                  | 49.792             |          |
| 5,900.0   | 5,766.0               | 5,806.7               | 5,728.7               | 17.3             | 15.9          | 66.15                 | -425.0                              | -1,750.2     | 1,332.2                | 1,302.1                 | 30.07                  | 44.299             |          |
| 6,000.0   | 5,797.8               | 5,874.9               | 5,765.6               | 18.8             | 16.7          | 75.15                 | -482.3                              | -1,752.3     | 1,268.4                | 1,235.5                 | 32.95                  | 38.496             |          |
| 6,100.0   | 5,811.0               | 5,941.1               | 5,793.9               | 20.4             | 17.5          | 85.85                 | -542.0                              | -1,754.5     | 1,201.6                | 1,165.6                 | 35.91                  | 33.456             |          |
| 6,200.0   | 5,811.3               | 6,009.7               | 5,815.1               | 21.9             | 18.5          | 89.09                 | -607.1                              | -1,756.9     | 1,135.5                | 1,097.1                 | 38.42                  | 29.557             |          |
| 6,300.0   | 5,811.3               | 6,086.2               | 5,828.3               | 23.4             | 19.6          | 89.96                 | -682.4                              | -1,759.6     | 1,073.8                | 1,032.9                 | 40.95                  | 26.223             |          |
| 6,400.0   | 5,811.3               | 6,201.5               | 5,831.0               | 25.0             | 21.2          | 90.14                 | -797.5                              | -1,762.8     | 1,016.0                | 972.0                   | 44.00                  | 23.093             |          |
| 6,500.0   | 5,811.3               | 6,292.9               | 5,831.0               | 26.6             | 22.6          | 90.14                 | -888.9                              | -1,762.5     | 959.5                  | 912.7                   | 46.85                  | 20.480             |          |
| 6,600.0   | 5,811.3               | 6,378.2               | 5,831.0               | 28.2             | 23.9          | 90.15                 | -974.2                              | -1,762.0     | 907.4                  | 857.6                   | 49.78                  | 18.230             |          |
| 6,700.0   | 5,811.3               | 6,466.1               | 5,831.0               | 29.8             | 25.4          | 90.15                 | -1,062.2                            | -1,761.6     | 859.9                  | 807.1                   | 52.79                  | 16.290             |          |
| 6,800.0   | 5,811.3               | 6,556.5               | 5,831.0               | 31.4             | 26.9          | 90.15                 | -1,152.5                            | -1,761.2     | 817.0                  | 761.1                   | 55.84                  | 14.630             |          |
| 6,900.0   | 5,811.3               | 6,648.9               | 5,831.0               | 33.0             | 28.5          | 90.16                 | -1,245.0                            | -1,760.7     | 778.9                  | 720.0                   | 58.92                  | 13.219             |          |
| 7,000.0   | 5,811.3               | 6,743.2               | 5,831.0               | 34.6             | 30.1          | 90.16                 | -1,339.3                            | -1,760.3     | 745.7                  | 683.7                   | 61.99                  | 12.029             |          |
| 7,100.0   | 5,811.3               | 6,839.1               | 5,831.0               | 36.2             | 31.8          | 90.17                 | -1,435.2                            | -1,759.8     | 717.4                  | 652.4                   | 65.02                  | 11.034             |          |
| 7,200.0   | 5,811.3               | 6,936.4               | 5,831.0               | 37.7             | 33.5          | 90.17                 | -1,532.4                            | -1,759.3     | 694.2                  | 626.3                   | 67.99                  | 10.212             |          |
| 7,300.0   | 5,811.3               | 7,034.8               | 5,831.0               | 39.2             | 35.3          | 90.17                 | -1,630.8                            | -1,758.9     | 676.2                  | 605.3                   | 70.86                  | 9.542              |          |
| 7,400.0   | 5,811.3               | 7,133.9               | 5,831.0               | 40.7             | 37.1          | 90.18                 | -1,729.9                            | -1,758.4     | 663.3                  | 589.7                   | 73.63                  | 9.009              |          |
| 7,500.0   | 5,811.3               | 7,233.6               | 5,831.0               | 42.1             | 38.9          | 90.18                 | -1,829.6                            | -1,757.9     | 655.6                  | 579.4                   | 76.25                  | 8.598              |          |
| 7,600.0   | 5,811.3               | 7,333.6               | 5,831.0               | 43.6             | 40.7          | 90.18                 | -1,929.6                            | -1,757.4     | 653.2                  | 574.3                   | 78.85                  | 8.284              |          |
| 7,700.0   | 5,811.3               | 7,433.6               | 5,831.0               | 45.0             | 42.5          | 90.18                 | -2,029.6                            | -1,756.9     | 652.7                  | 570.4                   | 82.28                  | 7.932              |          |
| 7,800.0   | 5,811.3               | 7,533.6               | 5,831.0               | 46.4             | 44.4          | 90.18                 | -2,129.6                            | -1,756.5     | 652.2                  | 566.5                   | 85.75                  | 7.606              |          |
| 7,900.0   | 5,811.2               | 7,633.6               | 5,831.0               | 47.9             | 46.2          | 90.18                 | -2,229.6                            | -1,756.0     | 651.7                  | 562.5                   | 89.25                  | 7.302              |          |
| 8,000.0   | 5,811.2               | 7,733.6               | 5,831.0               | 49.4             | 48.1          | 90.18                 | -2,329.6                            | -1,755.5     | 651.3                  | 558.5                   | 92.78                  | 7.020              |          |
| 8,100.0   | 5,811.2               | 7,833.6               | 5,831.0               | 50.9             | 49.9          | 90.18                 | -2,429.6                            | -1,755.0     | 650.8                  | 554.4                   | 96.33                  | 6.756              |          |
| 8,200.0   | 5,811.2               | 7,933.6               | 5,831.0               | 52.5             | 51.8          | 90.18                 | -2,529.6                            | -1,754.5     | 650.3                  | 550.4                   | 99.90                  | 6.509              |          |
| 8,300.0   | 5,811.2               | 8,033.6               | 5,831.0               | 54.0             | 53.6          | 90.18                 | -2,629.6                            | -1,754.0     | 649.8                  | 546.3                   | 103.49                 | 6.279              |          |
| 8,400.0   | 5,811.2               | 8,133.6               | 5,831.0               | 55.6             | 55.5          | 90.18                 | -2,729.6                            | -1,753.6     | 649.3                  | 542.2                   | 107.10                 | 6.063              |          |
| 8,500.0   | 5,811.2               | 8,233.6               | 5,831.0               | 57.2             | 57.4          | 90.18                 | -2,829.6                            | -1,753.1     | 648.9                  | 538.1                   | 110.73                 | 5.860              |          |
| 8,600.0   | 5,811.2               | 8,333.6               | 5,831.0               | 58.9             | 59.3          | 90.18                 | -2,929.6                            | -1,752.6     | 648.4                  | 534.0                   | 114.37                 | 5.669              |          |
| 8,700.0   | 5,811.2               | 8,433.6               | 5,831.0               | 60.5             | 61.1          | 90.18                 | -3,029.6                            | -1,752.1     | 647.9                  | 529.9                   | 118.03                 | 5.490              |          |
| 8,800.0   | 5,811.2               | 8,533.6               | 5,831.0               | 62.2             | 63.0          | 90.18                 | -3,129.6                            | -1,751.6     | 647.4                  | 525.7                   | 121.69                 | 5.320              |          |
| 8,900.0   | 5,811.2               | 8,633.5               | 5,831.0               | 63.9             | 64.9          | 90.18                 | -3,229.6                            | -1,751.2     | 647.0                  | 521.6                   | 125.37                 | 5.160              |          |
| 9,000.0   | 5,811.2               | 8,733.5               | 5,831.0               | 65.6             | 66.8          | 90.19                 | -3,329.6                            | -1,750.7     | 646.5                  | 517.4                   | 129.06                 | 5.009              |          |
| 9,100.0   | 5,811.2               | 8,833.5               | 5,831.0               | 67.3             | 68.7          | 90.19                 | -3,429.6                            | -1,750.2     | 646.0                  | 513.3                   | 132.75                 | 4.866              |          |
| 9,200.0   | 5,811.2               | 8,933.5               | 5,831.0               | 69.0             | 70.6          | 90.19                 | -3,529.6                            | -1,749.7     | 645.5                  | 509.1                   | 136.46                 | 4.731              |          |
| 9,300.0   | 5,811.2               | 9,033.5               | 5,831.0               | 70.7             | 72.5          | 90.19                 | -3,629.6                            | -1,749.2     | 645.1                  | 504.9                   | 140.17                 | 4.602              |          |
| 9,400.0   | 5,811.2               | 9,133.5               | 5,831.0               | 72.5             | 74.4          | 90.19                 | -3,729.6                            | -1,748.7     | 644.6                  | 500.7                   | 143.89                 | 4.480              |          |
| 9,500.0   | 5,811.2               | 9,233.5               | 5,831.0               | 74.2             | 76.3          | 90.19                 | -3,829.6                            | -1,748.3     | 644.1                  | 496.5                   | 147.61                 | 4.363              |          |
| 9,600.0   | 5,811.2               | 9,333.5               | 5,831.0               | 76.0             | 78.2          | 90.19                 | -3,929.5                            | -1,747.8     | 643.6                  | 492.3                   | 151.34                 | 4.253              |          |
| 9,700.0   | 5,811.2               | 9,433.5               | 5,831.0               | 77.7             | 80.1          | 90.19                 | -4,029.5                            | -1,747.3     | 643.2                  | 488.1                   | 155.08                 | 4.147              |          |
| 9,800.0   | 5,811.2               | 9,533.5               | 5,831.0               | 79.5             | 82.0          | 90.19                 | -4,129.5                            | -1,746.8     | 642.7                  | 483.9                   | 158.82                 | 4.046              |          |
| 9,900.0   | 5,811.2               | 9,633.5               | 5,831.0               | 81.3             | 83.9          | 90.19                 | -4,229.5                            | -1,746.3     | 642.2                  | 479.6                   | 162.57                 | 3.950              |          |
| 10,000.0  | 5,811.2               | 9,733.5               | 5,831.0               | 83.1             | 85.8          | 90.19                 | -4,329.5                            | -1,745.8     | 641.7                  | 475.4                   | 166.32                 | 3.858              |          |
| 10,100.0  | 5,811.2               | 9,833.5               | 5,831.0               | 84.9             | 87.7          | 90.19                 | -4,429.5                            | -1,745.4     | 641.2                  | 471.2                   | 170.08                 | 3.770              |          |
| 10,200.0  | 5,811.1               | 9,933.5               | 5,831.0               | 86.7             | 89.6          | 90.19                 | -4,529.5                            | -1,744.9     | 640.8                  | 466.9                   | 173.84                 | 3.686              |          |
| 10,300.0  | 5,811.1               | 10,033.5              | 5,831.0               | 88.5             | 91.5          | 90.19                 | -4,629.5                            | -1,744.4     | 640.3                  | 462.7                   | 177.60                 | 3.605              |          |

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



# Cathedral Energy Services

## Anticollision Report

|                           |                               |                                     |  |
|---------------------------|-------------------------------|-------------------------------------|--|
| <b>Company:</b>           | Whiting Petroleum Corporation | <b>Local Co-ordinate Reference:</b> | Well Razor Federal #12F-1301A          |
| <b>Project:</b>           | Weld County, CO               | <b>TVD Reference:</b>               | WELL @ 4953.6usft (Original Well Elev) |
| <b>Reference Site:</b>    | S12-T10N-R58W                 | <b>MD Reference:</b>                | WELL @ 4953.6usft (Original Well Elev) |
| <b>Site Error:</b>        | 0.0usft                       | <b>North Reference:</b>             | True                                   |
| <b>Reference Well:</b>    | Razor Federal #12F-1301A      | <b>Survey Calculation Method:</b>   | Minimum Curvature                      |
| <b>Well Error:</b>        | 0.0usft                       | <b>Output errors are at</b>         | 2.00 sigma                             |
| <b>Reference Wellbore</b> | HZ                            | <b>Database:</b>                    | USA EDM 5000 Multi Users DB            |
| <b>Reference Design:</b>  | Plan #3                       | <b>Offset TVD Reference:</b>        | Offset Datum                           |

| Offset Design S11-T10N-R58W - Razor #11H-1415A - 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                            |              |                        |                         |                        |                   | 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 |                    |          |
| 10,400.0  | 5,811.1               | 10,133.5              | 5,831.0               | 90.3             | 93.4          | 90.19                 | -4,729.5                            | -1,743.9     | 639.8                  | 458.4                   | 181.37                 | 3.528             |                    |          |
| 10,500.0  | 5,811.1               | 10,233.5              | 5,831.0               | 92.1             | 95.3          | 90.19                 | -4,829.5                            | -1,743.4     | 639.3                  | 454.2                   | 185.14                 | 3.453             |                    |          |
| 10,600.0  | 5,811.1               | 10,333.5              | 5,831.0               | 93.9             | 97.2          | 90.19                 | -4,929.5                            | -1,742.9     | 638.9                  | 450.0                   | 188.91                 | 3.382             |                    |          |
| 10,700.0  | 5,811.1               | 10,433.5              | 5,831.0               | 95.7             | 99.1          | 90.19                 | -5,029.5                            | -1,742.5     | 638.4                  | 445.7                   | 192.69                 | 3.313             |                    |          |
| 10,800.0  | 5,811.1               | 10,533.5              | 5,831.0               | 97.5             | 101.0         | 90.19                 | -5,129.5                            | -1,742.0     | 637.9                  | 441.4                   | 196.47                 | 3.247             |                    |          |
| 10,900.0  | 5,811.1               | 10,633.5              | 5,831.0               | 99.4             | 102.9         | 90.20                 | -5,229.5                            | -1,741.5     | 637.4                  | 437.2                   | 200.25                 | 3.183             |                    |          |
| 11,000.0  | 5,811.1               | 10,733.5              | 5,831.0               | 101.2            | 104.8         | 90.20                 | -5,329.5                            | -1,741.0     | 637.0                  | 432.9                   | 204.03                 | 3.122             |                    |          |
| 11,100.0  | 5,811.1               | 10,833.5              | 5,831.0               | 103.0            | 106.7         | 90.20                 | -5,429.5                            | -1,740.5     | 636.5                  | 428.7                   | 207.82                 | 3.063             |                    |          |
| 11,200.0  | 5,811.1               | 10,933.5              | 5,831.0               | 104.9            | 108.6         | 90.20                 | -5,529.5                            | -1,740.0     | 636.0                  | 424.4                   | 211.60                 | 3.006             |                    |          |
| 11,300.0  | 5,811.1               | 11,033.5              | 5,831.0               | 106.7            | 110.5         | 90.20                 | -5,629.5                            | -1,739.6     | 635.5                  | 420.1                   | 215.39                 | 2.951             |                    |          |
| 11,400.0  | 5,811.1               | 11,133.5              | 5,831.0               | 108.6            | 112.5         | 90.20                 | -5,729.5                            | -1,739.1     | 635.0                  | 415.9                   | 219.19                 | 2.897             |                    |          |
| 11,500.0  | 5,811.1               | 11,233.5              | 5,831.0               | 110.4            | 114.4         | 90.20                 | -5,829.5                            | -1,738.6     | 634.6                  | 411.6                   | 222.98                 | 2.846             |                    |          |
| 11,600.0  | 5,811.1               | 11,333.5              | 5,831.0               | 112.3            | 116.3         | 90.20                 | -5,929.5                            | -1,738.1     | 634.1                  | 407.3                   | 226.78                 | 2.796             |                    |          |
| 11,700.0  | 5,811.1               | 11,433.5              | 5,831.0               | 114.1            | 118.2         | 90.20                 | -6,029.5                            | -1,737.6     | 633.6                  | 403.0                   | 230.57                 | 2.748             |                    |          |
| 11,800.0  | 5,811.1               | 11,533.5              | 5,831.0               | 116.0            | 120.1         | 90.20                 | -6,129.5                            | -1,737.1     | 633.1                  | 398.8                   | 234.37                 | 2.701             |                    |          |
| 11,900.0  | 5,811.1               | 11,633.5              | 5,831.0               | 117.8            | 122.0         | 90.20                 | -6,229.5                            | -1,736.7     | 632.7                  | 394.5                   | 238.17                 | 2.656             |                    |          |
| 12,000.0  | 5,811.1               | 11,733.5              | 5,831.0               | 119.7            | 123.9         | 90.20                 | -6,329.5                            | -1,736.2     | 632.2                  | 390.2                   | 241.97                 | 2.613             |                    |          |
| 12,100.0  | 5,811.1               | 11,833.5              | 5,831.0               | 121.6            | 125.8         | 90.20                 | -6,429.5                            | -1,735.7     | 631.7                  | 385.9                   | 245.78                 | 2.570             |                    |          |
| 12,200.0  | 5,811.1               | 11,933.5              | 5,831.0               | 123.4            | 127.8         | 90.20                 | -6,529.5                            | -1,735.2     | 631.2                  | 381.7                   | 249.58                 | 2.529             |                    |          |
| 12,300.0  | 5,811.1               | 12,033.5              | 5,831.0               | 125.3            | 129.7         | 90.20                 | -6,629.5                            | -1,734.7     | 630.8                  | 377.4                   | 253.39                 | 2.489             |                    |          |
| 12,400.0  | 5,811.1               | 12,133.5              | 5,831.0               | 127.2            | 131.6         | 90.20                 | -6,729.5                            | -1,734.2     | 630.3                  | 373.1                   | 257.19                 | 2.451             |                    |          |
| 12,500.0  | 5,811.0               | 12,233.5              | 5,831.0               | 129.0            | 133.5         | 90.20                 | -6,829.5                            | -1,733.8     | 629.8                  | 368.8                   | 261.00                 | 2.413             |                    |          |
| 12,600.0  | 5,811.0               | 12,333.5              | 5,831.0               | 130.9            | 135.4         | 90.20                 | -6,929.5                            | -1,733.3     | 629.3                  | 364.5                   | 264.81                 | 2.377             |                    |          |
| 12,700.0  | 5,811.0               | 12,433.5              | 5,831.0               | 132.8            | 137.3         | 90.20                 | -7,029.5                            | -1,732.8     | 628.9                  | 360.2                   | 268.62                 | 2.341             |                    |          |
| 12,800.0  | 5,811.0               | 12,533.5              | 5,831.0               | 134.6            | 139.2         | 90.21                 | -7,129.5                            | -1,732.3     | 628.4                  | 355.9                   | 272.43                 | 2.307             |                    |          |
| 12,900.0  | 5,811.0               | 12,633.5              | 5,831.0               | 136.5            | 141.2         | 90.21                 | -7,229.5                            | -1,731.8     | 627.9                  | 351.7                   | 276.24                 | 2.273             |                    |          |
| 13,000.0  | 5,811.0               | 12,733.5              | 5,831.0               | 138.4            | 143.1         | 90.21                 | -7,329.5                            | -1,731.3     | 627.4                  | 347.4                   | 280.05                 | 2.240             |                    |          |
| 13,100.0  | 5,811.0               | 12,833.5              | 5,831.0               | 140.3            | 145.0         | 90.21                 | -7,429.5                            | -1,730.9     | 626.9                  | 343.1                   | 283.87                 | 2.209             |                    |          |
| 13,200.0  | 5,811.0               | 12,933.5              | 5,831.0               | 142.1            | 146.9         | 90.21                 | -7,529.5                            | -1,730.4     | 626.5                  | 338.8                   | 287.68                 | 2.178             |                    |          |
| 13,300.0  | 5,811.0               | 13,033.5              | 5,831.0               | 144.0            | 148.8         | 90.21                 | -7,629.5                            | -1,729.9     | 626.0                  | 334.5                   | 291.50                 | 2.148             |                    |          |
| 13,400.0  | 5,811.0               | 13,133.5              | 5,831.0               | 145.9            | 150.7         | 90.21                 | -7,729.5                            | -1,729.4     | 625.5                  | 330.2                   | 295.31                 | 2.118             |                    |          |
| 13,500.0  | 5,811.0               | 13,233.5              | 5,831.0               | 147.8            | 152.6         | 90.21                 | -7,829.5                            | -1,728.9     | 625.0                  | 325.9                   | 299.13                 | 2.090             |                    |          |
| 13,600.0  | 5,811.0               | 13,333.5              | 5,831.0               | 149.7            | 154.6         | 90.21                 | -7,929.5                            | -1,728.4     | 624.6                  | 321.6                   | 302.95                 | 2.062             |                    |          |
| 13,700.0  | 5,811.0               | 13,433.5              | 5,831.0               | 151.6            | 156.5         | 90.21                 | -8,029.5                            | -1,728.0     | 624.1                  | 317.3                   | 306.77                 | 2.034             |                    |          |
| 13,800.0  | 5,811.0               | 13,533.5              | 5,831.0               | 153.4            | 158.4         | 90.21                 | -8,129.5                            | -1,727.5     | 623.6                  | 313.0                   | 310.58                 | 2.008             |                    |          |
| 13,900.0  | 5,811.0               | 13,633.5              | 5,831.0               | 155.3            | 160.3         | 90.21                 | -8,229.5                            | -1,727.0     | 623.1                  | 308.7                   | 314.40                 | 1.982             |                    |          |
| 13,919.8  | 5,811.0               | 13,651.3              | 5,831.0               | 155.7            | 160.7         | 90.21                 | -8,247.3                            | -1,726.9     | 623.0                  | 307.9                   | 315.12                 | 1.977             | CC, ES, SF         |          |

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



# Cathedral Energy Services

## Anticollision Report

|                           |                               |                                     |  |
|---------------------------|-------------------------------|-------------------------------------|--|
| <b>Company:</b>           | Whiting Petroleum Corporation | <b>Local Co-ordinate Reference:</b> | Well Razor Federal #12F-1301A          |
| <b>Project:</b>           | Weld County, CO               | <b>TVD Reference:</b>               | WELL @ 4953.6usft (Original Well Elev) |
| <b>Reference Site:</b>    | S12-T10N-R58W                 | <b>MD Reference:</b>                | WELL @ 4953.6usft (Original Well Elev) |
| <b>Site Error:</b>        | 0.0usft                       | <b>North Reference:</b>             | True                                   |
| <b>Reference Well:</b>    | Razor Federal #12F-1301A      | <b>Survey Calculation Method:</b>   | Minimum Curvature                      |
| <b>Well Error:</b>        | 0.0usft                       | <b>Output errors are at</b>         | 2.00 sigma                             |
| <b>Reference Wellbore</b> | HZ                            | <b>Database:</b>                    | USA EDM 5000 Multi Users DB            |
| <b>Reference Design:</b>  | Plan #3                       | <b>Offset TVD Reference:</b>        | Offset Datum                           |

| Offset Design S11-T10N-R58W - Razor #11H-1416B - 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 |                             |  |
| 0.0   | 0.0                   | 17.7                  | 17.7                  | 0.0              | 0.0           | -88.99                | 30.4                                | -1,728.2     | 1,728.5                |                         |                        |                   |                             |  |
| 100.0   | 100.0                 | 117.7                 | 117.7                 | 0.1              | 0.1           | -88.99                | 30.4                                | -1,728.2     | 1,728.5                | 1,728.3                 | 0.23                   | 7,621.314         |                             |  |
| 200.0   | 200.0                 | 217.7                 | 217.7                 | 0.3              | 0.4           | -88.99                | 30.4                                | -1,728.2     | 1,728.5                | 1,727.8                 | 0.68                   | 2,555.721         |                             |  |
| 300.0   | 300.0                 | 317.7                 | 317.7                 | 0.5              | 0.6           | -88.99                | 30.4                                | -1,728.2     | 1,728.5                | 1,727.4                 | 1.13                   | 1,535.280         |                             |  |
| 400.0   | 400.0                 | 417.7                 | 417.7                 | 0.8              | 0.8           | -88.99                | 30.4                                | -1,728.2     | 1,728.5                | 1,726.9                 | 1.58                   | 1,097.195         |                             |  |
| 500.0   | 500.0                 | 517.7                 | 517.7                 | 1.0              | 1.0           | -88.99                | 30.4                                | -1,728.2     | 1,728.5                | 1,726.5                 | 2.02                   | 853.619           |                             |  |
| 600.0   | 600.0                 | 617.7                 | 617.7                 | 1.2              | 1.3           | -88.99                | 30.4                                | -1,728.2     | 1,728.5                | 1,726.0                 | 2.47                   | 698.543           |                             |  |
| 700.0   | 700.0                 | 717.7                 | 717.7                 | 1.4              | 1.5           | -88.99                | 30.4                                | -1,728.2     | 1,728.5                | 1,725.6                 | 2.92                   | 591.150           |                             |  |
| 800.0   | 800.0                 | 817.7                 | 817.7                 | 1.7              | 1.7           | -88.99                | 30.4                                | -1,728.2     | 1,728.5                | 1,725.1                 | 3.37                   | 512.377           |                             |  |
| 900.0   | 900.0                 | 917.7                 | 917.7                 | 1.9              | 1.9           | -88.99                | 30.4                                | -1,728.2     | 1,728.5                | 1,724.7                 | 3.82                   | 452.130           |                             |  |
| 1,000.0   | 1,000.0               | 1,021.4               | 1,021.4               | 2.1              | 2.2           | -88.99                | 30.3                                | -1,728.2     | 1,728.5                | 1,724.2                 | 4.28                   | 404.323           |                             |  |
| 1,100.0   | 1,100.0               | 1,142.3               | 1,142.3               | 2.3              | 2.4           | 46.92                 | 27.0                                | -1,727.3     | 1,726.5                | 1,721.8                 | 4.70                   | 367.017           |                             |  |
| 1,200.0   | 1,199.8               | 1,252.1               | 1,251.8               | 2.5              | 2.6           | 46.91                 | 20.2                                | -1,725.4     | 1,721.0                | 1,716.0                 | 5.09                   | 338.331           |                             |  |
| 1,300.0   | 1,299.6               | 1,351.9               | 1,351.3               | 2.7              | 2.8           | 46.85                 | 13.5                                | -1,723.5     | 1,714.3                | 1,708.8                 | 5.47                   | 313.156           |                             |  |
| 1,400.0   | 1,399.4               | 1,451.6               | 1,450.9               | 2.9              | 3.0           | 46.80                 | 6.8                                 | -1,721.6     | 1,707.5                | 1,701.6                 | 5.88                   | 290.366           |                             |  |
| 1,500.0   | 1,499.1               | 1,551.4               | 1,550.4               | 3.1              | 3.2           | 46.75                 | 0.1                                 | -1,719.7     | 1,700.8                | 1,694.5                 | 6.30                   | 269.852           |                             |  |
| 1,600.0   | 1,598.9               | 1,651.1               | 1,649.9               | 3.4              | 3.4           | 46.69                 | -6.6                                | -1,717.8     | 1,694.0                | 1,687.3                 | 6.74                   | 251.437           |                             |  |
| 1,700.0   | 1,698.6               | 1,750.9               | 1,749.4               | 3.6              | 3.7           | 46.64                 | -13.3                               | -1,716.0     | 1,687.3                | 1,680.1                 | 7.18                   | 234.914           |                             |  |
| 1,800.0   | 1,798.4               | 1,850.7               | 1,848.9               | 3.8              | 3.9           | 46.58                 | -20.0                               | -1,714.1     | 1,680.5                | 1,672.9                 | 7.64                   | 220.067           |                             |  |
| 1,900.0   | 1,898.1               | 1,950.4               | 1,948.4               | 4.1              | 4.1           | 46.53                 | -26.7                               | -1,712.2     | 1,673.7                | 1,665.6                 | 8.10                   | 206.705           |                             |  |
| 2,000.0   | 1,997.9               | 2,050.2               | 2,047.9               | 4.3              | 4.4           | 46.47                 | -33.4                               | -1,710.3     | 1,667.0                | 1,658.4                 | 8.56                   | 194.644           |                             |  |
| 2,100.0   | 2,097.6               | 2,149.9               | 2,147.5               | 4.5              | 4.6           | 46.41                 | -40.1                               | -1,708.4     | 1,660.2                | 1,651.2                 | 9.04                   | 183.725           |                             |  |
| 2,200.0   | 2,197.4               | 2,249.7               | 2,247.0               | 4.8              | 4.9           | 46.36                 | -46.8                               | -1,706.5     | 1,653.5                | 1,644.0                 | 9.51                   | 173.811           |                             |  |
| 2,300.0   | 2,297.2               | 2,349.5               | 2,346.5               | 5.0              | 5.1           | 46.30                 | -53.5                               | -1,704.6     | 1,646.7                | 1,636.8                 | 9.99                   | 164.781           |                             |  |
| 2,400.0   | 2,396.9               | 2,449.2               | 2,446.0               | 5.3              | 5.3           | 46.24                 | -60.2                               | -1,702.8     | 1,640.0                | 1,629.5                 | 10.48                  | 156.530           |                             |  |
| 2,500.0   | 2,496.7               | 2,549.0               | 2,545.5               | 5.5              | 5.6           | 46.18                 | -66.9                               | -1,700.9     | 1,633.3                | 1,622.3                 | 10.96                  | 148.968           |                             |  |
| 2,600.0   | 2,596.4               | 2,648.7               | 2,645.0               | 5.8              | 5.8           | 46.12                 | -73.6                               | -1,699.0     | 1,626.5                | 1,615.1                 | 11.45                  | 142.018           |                             |  |
| 2,700.0   | 2,696.2               | 2,748.5               | 2,744.6               | 6.0              | 6.1           | 46.06                 | -80.3                               | -1,697.1     | 1,619.8                | 1,607.8                 | 11.94                  | 135.612           |                             |  |
| 2,800.0   | 2,795.9               | 2,848.2               | 2,844.1               | 6.3              | 6.4           | 46.00                 | -87.0                               | -1,695.2     | 1,613.0                | 1,600.6                 | 12.44                  | 129.691           |                             |  |
| 2,900.0   | 2,895.7               | 2,948.0               | 2,943.6               | 6.5              | 6.6           | 45.94                 | -93.7                               | -1,693.3     | 1,606.3                | 1,593.4                 | 12.93                  | 124.205           |                             |  |
| 3,000.0   | 2,995.5               | 3,047.8               | 3,043.1               | 6.8              | 6.9           | 45.88                 | -100.4                              | -1,691.4     | 1,599.6                | 1,586.1                 | 13.43                  | 119.110           |                             |  |
| 3,100.0   | 3,095.2               | 3,147.5               | 3,142.6               | 7.1              | 7.1           | 45.82                 | -107.1                              | -1,689.6     | 1,592.8                | 1,578.9                 | 13.93                  | 114.367           |                             |  |
| 3,200.0   | 3,195.0               | 3,247.3               | 3,242.1               | 7.3              | 7.4           | 45.76                 | -113.8                              | -1,687.7     | 1,586.1                | 1,571.7                 | 14.43                  | 109.941           |                             |  |
| 3,300.0   | 3,294.7               | 3,347.0               | 3,341.6               | 7.6              | 7.6           | 45.69                 | -120.5                              | -1,685.8     | 1,579.4                | 1,564.4                 | 14.93                  | 105.804           |                             |  |
| 3,400.0   | 3,394.5               | 3,446.8               | 3,441.2               | 7.8              | 7.9           | 45.63                 | -127.2                              | -1,683.9     | 1,572.6                | 1,557.2                 | 15.43                  | 101.928           |                             |  |
| 3,500.0   | 3,494.2               | 3,546.6               | 3,540.7               | 8.1              | 8.1           | 45.57                 | -133.9                              | -1,682.0     | 1,565.9                | 1,550.0                 | 15.93                  | 98.290            |                             |  |
| 3,600.0   | 3,594.0               | 3,646.3               | 3,640.2               | 8.3              | 8.4           | 45.50                 | -140.6                              | -1,680.1     | 1,559.2                | 1,542.8                 | 16.44                  | 94.869            |                             |  |
| 3,700.0   | 3,693.7               | 3,746.1               | 3,739.7               | 8.6              | 8.7           | 45.44                 | -147.3                              | -1,678.3     | 1,552.5                | 1,535.5                 | 16.94                  | 91.648            |                             |  |
| 3,800.0   | 3,793.5               | 3,845.8               | 3,839.2               | 8.9              | 8.9           | 45.37                 | -154.0                              | -1,676.4     | 1,545.8                | 1,528.3                 | 17.44                  | 88.608            |                             |  |
| 3,900.0   | 3,893.3               | 3,945.6               | 3,938.7               | 9.1              | 9.2           | 45.31                 | -160.7                              | -1,674.5     | 1,539.0                | 1,521.1                 | 17.95                  | 85.737            |                             |  |
| 4,000.0   | 3,993.0               | 4,045.3               | 4,038.3               | 9.4              | 9.4           | 45.24                 | -167.4                              | -1,672.6     | 1,532.3                | 1,513.9                 | 18.46                  | 83.020            |                             |  |
| 4,100.0   | 4,092.8               | 4,145.1               | 4,137.8               | 9.6              | 9.7           | 45.17                 | -174.1                              | -1,670.7     | 1,525.6                | 1,506.6                 | 18.96                  | 80.446            |                             |  |
| 4,200.0   | 4,192.5               | 4,244.9               | 4,237.3               | 9.9              | 10.0          | 45.10                 | -180.8                              | -1,668.8     | 1,518.9                | 1,499.4                 | 19.47                  | 78.003            |                             |  |
| 4,300.0   | 4,292.3               | 4,344.6               | 4,336.8               | 10.2             | 10.2          | 45.04                 | -187.5                              | -1,666.9     | 1,512.2                | 1,492.2                 | 19.98                  | 75.683            |                             |  |
| 4,400.0   | 4,392.0               | 4,444.4               | 4,436.3               | 10.4             | 10.5          | 44.97                 | -194.2                              | -1,665.1     | 1,505.5                | 1,485.0                 | 20.49                  | 73.476            |                             |  |
| 4,500.0   | 4,491.8               | 4,544.1               | 4,535.8               | 10.7             | 10.7          | 44.90                 | -200.8                              | -1,663.2     | 1,498.8                | 1,477.8                 | 21.00                  | 71.375            |                             |  |
| 4,600.0   | 4,591.6               | 4,643.9               | 4,635.3               | 11.0             | 11.0          | 44.83                 | -207.5                              | -1,661.3     | 1,492.1                | 1,470.6                 | 21.51                  | 69.371            |                             |  |
| 4,700.0   | 4,691.3               | 4,743.7               | 4,734.9               | 11.2             | 11.3          | 44.76                 | -214.2                              | -1,659.4     | 1,485.4                | 1,463.4                 | 22.02                  | 67.460            |                             |  |
| 4,800.0   | 4,791.1               | 4,843.4               | 4,834.4               | 11.5             | 11.5          | 44.68                 | -220.9                              | -1,657.5     | 1,478.7                | 1,456.1                 | 22.53                  | 65.633            |                             |  |
| 4,900.0   | 4,890.8               | 4,943.2               | 4,933.9               | 11.7             | 11.8          | 44.61                 | -227.6                              | -1,655.6     | 1,472.0                | 1,448.9                 | 23.04                  | 63.887            |                             |  |
| 5,000.0   | 4,990.6               | 5,042.9               | 5,033.4               | 12.0             | 12.0          | 44.54                 | -234.3                              | -1,653.7     | 1,465.3                | 1,441.7                 | 23.55                  | 62.216            |                             |  |
| 5,100.0   | 5,090.3               | 5,142.7               | 5,132.9               | 12.3             | 12.3          | 44.47                 | -241.0                              | -1,651.9     | 1,458.6                | 1,434.5                 | 24.06                  | 60.614            |                             |  |

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

# Cathedral Energy Services

## Anticollision Report

|                           |                               |                                     |  |
|---------------------------|-------------------------------|-------------------------------------|--|
| <b>Company:</b>           | Whiting Petroleum Corporation | <b>Local Co-ordinate Reference:</b> | Well Razor Federal #12F-1301A          |
| <b>Project:</b>           | Weld County, CO               | <b>TVD Reference:</b>               | WELL @ 4953.6usft (Original Well Elev) |
| <b>Reference Site:</b>    | S12-T10N-R58W                 | <b>MD Reference:</b>                | WELL @ 4953.6usft (Original Well Elev) |
| <b>Site Error:</b>        | 0.0usft                       | <b>North Reference:</b>             | True                                   |
| <b>Reference Well:</b>    | Razor Federal #12F-1301A      | <b>Survey Calculation Method:</b>   | Minimum Curvature                      |
| <b>Well Error:</b>        | 0.0usft                       | <b>Output errors are at</b>         | 2.00 sigma                             |
| <b>Reference Wellbore</b> | HZ                            | <b>Database:</b>                    | USA EDM 5000 Multi Users DB            |
| <b>Reference Design:</b>  | Plan #3                       | <b>Offset TVD Reference:</b>        | Offset Datum                           |

| Offset Design S11-T10N-R58W - Razor #11H-1416B - 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   | 5,190.1               | 5,242.4               | 5,232.4               | 12.5             | 12.6          | 44.39                 | -247.7                              | -1,650.0     | 1,451.9                | 1,427.3                 | 24.58                  | 59.079            |                             |  |
| 5,300.0   | 5,289.9               | 5,342.2               | 5,332.0               | 12.8             | 12.8          | 44.32                 | -254.4                              | -1,648.1     | 1,445.2                | 1,420.1                 | 25.09                  | 57.606            |                             |  |
| 5,400.0   | 5,389.2               | 5,441.7               | 5,431.2               | 13.1             | 13.1          | 44.89                 | -261.1                              | -1,646.2     | 1,435.8                | 1,410.4                 | 25.48                  | 56.358            |                             |  |
| 5,500.0   | 5,485.0               | 5,692.0               | 5,669.7               | 13.5             | 14.2          | 46.40                 | -326.7                              | -1,627.8     | 1,409.6                | 1,383.2                 | 26.39                  | 53.406            |                             |  |
| 5,600.0   | 5,573.6               | 5,902.6               | 5,827.0               | 14.2             | 16.0          | 47.30                 | -459.3                              | -1,590.4     | 1,361.4                | 1,333.9                 | 27.42                  | 49.645            |                             |  |
| 5,700.0   | 5,651.8               | 6,039.5               | 5,894.6               | 15.0             | 17.7          | 50.04                 | -573.4                              | -1,558.3     | 1,298.1                | 1,270.1                 | 28.07                  | 46.243            |                             |  |
| 5,800.0   | 5,716.7               | 6,134.7               | 5,922.2               | 16.1             | 19.1          | 55.86                 | -661.0                              | -1,533.7     | 1,224.7                | 1,195.7                 | 29.08                  | 42.113            |                             |  |
| 5,900.0   | 5,766.0               | 6,208.8               | 5,932.0               | 17.3             | 20.2          | 65.61                 | -731.7                              | -1,513.8     | 1,144.3                | 1,113.2                 | 31.11                  | 36.787            |                             |  |
| 6,000.0   | 5,797.8               | 6,256.8               | 5,933.0               | 18.8             | 20.9          | 80.47                 | -777.9                              | -1,500.9     | 1,059.5                | 1,025.4                 | 34.04                  | 31.128            |                             |  |
| 6,100.0   | 5,811.0               | 6,300.0               | 5,933.0               | 20.4             | 21.5          | 98.44                 | -819.7                              | -1,490.0     | 973.9                  | 937.9                   | 36.05                  | 27.018            |                             |  |
| 6,200.0   | 5,811.3               | 6,327.2               | 5,933.0               | 21.9             | 21.9          | 101.51                | -846.2                              | -1,483.6     | 890.7                  | 852.9                   | 37.86                  | 23.529            |                             |  |
| 6,300.0   | 5,811.3               | 6,369.3               | 5,933.0               | 23.4             | 22.5          | 101.47                | -887.3                              | -1,474.5     | 811.9                  | 771.9                   | 39.97                  | 20.311            |                             |  |
| 6,400.0   | 5,811.3               | 6,416.8               | 5,933.0               | 25.0             | 23.2          | 101.59                | -933.8                              | -1,465.3     | 737.9                  | 695.7                   | 42.20                  | 17.487            |                             |  |
| 6,500.0   | 5,811.3               | 6,469.7               | 5,933.0               | 26.6             | 23.9          | 101.85                | -986.0                              | -1,456.5     | 669.5                  | 625.0                   | 44.54                  | 15.033            |                             |  |
| 6,600.0   | 5,811.3               | 6,528.1               | 5,933.0               | 28.2             | 24.8          | 102.24                | -1,043.8                            | -1,448.4     | 607.3                  | 560.3                   | 46.96                  | 12.933            |                             |  |
| 6,700.0   | 5,811.3               | 6,600.0               | 5,933.0               | 29.8             | 25.9          | 102.84                | -1,115.3                            | -1,440.8     | 552.0                  | 502.5                   | 49.53                  | 11.145            |                             |  |
| 6,800.0   | 5,811.3               | 6,660.3               | 5,933.0               | 31.4             | 26.8          | 103.29                | -1,175.5                            | -1,436.6     | 504.0                  | 451.9                   | 52.02                  | 9.688             |                             |  |
| 6,900.0   | 5,811.3               | 6,733.5               | 5,933.0               | 33.0             | 27.9          | 103.89                | -1,248.6                            | -1,434.0     | 464.0                  | 409.4                   | 54.61                  | 8.496             |                             |  |
| 7,000.0   | 5,811.3               | 6,820.6               | 5,933.0               | 34.6             | 29.3          | 104.60                | -1,335.7                            | -1,433.7     | 431.8                  | 374.4                   | 57.38                  | 7.525             |                             |  |
| 7,100.0   | 5,811.3               | 6,916.6               | 5,933.0               | 36.2             | 30.9          | 105.36                | -1,431.7                            | -1,433.7     | 404.9                  | 344.7                   | 60.27                  | 6.718             |                             |  |
| 7,200.0   | 5,811.3               | 7,014.0               | 5,933.0               | 37.7             | 32.6          | 106.07                | -1,529.1                            | -1,433.7     | 383.0                  | 319.9                   | 63.11                  | 6.069             |                             |  |
| 7,300.0   | 5,811.3               | 7,112.4               | 5,933.0               | 39.2             | 34.3          | 106.68                | -1,627.5                            | -1,433.7     | 366.1                  | 300.3                   | 65.88                  | 5.557             |                             |  |
| 7,400.0   | 5,811.3               | 7,211.6               | 5,933.0               | 40.7             | 36.0          | 107.15                | -1,726.7                            | -1,433.7     | 354.3                  | 285.7                   | 68.59                  | 5.165             |                             |  |
| 7,500.0   | 5,811.3               | 7,311.4               | 5,933.0               | 42.1             | 37.7          | 107.44                | -1,826.5                            | -1,433.7     | 347.4                  | 276.2                   | 71.23                  | 4.877             |                             |  |
| 7,599.9   | 5,811.3               | 7,411.2               | 5,933.0               | 43.6             | 39.5          | 107.54                | -1,926.3                            | -1,433.7     | 345.2                  | 271.3                   | 73.87                  | 4.673 CC          |                             |  |
| 7,600.0   | 5,811.3               | 7,411.3               | 5,933.0               | 43.6             | 39.5          | 107.52                | -1,926.4                            | -1,433.7     | 345.5                  | 271.6                   | 73.88                  | 4.676             |                             |  |
| 7,700.0   | 5,811.3               | 7,511.3               | 5,933.0               | 45.0             | 41.3          | 107.52                | -2,026.4                            | -1,433.7     | 345.5                  | 268.3                   | 77.16                  | 4.477             |                             |  |
| 7,800.0   | 5,811.3               | 7,611.3               | 5,933.0               | 46.4             | 43.1          | 107.52                | -2,126.4                            | -1,433.7     | 345.5                  | 265.0                   | 80.48                  | 4.293             |                             |  |
| 7,900.0   | 5,811.2               | 7,711.3               | 5,933.0               | 47.9             | 44.9          | 107.52                | -2,226.4                            | -1,433.7     | 345.5                  | 261.7                   | 83.83                  | 4.121             |                             |  |
| 8,000.0   | 5,811.2               | 7,811.3               | 5,933.0               | 49.4             | 46.8          | 107.53                | -2,326.4                            | -1,433.7     | 345.5                  | 258.3                   | 87.21                  | 3.962             |                             |  |
| 8,100.0   | 5,811.2               | 7,911.3               | 5,933.0               | 50.9             | 48.6          | 107.53                | -2,426.4                            | -1,433.7     | 345.5                  | 254.9                   | 90.61                  | 3.813             |                             |  |
| 8,200.0   | 5,811.2               | 8,011.3               | 5,933.0               | 52.5             | 50.4          | 107.53                | -2,526.4                            | -1,433.7     | 345.5                  | 251.5                   | 94.03                  | 3.675             |                             |  |
| 8,300.0   | 5,811.2               | 8,111.3               | 5,933.0               | 54.0             | 52.3          | 107.53                | -2,626.4                            | -1,433.7     | 345.5                  | 248.1                   | 97.47                  | 3.545             |                             |  |
| 8,400.0   | 5,811.2               | 8,211.3               | 5,933.0               | 55.6             | 54.1          | 107.53                | -2,726.4                            | -1,433.7     | 345.5                  | 244.6                   | 100.93                 | 3.423             |                             |  |
| 8,500.0   | 5,811.2               | 8,311.3               | 5,933.0               | 57.2             | 56.0          | 107.53                | -2,826.4                            | -1,433.7     | 345.5                  | 241.1                   | 104.41                 | 3.309             |                             |  |
| 8,600.0   | 5,811.2               | 8,411.3               | 5,933.0               | 58.9             | 57.8          | 107.53                | -2,926.4                            | -1,433.7     | 345.5                  | 237.6                   | 107.90                 | 3.202             |                             |  |
| 8,700.0   | 5,811.2               | 8,511.3               | 5,933.0               | 60.5             | 59.7          | 107.53                | -3,026.4                            | -1,433.7     | 345.6                  | 234.2                   | 111.40                 | 3.102             |                             |  |
| 8,800.0   | 5,811.2               | 8,611.3               | 5,933.0               | 62.2             | 61.6          | 107.53                | -3,126.4                            | -1,433.7     | 345.6                  | 230.6                   | 114.92                 | 3.007             |                             |  |
| 8,900.0   | 5,811.2               | 8,711.3               | 5,933.0               | 63.9             | 63.4          | 107.53                | -3,226.4                            | -1,433.7     | 345.6                  | 227.1                   | 118.45                 | 2.918             |                             |  |
| 9,000.0   | 5,811.2               | 8,811.3               | 5,933.0               | 65.6             | 65.3          | 107.53                | -3,326.4                            | -1,433.7     | 345.6                  | 223.6                   | 121.98                 | 2.833             |                             |  |
| 9,100.0   | 5,811.2               | 8,911.3               | 5,933.0               | 67.3             | 67.2          | 107.53                | -3,426.4                            | -1,433.7     | 345.6                  | 220.1                   | 125.53                 | 2.753             |                             |  |
| 9,200.0   | 5,811.2               | 9,011.3               | 5,933.0               | 69.0             | 69.0          | 107.53                | -3,526.4                            | -1,433.7     | 345.6                  | 216.5                   | 129.08                 | 2.677             |                             |  |
| 9,300.0   | 5,811.2               | 9,111.3               | 5,933.0               | 70.7             | 70.9          | 107.53                | -3,626.4                            | -1,433.7     | 345.6                  | 213.0                   | 132.64                 | 2.605             |                             |  |
| 9,400.0   | 5,811.2               | 9,211.3               | 5,933.0               | 72.5             | 72.8          | 107.53                | -3,726.4                            | -1,433.7     | 345.6                  | 209.4                   | 136.21                 | 2.537             |                             |  |
| 9,500.0   | 5,811.2               | 9,311.3               | 5,933.0               | 74.2             | 74.7          | 107.53                | -3,826.4                            | -1,433.7     | 345.6                  | 205.8                   | 139.78                 | 2.472             |                             |  |
| 9,600.0   | 5,811.2               | 9,411.3               | 5,933.0               | 76.0             | 76.6          | 107.53                | -3,926.4                            | -1,433.7     | 345.6                  | 202.2                   | 143.36                 | 2.411             |                             |  |
| 9,700.0   | 5,811.2               | 9,511.3               | 5,933.0               | 77.7             | 78.5          | 107.53                | -4,026.4                            | -1,433.7     | 345.6                  | 198.7                   | 146.95                 | 2.352             |                             |  |
| 9,800.0   | 5,811.2               | 9,611.3               | 5,933.0               | 79.5             | 80.4          | 107.53                | -4,126.4                            | -1,433.7     | 345.6                  | 195.1                   | 150.54                 | 2.296             |                             |  |
| 9,900.0   | 5,811.2               | 9,711.3               | 5,933.0               | 81.3             | 82.2          | 107.53                | -4,226.4                            | -1,433.7     | 345.6                  | 191.5                   | 154.14                 | 2.242             |                             |  |
| 10,000.0  | 5,811.2               | 9,811.3               | 5,933.0               | 83.1             | 84.1          | 107.53                | -4,326.4                            | -1,433.7     | 345.6                  | 187.9                   | 157.74                 | 2.191             |                             |  |
| 10,100.0  | 5,811.2               | 9,911.3               | 5,933.0               | 84.9             | 86.0          | 107.53                | -4,426.4                            | -1,433.7     | 345.6                  | 184.3                   | 161.34                 | 2.142             |                             |  |
| 10,200.0  | 5,811.1               | 10,011.3              | 5,933.0               | 86.7             | 87.9          | 107.53                | -4,526.4                            | -1,433.7     | 345.6                  | 180.7                   | 164.95                 | 2.095             |                             |  |

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

# Cathedral Energy Services

## Anticollision Report

|                           |                               |                                     |  |
|---------------------------|-------------------------------|-------------------------------------|--|
| <b>Company:</b>           | Whiting Petroleum Corporation | <b>Local Co-ordinate Reference:</b> | Well Razor Federal #12F-1301A          |
| <b>Project:</b>           | Weld County, CO               | <b>TVD Reference:</b>               | WELL @ 4953.6usft (Original Well Elev) |
| <b>Reference Site:</b>    | S12-T10N-R58W                 | <b>MD Reference:</b>                | WELL @ 4953.6usft (Original Well Elev) |
| <b>Site Error:</b>        | 0.0usft                       | <b>North Reference:</b>             | True                                   |
| <b>Reference Well:</b>    | Razor Federal #12F-1301A      | <b>Survey Calculation Method:</b>   | Minimum Curvature                      |
| <b>Well Error:</b>        | 0.0usft                       | <b>Output errors are at</b>         | 2.00 sigma                             |
| <b>Reference Wellbore</b> | HZ                            | <b>Database:</b>                    | USA EDM 5000 Multi Users DB            |
| <b>Reference Design:</b>  | Plan #3                       | <b>Offset TVD Reference:</b>        | Offset Datum                           |

| Offset Design S11-T10N-R58W - Razor #11H-1416B - 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 |
| 10,300.0  | 5,811.1               | 10,111.3              | 5,933.0               | 88.5             | 89.8          | 107.54                | -4,626.4                            | -1,433.7     | 345.7                  | 177.1                   | 168.56                 | 2.051              |                   |
| 10,400.0  | 5,811.1               | 10,211.3              | 5,933.0               | 90.3             | 91.7          | 107.54                | -4,726.4                            | -1,433.7     | 345.7                  | 173.5                   | 172.18                 | 2.008              |                   |
| 10,500.0  | 5,811.1               | 10,311.3              | 5,933.0               | 92.1             | 93.6          | 107.54                | -4,826.4                            | -1,433.7     | 345.7                  | 169.9                   | 175.80                 | 1.966              |                   |
| 10,600.0  | 5,811.1               | 10,411.3              | 5,933.0               | 93.9             | 95.5          | 107.54                | -4,926.4                            | -1,433.7     | 345.7                  | 166.3                   | 179.42                 | 1.927              |                   |
| 10,700.0  | 5,811.1               | 10,511.3              | 5,933.0               | 95.7             | 97.4          | 107.54                | -5,026.4                            | -1,433.7     | 345.7                  | 162.6                   | 183.04                 | 1.888              |                   |
| 10,800.0  | 5,811.1               | 10,611.3              | 5,933.0               | 97.5             | 99.3          | 107.54                | -5,126.4                            | -1,433.7     | 345.7                  | 159.0                   | 186.67                 | 1.852              |                   |
| 10,900.0  | 5,811.1               | 10,711.3              | 5,933.0               | 99.4             | 101.2         | 107.54                | -5,226.4                            | -1,433.7     | 345.7                  | 155.4                   | 190.30                 | 1.817              |                   |
| 11,000.0  | 5,811.1               | 10,811.3              | 5,933.0               | 101.2            | 103.1         | 107.54                | -5,326.4                            | -1,433.7     | 345.7                  | 151.8                   | 193.93                 | 1.783              |                   |
| 11,100.0  | 5,811.1               | 10,911.3              | 5,933.0               | 103.0            | 105.0         | 107.54                | -5,426.4                            | -1,433.7     | 345.7                  | 148.1                   | 197.57                 | 1.750              |                   |
| 11,200.0  | 5,811.1               | 11,011.3              | 5,933.0               | 104.9            | 106.9         | 107.54                | -5,526.4                            | -1,433.7     | 345.7                  | 144.5                   | 201.20                 | 1.718              |                   |
| 11,300.0  | 5,811.1               | 11,111.3              | 5,933.0               | 106.7            | 108.8         | 107.54                | -5,626.4                            | -1,433.7     | 345.7                  | 140.9                   | 204.84                 | 1.688              |                   |
| 11,400.0  | 5,811.1               | 11,211.3              | 5,933.0               | 108.6            | 110.7         | 107.54                | -5,726.4                            | -1,433.7     | 345.7                  | 137.2                   | 208.48                 | 1.658              |                   |
| 11,500.0  | 5,811.1               | 11,311.3              | 5,933.0               | 110.4            | 112.6         | 107.54                | -5,826.4                            | -1,433.7     | 345.7                  | 133.6                   | 212.12                 | 1.630              |                   |
| 11,600.0  | 5,811.1               | 11,411.3              | 5,933.0               | 112.3            | 114.5         | 107.54                | -5,926.4                            | -1,433.7     | 345.7                  | 130.0                   | 215.77                 | 1.602              |                   |
| 11,700.0  | 5,811.1               | 11,511.3              | 5,933.0               | 114.1            | 116.5         | 107.54                | -6,026.4                            | -1,433.7     | 345.7                  | 126.3                   | 219.41                 | 1.576              |                   |
| 11,800.0  | 5,811.1               | 11,611.3              | 5,933.0               | 116.0            | 118.4         | 107.54                | -6,126.4                            | -1,433.7     | 345.7                  | 122.7                   | 223.06                 | 1.550              |                   |
| 11,900.0  | 5,811.1               | 11,711.3              | 5,933.0               | 117.8            | 120.3         | 107.54                | -6,226.4                            | -1,433.7     | 345.8                  | 119.0                   | 226.71                 | 1.525              |                   |
| 12,000.0  | 5,811.1               | 11,811.3              | 5,933.0               | 119.7            | 122.2         | 107.54                | -6,326.4                            | -1,433.7     | 345.8                  | 115.4                   | 230.36                 | 1.501              |                   |
| 12,100.0  | 5,811.1               | 11,911.3              | 5,933.0               | 121.6            | 124.1         | 107.54                | -6,426.4                            | -1,433.7     | 345.8                  | 111.8                   | 234.01                 | 1.478              | Level 3           |
| 12,200.0  | 5,811.1               | 12,011.3              | 5,933.0               | 123.4            | 126.0         | 107.54                | -6,526.4                            | -1,433.7     | 345.8                  | 108.1                   | 237.66                 | 1.455              | Level 3           |
| 12,300.0  | 5,811.1               | 12,111.3              | 5,933.0               | 125.3            | 127.9         | 107.54                | -6,626.4                            | -1,433.7     | 345.8                  | 104.5                   | 241.31                 | 1.433              | Level 3           |
| 12,400.0  | 5,811.1               | 12,211.3              | 5,933.0               | 127.2            | 129.8         | 107.54                | -6,726.4                            | -1,433.7     | 345.8                  | 100.8                   | 244.97                 | 1.412              | Level 3           |
| 12,500.0  | 5,811.0               | 12,311.3              | 5,933.0               | 129.0            | 131.7         | 107.54                | -6,826.4                            | -1,433.7     | 345.8                  | 97.2                    | 248.62                 | 1.391              | Level 3           |
| 12,600.0  | 5,811.0               | 12,411.3              | 5,933.0               | 130.9            | 133.6         | 107.55                | -6,926.4                            | -1,433.7     | 345.8                  | 93.5                    | 252.28                 | 1.371              | Level 3           |
| 12,700.0  | 5,811.0               | 12,511.3              | 5,933.0               | 132.8            | 135.5         | 107.55                | -7,026.4                            | -1,433.7     | 345.8                  | 89.9                    | 255.94                 | 1.351              | Level 3           |
| 12,800.0  | 5,811.0               | 12,611.3              | 5,933.0               | 134.6            | 137.5         | 107.55                | -7,126.4                            | -1,433.7     | 345.8                  | 86.2                    | 259.60                 | 1.332              | Level 3           |
| 12,900.0  | 5,811.0               | 12,711.3              | 5,933.0               | 136.5            | 139.4         | 107.55                | -7,226.4                            | -1,433.7     | 345.8                  | 82.6                    | 263.25                 | 1.314              | Level 3           |
| 13,000.0  | 5,811.0               | 12,811.3              | 5,933.0               | 138.4            | 141.3         | 107.55                | -7,326.4                            | -1,433.7     | 345.8                  | 78.9                    | 266.92                 | 1.296              | Level 3           |
| 13,100.0  | 5,811.0               | 12,911.3              | 5,933.0               | 140.3            | 143.2         | 107.55                | -7,426.4                            | -1,433.7     | 345.8                  | 75.3                    | 270.58                 | 1.278              | Level 3           |
| 13,200.0  | 5,811.0               | 13,011.3              | 5,933.0               | 142.1            | 145.1         | 107.55                | -7,526.4                            | -1,433.7     | 345.8                  | 71.6                    | 274.24                 | 1.261              | Level 3           |
| 13,300.0  | 5,811.0               | 13,111.3              | 5,933.0               | 144.0            | 147.0         | 107.55                | -7,626.4                            | -1,433.7     | 345.8                  | 67.9                    | 277.90                 | 1.244              | Level 2           |
| 13,400.0  | 5,811.0               | 13,211.3              | 5,933.0               | 145.9            | 148.9         | 107.55                | -7,726.4                            | -1,433.7     | 345.8                  | 64.3                    | 281.56                 | 1.228              | Level 2           |
| 13,500.0  | 5,811.0               | 13,311.3              | 5,933.0               | 147.8            | 150.8         | 107.55                | -7,826.4                            | -1,433.7     | 345.9                  | 60.6                    | 285.23                 | 1.213              | Level 2           |
| 13,600.0  | 5,811.0               | 13,411.3              | 5,933.0               | 149.7            | 152.7         | 107.55                | -7,926.4                            | -1,433.7     | 345.9                  | 57.0                    | 288.89                 | 1.197              | Level 2           |
| 13,700.0  | 5,811.0               | 13,511.3              | 5,933.0               | 151.6            | 154.7         | 107.55                | -8,026.4                            | -1,433.7     | 345.9                  | 53.3                    | 292.56                 | 1.182              | Level 2           |
| 13,800.0  | 5,811.0               | 13,611.3              | 5,933.0               | 153.4            | 156.6         | 107.55                | -8,126.4                            | -1,433.6     | 345.9                  | 49.6                    | 296.22                 | 1.168              | Level 2           |
| 13,900.0  | 5,811.0               | 13,711.3              | 5,933.0               | 155.3            | 158.4         | 107.55                | -8,226.4                            | -1,433.6     | 345.9                  | 46.0                    | 299.85                 | 1.153              | Level 2           |
| 13,919.8  | 5,811.0               | 13,731.2              | 5,933.0               | 155.7            | 158.8         | 107.55                | -8,246.3                            | -1,433.6     | 345.9                  | 45.4                    | 300.51                 | 1.151              | Level 2, ES, SF   |

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

# Cathedral Energy Services

## Anticollision Report

|                           |                               |                                     |  |
|---------------------------|-------------------------------|-------------------------------------|--|
| <b>Company:</b>           | Whiting Petroleum Corporation | <b>Local Co-ordinate Reference:</b> | Well Razor Federal #12F-1301A          |
| <b>Project:</b>           | Weld County, CO               | <b>TVD Reference:</b>               | WELL @ 4953.6usft (Original Well Elev) |
| <b>Reference Site:</b>    | S12-T10N-R58W                 | <b>MD Reference:</b>                | WELL @ 4953.6usft (Original Well Elev) |
| <b>Site Error:</b>        | 0.0usft                       | <b>North Reference:</b>             | True                                   |
| <b>Reference Well:</b>    | Razor Federal #12F-1301A      | <b>Survey Calculation Method:</b>   | Minimum Curvature                      |
| <b>Well Error:</b>        | 0.0usft                       | <b>Output errors are at</b>         | 2.00 sigma                             |
| <b>Reference Wellbore</b> | HZ                            | <b>Database:</b>                    | USA EDM 5000 Multi Users DB            |
| <b>Reference Design:</b>  | Plan #3                       | <b>Offset TVD Reference:</b>        | Offset Datum                           |

| Offset Design S12-T10N-R58W - Razor #12F-0101A - HZ - Plan #2 |                       |                       |                       |                  |               |                       |                                     |              |                        |                         |                        |                   | Offset Site Error: | 0.0 usft |
|---|-----------------------|-----------------------|-----------------------|------------------|---------------|-----------------------|-------------------------------------|--------------|------------------------|-------------------------|------------------------|-------------------|--------------------|----------|
| Survey Program: O-ISCWSA MWD                                  |                       |                       |                       |                  |               |                       |                                     |              |                        |                         |                        |                   | Offset Well Error: | 0.0 usft |
| Reference   |                       | Offset                |                       | Semi Major Axis  |               |                       | Distance                            |              |                        |                         |                        | 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) | Total Uncertainty Axis |                   |                    |          |
| 0.0   | 0.0                   | 0.0                   | 0.0                   | 0.0              | 0.0           | 0.00                  | 74.9                                | 0.0          | 74.9                   |                         |                        |                   |                    |          |
| 100.0   | 100.0                 | 100.0                 | 100.0                 | 0.1              | 0.1           | 0.00                  | 74.9                                | 0.0          | 74.9                   | 74.7                    | 0.19                   | 400.351           |                    |          |
| 200.0   | 200.0                 | 200.0                 | 200.0                 | 0.3              | 0.3           | 0.00                  | 74.9                                | 0.0          | 74.9                   | 74.2                    | 0.64                   | 117.632           |                    |          |
| 300.0   | 300.0                 | 300.0                 | 300.0                 | 0.5              | 0.5           | 0.00                  | 74.9                                | 0.0          | 74.9                   | 73.8                    | 1.09                   | 68.945            |                    |          |
| 400.0   | 400.0                 | 400.0                 | 400.0                 | 0.8              | 0.8           | 0.00                  | 74.9                                | 0.0          | 74.9                   | 73.3                    | 1.54                   | 48.762            |                    |          |
| 466.7   | 466.7                 | 466.7                 | 466.7                 | 0.9              | 0.9           | 0.00                  | 74.9                                | 0.0          | 74.9                   | 73.0                    | 1.84                   | 40.800 CC         |                    |          |
| 500.0   | 500.0                 | 500.0                 | 500.0                 | 1.0              | 1.0           | 0.00                  | 74.9                                | 0.0          | 74.9                   | 72.9                    | 1.99                   | 37.721 ES         |                    |          |
| 600.0   | 600.0                 | 598.2                 | 598.2                 | 1.2              | 1.2           | -0.94                 | 76.0                                | -1.2         | 76.0                   | 73.6                    | 2.43                   | 31.321            |                    |          |
| 700.0   | 700.0                 | 696.2                 | 696.1                 | 1.4              | 1.4           | -3.58                 | 79.4                                | -5.0         | 79.7                   | 76.8                    | 2.87                   | 27.719            |                    |          |
| 800.0   | 800.0                 | 795.9                 | 795.5                 | 1.7              | 1.7           | -6.86                 | 84.1                                | -10.1        | 84.8                   | 81.5                    | 3.32                   | 25.521            |                    |          |
| 900.0   | 900.0                 | 895.7                 | 895.0                 | 1.9              | 1.9           | -9.75                 | 88.8                                | -15.3        | 90.2                   | 86.4                    | 3.77                   | 23.924            |                    |          |
| 1,000.0   | 1,000.0               | 995.4                 | 994.6                 | 2.1              | 2.1           | -12.32                | 93.4                                | -20.4        | 95.8                   | 91.6                    | 4.22                   | 22.703            |                    |          |
| 1,100.0   | 1,100.0               | 1,095.2               | 1,094.1               | 2.3              | 2.4           | 122.07                | 98.1                                | -25.6        | 102.5                  | 97.8                    | 4.67                   | 21.936            |                    |          |
| 1,200.0   | 1,199.8               | 1,194.8               | 1,193.4               | 2.5              | 2.6           | 122.21                | 102.8                               | -30.7        | 111.1                  | 106.0                   | 5.09                   | 21.813            |                    |          |
| 1,300.0   | 1,299.6               | 1,294.3               | 1,292.7               | 2.7              | 2.9           | 123.15                | 107.5                               | -35.8        | 120.6                  | 115.0                   | 5.52                   | 21.827            |                    |          |
| 1,400.0   | 1,399.4               | 1,393.9               | 1,392.0               | 2.9              | 3.1           | 123.96                | 112.2                               | -41.0        | 130.1                  | 124.1                   | 5.97                   | 21.808            |                    |          |
| 1,500.0   | 1,499.1               | 1,493.4               | 1,491.3               | 3.1              | 3.4           | 124.66                | 116.8                               | -46.1        | 139.7                  | 133.3                   | 6.42                   | 21.768            |                    |          |
| 1,600.0   | 1,598.9               | 1,592.9               | 1,590.6               | 3.4              | 3.6           | 125.26                | 121.5                               | -51.2        | 149.3                  | 142.4                   | 6.87                   | 21.717            |                    |          |
| 1,700.0   | 1,698.6               | 1,692.4               | 1,689.9               | 3.6              | 3.9           | 125.80                | 126.2                               | -56.4        | 158.9                  | 151.5                   | 7.33                   | 21.659            |                    |          |
| 1,800.0   | 1,798.4               | 1,792.0               | 1,789.2               | 3.8              | 4.2           | 126.27                | 130.8                               | -61.5        | 168.5                  | 160.7                   | 7.80                   | 21.599            |                    |          |
| 1,900.0   | 1,898.1               | 1,891.5               | 1,888.4               | 4.1              | 4.4           | 126.69                | 135.5                               | -66.6        | 178.1                  | 169.8                   | 8.27                   | 21.537            |                    |          |
| 2,000.0   | 1,997.9               | 1,991.0               | 1,987.7               | 4.3              | 4.7           | 127.07                | 140.2                               | -71.8        | 187.7                  | 179.0                   | 8.74                   | 21.477            |                    |          |
| 2,100.0   | 2,097.6               | 2,090.6               | 2,087.0               | 4.5              | 4.9           | 127.42                | 144.9                               | -76.9        | 197.3                  | 188.1                   | 9.21                   | 21.418            |                    |          |
| 2,200.0   | 2,197.4               | 2,190.1               | 2,186.3               | 4.8              | 5.2           | 127.73                | 149.5                               | -82.0        | 207.0                  | 197.3                   | 9.69                   | 21.362            |                    |          |
| 2,300.0   | 2,297.2               | 2,289.6               | 2,285.6               | 5.0              | 5.4           | 128.01                | 154.2                               | -87.2        | 216.6                  | 206.5                   | 10.17                  | 21.307            |                    |          |
| 2,400.0   | 2,396.9               | 2,389.1               | 2,384.9               | 5.3              | 5.7           | 128.27                | 158.9                               | -92.3        | 226.3                  | 215.6                   | 10.65                  | 21.256            |                    |          |
| 2,500.0   | 2,496.7               | 2,488.7               | 2,484.2               | 5.5              | 5.9           | 128.50                | 163.6                               | -97.4        | 235.9                  | 224.8                   | 11.13                  | 21.206            |                    |          |
| 2,600.0   | 2,596.4               | 2,588.2               | 2,583.4               | 5.8              | 6.2           | 128.72                | 168.2                               | -102.6       | 245.6                  | 234.0                   | 11.61                  | 21.159            |                    |          |
| 2,700.0   | 2,696.2               | 2,687.7               | 2,682.7               | 6.0              | 6.5           | 128.93                | 172.9                               | -107.7       | 255.2                  | 243.2                   | 12.09                  | 21.115            |                    |          |
| 2,800.0   | 2,795.9               | 2,787.3               | 2,782.0               | 6.3              | 6.7           | 129.11                | 177.6                               | -112.9       | 264.9                  | 252.3                   | 12.57                  | 21.072            |                    |          |
| 2,900.0   | 2,895.7               | 2,886.8               | 2,881.3               | 6.5              | 7.0           | 129.29                | 182.2                               | -118.0       | 274.6                  | 261.5                   | 13.05                  | 21.032            |                    |          |
| 3,000.0   | 2,995.5               | 2,986.3               | 2,980.6               | 6.8              | 7.2           | 129.45                | 186.9                               | -123.1       | 284.2                  | 270.7                   | 13.54                  | 20.994            |                    |          |
| 3,100.0   | 3,095.2               | 3,085.8               | 3,079.9               | 7.1              | 7.5           | 129.60                | 191.6                               | -128.3       | 293.9                  | 279.9                   | 14.02                  | 20.958            |                    |          |
| 3,200.0   | 3,195.0               | 3,185.4               | 3,179.2               | 7.3              | 7.7           | 129.74                | 196.3                               | -133.4       | 303.6                  | 289.1                   | 14.51                  | 20.924            |                    |          |
| 3,300.0   | 3,294.7               | 3,284.9               | 3,278.4               | 7.6              | 8.0           | 129.88                | 200.9                               | -138.5       | 313.3                  | 298.3                   | 15.00                  | 20.891            |                    |          |
| 3,400.0   | 3,394.5               | 3,384.4               | 3,377.7               | 7.8              | 8.3           | 130.00                | 205.6                               | -143.7       | 322.9                  | 307.5                   | 15.48                  | 20.860            |                    |          |
| 3,500.0   | 3,494.2               | 3,484.0               | 3,477.0               | 8.1              | 8.5           | 130.12                | 210.3                               | -148.8       | 332.6                  | 316.6                   | 15.97                  | 20.830            |                    |          |
| 3,600.0   | 3,594.0               | 3,583.5               | 3,576.3               | 8.3              | 8.8           | 130.23                | 214.9                               | -153.9       | 342.3                  | 325.8                   | 16.45                  | 20.802            |                    |          |
| 3,700.0   | 3,693.7               | 3,683.0               | 3,675.6               | 8.6              | 9.0           | 130.34                | 219.6                               | -159.1       | 352.0                  | 335.0                   | 16.94                  | 20.775            |                    |          |
| 3,800.0   | 3,793.5               | 3,782.5               | 3,774.9               | 8.9              | 9.3           | 130.44                | 224.3                               | -164.2       | 361.7                  | 344.2                   | 17.43                  | 20.749            |                    |          |
| 3,900.0   | 3,893.3               | 3,882.1               | 3,874.2               | 9.1              | 9.5           | 130.53                | 229.0                               | -169.3       | 371.3                  | 353.4                   | 17.92                  | 20.725            |                    |          |
| 4,000.0   | 3,993.0               | 3,981.6               | 3,973.4               | 9.4              | 9.8           | 130.62                | 233.6                               | -174.5       | 381.0                  | 362.6                   | 18.41                  | 20.701            |                    |          |
| 4,100.0   | 4,092.8               | 4,081.1               | 4,072.7               | 9.6              | 10.0          | 130.70                | 238.3                               | -179.6       | 390.7                  | 371.8                   | 18.89                  | 20.679            |                    |          |
| 4,200.0   | 4,192.5               | 4,180.7               | 4,172.0               | 9.9              | 10.3          | 130.79                | 243.0                               | -184.7       | 400.4                  | 381.0                   | 19.38                  | 20.657            |                    |          |
| 4,300.0   | 4,292.3               | 4,280.2               | 4,271.3               | 10.2             | 10.6          | 130.86                | 247.7                               | -189.9       | 410.1                  | 390.2                   | 19.87                  | 20.637            |                    |          |
| 4,400.0   | 4,392.0               | 4,379.7               | 4,370.6               | 10.4             | 10.8          | 130.94                | 252.3                               | -195.0       | 419.8                  | 399.4                   | 20.36                  | 20.617            |                    |          |
| 4,500.0   | 4,491.8               | 4,479.2               | 4,469.9               | 10.7             | 11.1          | 131.01                | 257.0                               | -200.1       | 429.4                  | 408.6                   | 20.85                  | 20.598            |                    |          |
| 4,600.0   | 4,591.6               | 4,578.8               | 4,569.2               | 11.0             | 11.3          | 131.07                | 261.7                               | -205.3       | 439.1                  | 417.8                   | 21.34                  | 20.580            |                    |          |
| 4,700.0   | 4,691.3               | 4,678.3               | 4,668.4               | 11.2             | 11.6          | 131.14                | 266.3                               | -210.4       | 448.8                  | 427.0                   | 21.83                  | 20.562            |                    |          |
| 4,800.0   | 4,791.1               | 4,777.8               | 4,767.7               | 11.5             | 11.8          | 131.20                | 271.0                               | -215.6       | 458.5                  | 436.2                   | 22.32                  | 20.545            |                    |          |
| 4,900.0   | 4,890.8               | 4,877.4               | 4,867.0               | 11.7             | 12.1          | 131.26                | 275.7                               | -220.7       | 468.2                  | 445.4                   | 22.81                  | 20.529            |                    |          |
| 5,000.0   | 4,990.6               | 4,976.9               | 4,966.3               | 12.0             | 12.4          | 131.32                | 280.4                               | -225.8       | 477.9                  | 454.6                   | 23.30                  | 20.514            |                    |          |

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

# Cathedral Energy Services

## Anticollision Report

|                           |                               |                                     |  |
|---------------------------|-------------------------------|-------------------------------------|--|
| <b>Company:</b>           | Whiting Petroleum Corporation | <b>Local Co-ordinate Reference:</b> | Well Razor Federal #12F-1301A          |
| <b>Project:</b>           | Weld County, CO               | <b>TVD Reference:</b>               | WELL @ 4953.6usft (Original Well Elev) |
| <b>Reference Site:</b>    | S12-T10N-R58W                 | <b>MD Reference:</b>                | WELL @ 4953.6usft (Original Well Elev) |
| <b>Site Error:</b>        | 0.0usft                       | <b>North Reference:</b>             | True                                   |
| <b>Reference Well:</b>    | Razor Federal #12F-1301A      | <b>Survey Calculation Method:</b>   | Minimum Curvature                      |
| <b>Well Error:</b>        | 0.0usft                       | <b>Output errors are at</b>         | 2.00 sigma                             |
| <b>Reference Wellbore</b> | HZ                            | <b>Database:</b>                    | USA EDM 5000 Multi Users DB            |
| <b>Reference Design:</b>  | Plan #3                       | <b>Offset TVD Reference:</b>        | Offset Datum                           |

| Offset Design S12-T10N-R58W - Razor #12F-0101A - 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 |                             |  |
| 5,100.0   | 5,090.3               | 5,076.4               | 5,065.6               | 12.3             | 12.6          | 131.37                | 285.0                               | -231.0       | 487.6                  | 463.8                   | 23.79                  | 20.499            |                             |  |
| 5,200.0   | 5,190.1               | 5,175.9               | 5,164.9               | 12.5             | 12.9          | 131.42                | 289.7                               | -236.1       | 497.3                  | 473.0                   | 24.28                  | 20.484            |                             |  |
| 5,300.0   | 5,289.9               | 5,275.5               | 5,264.2               | 12.8             | 13.1          | 131.47                | 294.4                               | -241.2       | 507.0                  | 482.2                   | 24.77                  | 20.470 SF         |                             |  |
| 5,400.0   | 5,389.2               | 5,350.0               | 5,338.5               | 13.1             | 13.3          | 130.84                | 298.0                               | -245.2       | 519.8                  | 494.8                   | 25.05                  | 20.752            |                             |  |
| 5,500.0   | 5,485.0               | 5,413.8               | 5,401.5               | 13.5             | 13.5          | 128.87                | 304.6                               | -252.4       | 549.9                  | 524.8                   | 25.11                  | 21.905            |                             |  |
| 5,600.0   | 5,573.6               | 5,462.3               | 5,448.4               | 14.2             | 13.7          | 125.10                | 313.0                               | -261.7       | 597.9                  | 572.7                   | 25.20                  | 23.724            |                             |  |
| 5,700.0   | 5,651.8               | 5,500.0               | 5,483.8               | 15.0             | 13.9          | 118.90                | 321.6                               | -271.1       | 660.5                  | 634.7                   | 25.82                  | 25.583            |                             |  |
| 5,800.0   | 5,716.7               | 5,535.6               | 5,516.4               | 16.1             | 14.1          | 109.89                | 331.3                               | -281.8       | 734.1                  | 706.7                   | 27.38                  | 26.807            |                             |  |
| 5,900.0   | 5,766.0               | 5,550.0               | 5,529.3               | 17.3             | 14.2          | 96.07                 | 335.6                               | -286.5       | 815.2                  | 785.5                   | 29.71                  | 27.434            |                             |  |
| 6,000.0   | 5,797.8               | 5,574.3               | 5,550.6               | 18.8             | 14.4          | 80.72                 | 343.4                               | -295.2       | 900.3                  | 869.1                   | 31.17                  | 28.878            |                             |  |
| 6,100.0   | 5,811.0               | 5,580.9               | 5,556.3               | 20.4             | 14.4          | 63.73                 | 345.7                               | -297.6       | 986.5                  | 956.3                   | 30.18                  | 32.691            |                             |  |
| 6,200.0   | 5,811.3               | 5,581.4               | 5,556.7               | 21.9             | 14.4          | 58.53                 | 345.9                               | -297.8       | 1,073.5                | 1,043.2                 | 30.25                  | 35.484            |                             |  |
| 6,300.0   | 5,811.3               | 5,580.4               | 5,555.9               | 23.4             | 14.4          | 54.81                 | 345.5                               | -297.4       | 1,164.4                | 1,133.9                 | 30.41                  | 38.290            |                             |  |
| 6,400.0   | 5,811.3               | 5,578.1               | 5,553.9               | 25.0             | 14.4          | 49.52                 | 344.7                               | -296.6       | 1,258.1                | 1,228.3                 | 29.81                  | 42.211            |                             |  |
| 6,500.0   | 5,811.3               | 5,574.5               | 5,550.8               | 26.6             | 14.4          | 41.96                 | 343.5                               | -295.2       | 1,353.9                | 1,326.0                 | 27.87                  | 48.578            |                             |  |
| 6,600.0   | 5,811.3               | 5,569.7               | 5,546.6               | 28.2             | 14.4          | 31.25                 | 341.9                               | -293.5       | 1,451.1                | 1,427.3                 | 23.77                  | 61.041            |                             |  |
| 6,700.0   | 5,811.3               | 5,563.9               | 5,541.5               | 29.8             | 14.3          | 16.68                 | 340.0                               | -291.4       | 1,549.2                | 1,532.0                 | 17.12                  | 90.502            |                             |  |
| 6,800.0   | 5,811.3               | 5,550.0               | 5,529.3               | 31.4             | 14.2          | -1.59                 | 335.6                               | -286.5       | 1,647.7                | 1,635.5                 | 12.16                  | 135.544           |                             |  |
| 6,900.0   | 5,811.3               | 5,550.0               | 5,529.3               | 33.0             | 14.2          | -18.68                | 335.6                               | -286.5       | 1,746.2                | 1,727.8                 | 18.43                  | 94.728            |                             |  |
| 7,000.0   | 5,811.3               | 5,550.0               | 5,529.3               | 34.6             | 14.2          | -33.67                | 335.6                               | -286.5       | 1,844.7                | 1,816.6                 | 28.05                  | 65.773            |                             |  |
| 7,100.0   | 5,811.3               | 5,533.3               | 5,514.3               | 36.2             | 14.1          | -44.48                | 330.6                               | -281.0       | 1,942.6                | 1,907.5                 | 35.12                  | 55.311            |                             |  |
| 7,200.0   | 5,811.3               | 5,524.6               | 5,506.4               | 37.7             | 14.1          | -52.43                | 328.1                               | -278.3       | 2,039.9                | 1,999.8                 | 40.09                  | 50.888            |                             |  |
| 7,300.0   | 5,811.3               | 5,515.7               | 5,498.3               | 39.2             | 14.0          | -58.21                | 325.7                               | -275.6       | 2,136.4                | 2,092.9                 | 43.50                  | 49.109            |                             |  |
| 7,400.0   | 5,811.3               | 5,500.0               | 5,483.8               | 40.7             | 13.9          | -62.12                | 321.6                               | -271.1       | 2,232.0                | 2,186.3                 | 45.73                  | 48.807            |                             |  |
| 7,500.0   | 5,811.3               | 5,500.0               | 5,483.8               | 42.1             | 13.9          | -65.89                | 321.6                               | -271.1       | 2,326.4                | 2,278.7                 | 47.70                  | 48.767            |                             |  |
| 7,600.0   | 5,811.3               | 5,500.0               | 5,483.8               | 43.6             | 13.9          | -68.54                | 321.6                               | -271.1       | 2,419.7                | 2,370.5                 | 49.17                  | 49.208            |                             |  |
| 7,700.0   | 5,811.3               | 5,481.5               | 5,466.5               | 45.0             | 13.8          | -67.64                | 317.2                               | -266.3       | 2,512.7                | 2,462.5                 | 50.22                  | 50.037            |                             |  |
| 7,800.0   | 5,811.3               | 5,474.1               | 5,459.6               | 46.4             | 13.8          | -67.27                | 315.5                               | -264.5       | 2,606.2                | 2,554.7                 | 51.51                  | 50.597            |                             |  |
| 7,900.0   | 5,811.2               | 5,467.3               | 5,453.1               | 47.9             | 13.8          | -66.94                | 314.1                               | -262.9       | 2,700.1                | 2,647.2                 | 52.83                  | 51.110            |                             |  |
| 8,000.0   | 5,811.2               | 5,450.0               | 5,436.6               | 49.4             | 13.7          | -66.09                | 310.6                               | -259.1       | 2,794.4                | 2,740.5                 | 53.91                  | 51.832            |                             |  |
| 8,100.0   | 5,811.2               | 5,450.0               | 5,436.6               | 50.9             | 13.7          | -66.09                | 310.6                               | -259.1       | 2,889.0                | 2,833.6                 | 55.42                  | 52.133            |                             |  |
| 8,200.0   | 5,811.2               | 5,450.0               | 5,436.6               | 52.5             | 13.7          | -66.09                | 310.6                               | -259.1       | 2,983.9                | 2,926.9                 | 56.93                  | 52.410            |                             |  |
| 8,300.0   | 5,811.2               | 5,450.0               | 5,436.6               | 54.0             | 13.7          | -66.09                | 310.6                               | -259.1       | 3,079.1                | 3,020.6                 | 58.47                  | 52.665            |                             |  |
| 8,400.0   | 5,811.2               | 5,450.0               | 5,436.6               | 55.6             | 13.7          | -66.09                | 310.6                               | -259.1       | 3,174.6                | 3,114.6                 | 60.01                  | 52.901            |                             |  |
| 8,500.0   | 5,811.2               | 5,450.0               | 5,436.6               | 57.2             | 13.7          | -66.09                | 310.6                               | -259.1       | 3,270.4                | 3,208.9                 | 61.57                  | 53.120            |                             |  |
| 8,600.0   | 5,811.2               | 5,431.0               | 5,418.2               | 58.9             | 13.6          | -65.16                | 307.2                               | -255.3       | 3,366.3                | 3,303.6                 | 62.63                  | 53.748            |                             |  |
| 8,700.0   | 5,811.2               | 5,427.0               | 5,414.4               | 60.5             | 13.6          | -64.96                | 306.6                               | -254.6       | 3,462.4                | 3,398.3                 | 64.09                  | 54.025            |                             |  |
| 8,800.0   | 5,811.2               | 5,423.3               | 5,410.8               | 62.2             | 13.6          | -64.78                | 306.0                               | -254.0       | 3,558.8                | 3,493.2                 | 65.56                  | 54.285            |                             |  |
| 8,900.0   | 5,811.2               | 5,419.8               | 5,407.4               | 63.9             | 13.6          | -64.61                | 305.5                               | -253.4       | 3,655.3                | 3,588.3                 | 67.04                  | 54.528            |                             |  |
| 9,000.0   | 5,811.2               | 5,400.0               | 5,388.0               | 65.6             | 13.5          | -63.63                | 302.7                               | -250.4       | 3,752.2                | 3,684.1                 | 68.03                  | 55.154            |                             |  |
| 9,100.0   | 5,811.2               | 5,400.0               | 5,388.0               | 67.3             | 13.5          | -63.63                | 302.7                               | -250.4       | 3,849.0                | 3,779.4                 | 69.61                  | 55.293            |                             |  |
| 9,200.0   | 5,811.2               | 5,400.0               | 5,388.0               | 69.0             | 13.5          | -63.63                | 302.7                               | -250.4       | 3,945.9                | 3,874.7                 | 71.20                  | 55.424            |                             |  |
| 9,300.0   | 5,811.2               | 5,400.0               | 5,388.0               | 70.7             | 13.5          | -63.63                | 302.7                               | -250.4       | 4,043.0                | 3,970.3                 | 72.79                  | 55.546            |                             |  |
| 9,400.0   | 5,811.2               | 5,400.0               | 5,388.0               | 72.5             | 13.5          | -63.63                | 302.7                               | -250.4       | 4,140.3                | 4,065.9                 | 74.38                  | 55.662            |                             |  |
| 9,500.0   | 5,811.2               | 5,400.0               | 5,388.0               | 74.2             | 13.5          | -63.63                | 302.7                               | -250.4       | 4,237.7                | 4,161.7                 | 75.98                  | 55.772            |                             |  |
| 9,600.0   | 5,811.2               | 5,400.0               | 5,388.0               | 76.0             | 13.5          | -63.63                | 302.7                               | -250.4       | 4,335.2                | 4,257.6                 | 77.59                  | 55.875            |                             |  |
| 9,700.0   | 5,811.2               | 5,400.0               | 5,388.0               | 77.7             | 13.5          | -63.63                | 302.7                               | -250.4       | 4,432.8                | 4,353.6                 | 79.22                  | 55.958            |                             |  |
| 9,800.0   | 5,811.2               | 5,400.0               | 5,388.0               | 79.5             | 13.5          | -63.63                | 302.7                               | -250.4       | 4,530.5                | 4,449.6                 | 80.90                  | 56.001            |                             |  |
| 9,900.0   | 5,811.2               | 5,400.0               | 5,388.0               | 81.3             | 13.5          | -63.63                | 302.7                               | -250.4       | 4,628.3                | 4,545.7                 | 82.59                  | 56.041            |                             |  |
| 10,000.0  | 5,811.2               | 5,400.0               | 5,388.0               | 83.1             | 13.5          | -63.63                | 302.7                               | -250.4       | 4,726.2                | 4,641.9                 | 84.28                  | 56.078            |                             |  |
| 10,100.0  | 5,811.2               | 5,400.0               | 5,388.0               | 84.9             | 13.5          | -63.63                | 302.7                               | -250.4       | 4,824.2                | 4,738.2                 | 85.97                  | 56.113            |                             |  |
| 10,200.0  | 5,811.1               | 5,400.0               | 5,388.0               | 86.7             | 13.5          | -63.63                | 302.7                               | -250.4       | 4,922.3                | 4,834.6                 | 87.67                  | 56.146            |                             |  |

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

# Cathedral Energy Services

## Anticollision Report

|                           |                               |                                     |  |
|---------------------------|-------------------------------|-------------------------------------|--|
| <b>Company:</b>           | Whiting Petroleum Corporation | <b>Local Co-ordinate Reference:</b> | Well Razor Federal #12F-1301A          |
| <b>Project:</b>           | Weld County, CO               | <b>TVD Reference:</b>               | WELL @ 4953.6usft (Original Well Elev) |
| <b>Reference Site:</b>    | S12-T10N-R58W                 | <b>MD Reference:</b>                | WELL @ 4953.6usft (Original Well Elev) |
| <b>Site Error:</b>        | 0.0usft                       | <b>North Reference:</b>             | True                                   |
| <b>Reference Well:</b>    | Razor Federal #12F-1301A      | <b>Survey Calculation Method:</b>   | Minimum Curvature                      |
| <b>Well Error:</b>        | 0.0usft                       | <b>Output errors are at</b>         | 2.00 sigma                             |
| <b>Reference Wellbore</b> | HZ                            | <b>Database:</b>                    | USA EDM 5000 Multi Users DB            |
| <b>Reference Design:</b>  | Plan #3                       | <b>Offset TVD Reference:</b>        | Offset Datum                           |

| Offset Design S12-T10N-R58W - Razor #12F-0101A - 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 |                             |         |
| 10,300.0  | 5,811.1               | 5,400.0               | 5,388.0               | 88.5             | 13.5          | -63.63                | 302.7                               | -250.4       | 5,020.4                | 4,931.0                 | 89.37                  | 56.177            |                             |         |
| 10,400.0  | 5,811.1               | 5,400.0               | 5,388.0               | 90.3             | 13.5          | -63.63                | 302.7                               | -250.4       | 5,118.6                | 5,027.5                 | 91.07                  | 56.206            |                             |         |
| 10,500.0  | 5,811.1               | 5,400.0               | 5,388.0               | 92.1             | 13.5          | -63.63                | 302.7                               | -250.4       | 5,216.9                | 5,124.1                 | 92.77                  | 56.234            |                             |         |
| 10,600.0  | 5,811.1               | 5,400.0               | 5,388.0               | 93.9             | 13.5          | -63.63                | 302.7                               | -250.4       | 5,315.2                | 5,220.8                 | 94.48                  | 56.260            |                             |         |
| 10,700.0  | 5,811.1               | 5,400.0               | 5,388.0               | 95.7             | 13.5          | -63.63                | 302.7                               | -250.4       | 5,413.7                | 5,317.5                 | 96.18                  | 56.284            |                             |         |
| 10,800.0  | 5,811.1               | 5,377.8               | 5,366.1               | 97.5             | 13.4          | -62.54                | 300.2                               | -247.6       | 5,511.8                | 5,414.8                 | 97.03                  | 56.807            |                             |         |
| 10,900.0  | 5,811.1               | 5,376.4               | 5,364.7               | 99.4             | 13.4          | -62.47                | 300.1                               | -247.5       | 5,610.3                | 5,511.6                 | 98.67                  | 56.860            |                             |         |
| 11,000.0  | 5,811.1               | 5,375.0               | 5,363.3               | 101.2            | 13.4          | -62.40                | 299.9                               | -247.3       | 5,708.8                | 5,608.5                 | 100.31                 | 56.911            |                             |         |
| 11,100.0  | 5,811.1               | 5,373.7               | 5,362.0               | 103.0            | 13.4          | -62.34                | 299.8                               | -247.2       | 5,807.4                | 5,705.4                 | 101.96                 | 56.960            |                             |         |
| 11,200.0  | 5,811.1               | 5,372.4               | 5,360.8               | 104.9            | 13.4          | -62.28                | 299.7                               | -247.1       | 5,906.0                | 5,802.4                 | 103.60                 | 57.007            |                             |         |
| 11,300.0  | 5,811.1               | 5,350.0               | 5,338.5               | 106.7            | 13.3          | -61.17                | 298.0                               | -245.2       | 6,005.0                | 5,900.6                 | 104.33                 | 57.560            |                             |         |
| 11,400.0  | 5,811.1               | 5,350.0               | 5,338.5               | 108.6            | 13.3          | -61.17                | 298.0                               | -245.2       | 6,103.7                | 5,997.6                 | 106.01                 | 57.575            |                             |         |
| 11,500.0  | 5,811.1               | 5,350.0               | 5,338.5               | 110.4            | 13.3          | -61.17                | 298.0                               | -245.2       | 6,202.4                | 6,094.7                 | 107.70                 | 57.589            |                             |         |
| 11,600.0  | 5,811.1               | 5,350.0               | 5,338.5               | 112.3            | 13.3          | -61.17                | 298.0                               | -245.2       | 6,301.1                | 6,191.7                 | 109.39                 | 57.602            |                             |         |
| 11,700.0  | 5,811.1               | 5,350.0               | 5,338.5               | 114.1            | 13.3          | -61.17                | 298.0                               | -245.2       | 6,399.9                | 6,288.9                 | 111.08                 | 57.615            |                             |         |
| 11,800.0  | 5,811.1               | 5,350.0               | 5,338.5               | 116.0            | 13.3          | -61.17                | 298.0                               | -245.2       | 6,498.8                | 6,386.0                 | 112.77                 | 57.627            |                             |         |
| 11,900.0  | 5,811.1               | 5,350.0               | 5,338.5               | 117.8            | 13.3          | -61.17                | 298.0                               | -245.2       | 6,597.6                | 6,483.2                 | 114.46                 | 57.639            |                             |         |
| 12,000.0  | 5,811.1               | 5,350.0               | 5,338.5               | 119.7            | 13.3          | -61.17                | 298.0                               | -245.2       | 6,696.5                | 6,580.4                 | 116.16                 | 57.650            |                             |         |
| 12,100.0  | 5,811.1               | 5,350.0               | 5,338.5               | 121.6            | 13.3          | -61.17                | 298.0                               | -245.2       | 6,795.5                | 6,677.6                 | 117.85                 | 57.661            |                             |         |
| 12,200.0  | 5,811.1               | 5,350.0               | 5,338.5               | 123.4            | 13.3          | -61.17                | 298.0                               | -245.2       | 6,894.5                | 6,774.9                 | 119.55                 | 57.671            |                             |         |
| 12,300.0  | 5,811.1               | 5,350.0               | 5,338.5               | 125.3            | 13.3          | -61.17                | 298.0                               | -245.2       | 6,993.5                | 6,872.2                 | 121.24                 | 57.681            |                             |         |
| 12,400.0  | 5,811.1               | 5,350.0               | 5,338.5               | 127.2            | 13.3          | -61.17                | 298.0                               | -245.2       | 7,092.5                | 6,969.5                 | 122.94                 | 57.691            |                             |         |
| 12,500.0  | 5,811.0               | 5,350.0               | 5,338.5               | 129.0            | 13.3          | -61.17                | 298.0                               | -245.2       | 7,191.5                | 7,066.9                 | 124.64                 | 57.700            |                             |         |
| 12,600.0  | 5,811.0               | 5,350.0               | 5,338.5               | 130.9            | 13.3          | -61.17                | 298.0                               | -245.2       | 7,290.6                | 7,164.3                 | 126.34                 | 57.709            |                             |         |
| 12,700.0  | 5,811.0               | 5,350.0               | 5,338.5               | 132.8            | 13.3          | -61.17                | 298.0                               | -245.2       | 7,389.7                | 7,261.7                 | 128.03                 | 57.717            |                             |         |
| 12,800.0  | 5,811.0               | 5,350.0               | 5,338.5               | 134.6            | 13.3          | -61.17                | 298.0                               | -245.2       | 7,488.8                | 7,359.1                 | 129.73                 | 57.725            |                             |         |
| 12,900.0  | 5,811.0               | 5,350.0               | 5,338.5               | 136.5            | 13.3          | -61.17                | 298.0                               | -245.2       | 7,588.0                | 7,456.6                 | 131.43                 | 57.733            |                             |         |
| 13,000.0  | 5,811.0               | 5,350.0               | 5,338.5               | 138.4            | 13.3          | -61.17                | 298.0                               | -245.2       | 7,687.2                | 7,554.0                 | 133.13                 | 57.740            |                             |         |
| 13,100.0  | 5,811.0               | 5,350.0               | 5,338.5               | 140.3            | 13.3          | -61.17                | 298.0                               | -245.2       | 7,786.4                | 7,651.5                 | 134.83                 | 57.747            |                             |         |
| 13,200.0  | 5,811.0               | 5,350.0               | 5,338.5               | 142.1            | 13.3          | -61.17                | 298.0                               | -245.2       | 7,885.6                | 7,749.0                 | 136.54                 | 57.754            |                             |         |
| 13,300.0  | 5,811.0               | 5,350.0               | 5,338.5               | 144.0            | 13.3          | -61.17                | 298.0                               | -245.2       | 7,984.8                | 7,846.6                 | 138.24                 | 57.761            |                             |         |
| 13,400.0  | 5,811.0               | 5,350.0               | 5,338.5               | 145.9            | 13.3          | -61.17                | 298.0                               | -245.2       | 8,084.1                | 7,944.1                 | 139.94                 | 57.767            |                             |         |
| 13,500.0  | 5,811.0               | 5,350.0               | 5,338.5               | 147.8            | 13.3          | -61.17                | 298.0                               | -245.2       | 8,183.3                | 8,041.7                 | 141.64                 | 57.774            |                             |         |
| 13,600.0  | 5,811.0               | 5,350.0               | 5,338.5               | 149.7            | 13.3          | -61.17                | 298.0                               | -245.2       | 8,282.6                | 8,139.3                 | 143.35                 | 57.780            |                             |         |
| 13,700.0  | 5,811.0               | 5,350.0               | 5,338.5               | 151.6            | 13.3          | -61.17                | 298.0                               | -245.2       | 8,381.9                | 8,236.9                 | 145.05                 | 57.786            |                             |         |
| 13,800.0  | 5,811.0               | 5,350.0               | 5,338.5               | 153.4            | 13.3          | -61.17                | 298.0                               | -245.2       | 8,481.2                | 8,334.5                 | 146.76                 | 57.791            |                             |         |
| 13,900.0  | 5,811.0               | 5,350.0               | 5,338.5               | 155.3            | 13.3          | -61.17                | 298.0                               | -245.2       | 8,580.6                | 8,432.1                 | 148.46                 | 57.797            |                             |         |
| 13,919.8  | 5,811.0               | 5,350.0               | 5,338.5               | 155.7            | 13.3          | -61.17                | 298.0                               | -245.2       | 8,600.3                | 8,451.5                 | 148.80                 | 57.798            |                             |         |

# Cathedral Energy Services

## Anticollision Report

|                           |                               |                                     |  |
|---------------------------|-------------------------------|-------------------------------------|--|
| <b>Company:</b>           | Whiting Petroleum Corporation | <b>Local Co-ordinate Reference:</b> | Well Razor Federal #12F-1301A          |
| <b>Project:</b>           | Weld County, CO               | <b>TVD Reference:</b>               | WELL @ 4953.6usft (Original Well Elev) |
| <b>Reference Site:</b>    | S12-T10N-R58W                 | <b>MD Reference:</b>                | WELL @ 4953.6usft (Original Well Elev) |
| <b>Site Error:</b>        | 0.0usft                       | <b>North Reference:</b>             | True                                   |
| <b>Reference Well:</b>    | Razor Federal #12F-1301A      | <b>Survey Calculation Method:</b>   | Minimum Curvature                      |
| <b>Well Error:</b>        | 0.0usft                       | <b>Output errors are at</b>         | 2.00 sigma                             |
| <b>Reference Wellbore</b> | HZ                            | <b>Database:</b>                    | USA EDM 5000 Multi Users DB            |
| <b>Reference Design:</b>  | Plan #3                       | <b>Offset TVD Reference:</b>        | Offset Datum                           |

| Offset Design S12-T10N-R58W - Razor #12F-0102B - 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 |                             |         |
| 0.0   | 0.0                   | 0.0                   | 0.0                   | 0.0              | 0.0           | 23.81                 | 74.9                                | 33.0         | 81.9                   |                         |                        |                   |                             |         |
| 100.0   | 100.0                 | 100.0                 | 100.0                 | 0.1              | 0.1           | 23.81                 | 74.9                                | 33.0         | 81.9                   | 81.7                    | 0.19                   | 437.656           |                             |         |
| 200.0   | 200.0                 | 200.0                 | 200.0                 | 0.3              | 0.3           | 23.81                 | 74.9                                | 33.0         | 81.9                   | 81.2                    | 0.64                   | 128.593           |                             |         |
| 300.0   | 300.0                 | 300.0                 | 300.0                 | 0.5              | 0.5           | 23.81                 | 74.9                                | 33.0         | 81.9                   | 80.8                    | 1.09                   | 75.369            |                             |         |
| 400.0   | 400.0                 | 400.0                 | 400.0                 | 0.8              | 0.8           | 23.81                 | 74.9                                | 33.0         | 81.9                   | 80.3                    | 1.54                   | 53.306            |                             |         |
| 466.7   | 466.7                 | 466.7                 | 466.7                 | 0.9              | 0.9           | 23.81                 | 74.9                                | 33.0         | 81.9                   | 80.0                    | 1.84                   | 44.602 CC         |                             |         |
| 500.0   | 500.0                 | 500.0                 | 500.0                 | 1.0              | 1.0           | 23.81                 | 74.9                                | 33.0         | 81.9                   | 79.9                    | 1.99                   | 41.236 ES         |                             |         |
| 600.0   | 600.0                 | 598.6                 | 598.6                 | 1.2              | 1.2           | 22.78                 | 76.3                                | 32.0         | 82.7                   | 80.3                    | 2.43                   | 34.034            |                             |         |
| 700.0   | 700.0                 | 696.9                 | 696.8                 | 1.4              | 1.4           | 19.85                 | 80.3                                | 29.0         | 85.5                   | 82.6                    | 2.88                   | 29.672            |                             |         |
| 800.0   | 800.0                 | 796.6                 | 796.2                 | 1.7              | 1.7           | 16.13                 | 85.9                                | 24.8         | 89.5                   | 86.2                    | 3.33                   | 26.860            |                             |         |
| 900.0   | 900.0                 | 896.4                 | 895.7                 | 1.9              | 1.9           | 12.74                 | 91.5                                | 20.7         | 93.9                   | 90.1                    | 3.78                   | 24.829            |                             |         |
| 1,000.0   | 1,000.0               | 996.1                 | 995.3                 | 2.1              | 2.2           | 9.67                  | 97.1                                | 16.5         | 98.6                   | 94.3                    | 4.23                   | 23.295            |                             |         |
| 1,100.0   | 1,100.0               | 1,095.9               | 1,094.7               | 2.3              | 2.4           | 143.32                | 102.6                               | 12.4         | 104.9                  | 100.2                   | 4.69                   | 22.351            |                             |         |
| 1,200.0   | 1,199.8               | 1,195.4               | 1,194.0               | 2.5              | 2.6           | 142.34                | 108.2                               | 8.2          | 114.1                  | 109.0                   | 5.11                   | 22.322 SF         |                             |         |
| 1,300.0   | 1,299.6               | 1,294.9               | 1,293.2               | 2.7              | 2.9           | 142.10                | 113.8                               | 4.1          | 124.7                  | 119.2                   | 5.54                   | 22.500            |                             |         |
| 1,400.0   | 1,399.4               | 1,394.3               | 1,392.4               | 2.9              | 3.1           | 141.90                | 119.3                               | -0.1         | 135.3                  | 129.3                   | 5.98                   | 22.623            |                             |         |
| 1,500.0   | 1,499.1               | 1,493.7               | 1,491.6               | 3.1              | 3.4           | 141.73                | 124.9                               | -4.2         | 145.9                  | 139.5                   | 6.43                   | 22.705            |                             |         |
| 1,600.0   | 1,598.9               | 1,593.2               | 1,590.8               | 3.4              | 3.7           | 141.58                | 130.4                               | -8.4         | 156.5                  | 149.7                   | 6.88                   | 22.759            |                             |         |
| 1,700.0   | 1,698.6               | 1,692.6               | 1,690.0               | 3.6              | 3.9           | 141.45                | 136.0                               | -12.5        | 167.1                  | 159.8                   | 7.33                   | 22.794            |                             |         |
| 1,800.0   | 1,798.4               | 1,792.0               | 1,789.2               | 3.8              | 4.2           | 141.34                | 141.6                               | -16.6        | 177.7                  | 170.0                   | 7.79                   | 22.813            |                             |         |
| 1,900.0   | 1,898.1               | 1,891.5               | 1,888.4               | 4.1              | 4.4           | 141.24                | 147.1                               | -20.8        | 188.4                  | 180.1                   | 8.25                   | 22.822            |                             |         |
| 2,000.0   | 1,997.9               | 1,990.9               | 1,987.6               | 4.3              | 4.7           | 141.15                | 152.7                               | -24.9        | 199.0                  | 190.2                   | 8.72                   | 22.824            |                             |         |
| 2,100.0   | 2,097.6               | 2,090.3               | 2,086.8               | 4.5              | 4.9           | 141.07                | 158.3                               | -29.1        | 209.6                  | 200.4                   | 9.18                   | 22.820            |                             |         |
| 2,200.0   | 2,197.4               | 2,189.8               | 2,186.0               | 4.8              | 5.2           | 141.00                | 163.8                               | -33.2        | 220.2                  | 210.5                   | 9.65                   | 22.812            |                             |         |
| 2,300.0   | 2,297.2               | 2,289.2               | 2,285.2               | 5.0              | 5.4           | 140.93                | 169.4                               | -37.4        | 230.8                  | 220.7                   | 10.12                  | 22.801            |                             |         |
| 2,400.0   | 2,396.9               | 2,388.6               | 2,384.4               | 5.3              | 5.7           | 140.87                | 174.9                               | -41.5        | 241.4                  | 230.8                   | 10.59                  | 22.788            |                             |         |
| 2,500.0   | 2,496.7               | 2,488.1               | 2,483.6               | 5.5              | 5.9           | 140.82                | 180.5                               | -45.7        | 252.0                  | 241.0                   | 11.07                  | 22.773            |                             |         |
| 2,600.0   | 2,596.4               | 2,587.5               | 2,582.7               | 5.8              | 6.2           | 140.76                | 186.1                               | -49.8        | 262.6                  | 251.1                   | 11.54                  | 22.758            |                             |         |
| 2,700.0   | 2,696.2               | 2,686.9               | 2,681.9               | 6.0              | 6.4           | 140.72                | 191.6                               | -53.9        | 273.2                  | 261.2                   | 12.01                  | 22.743            |                             |         |
| 2,800.0   | 2,795.9               | 2,786.4               | 2,781.1               | 6.3              | 6.7           | 140.67                | 197.2                               | -58.1        | 283.9                  | 271.4                   | 12.49                  | 22.727            |                             |         |
| 2,900.0   | 2,895.7               | 2,885.8               | 2,880.3               | 6.5              | 7.0           | 140.63                | 202.8                               | -62.2        | 294.5                  | 281.5                   | 12.97                  | 22.710            |                             |         |
| 3,000.0   | 2,995.5               | 2,985.2               | 2,979.5               | 6.8              | 7.2           | 140.60                | 208.3                               | -66.4        | 305.1                  | 291.6                   | 13.44                  | 22.694            |                             |         |
| 3,100.0   | 3,095.2               | 3,084.7               | 3,078.7               | 7.1              | 7.5           | 140.56                | 213.9                               | -70.5        | 315.7                  | 301.8                   | 13.92                  | 22.678            |                             |         |
| 3,200.0   | 3,195.0               | 3,184.1               | 3,177.9               | 7.3              | 7.7           | 140.53                | 219.4                               | -74.7        | 326.3                  | 311.9                   | 14.40                  | 22.663            |                             |         |
| 3,300.0   | 3,294.7               | 3,283.6               | 3,277.1               | 7.6              | 8.0           | 140.50                | 225.0                               | -78.8        | 336.9                  | 322.0                   | 14.88                  | 22.647            |                             |         |
| 3,400.0   | 3,394.5               | 3,383.0               | 3,376.3               | 7.8              | 8.2           | 140.47                | 230.6                               | -82.9        | 347.5                  | 332.2                   | 15.36                  | 22.632            |                             |         |
| 3,500.0   | 3,494.2               | 3,482.4               | 3,475.5               | 8.1              | 8.5           | 140.44                | 236.1                               | -87.1        | 358.1                  | 342.3                   | 15.83                  | 22.617            |                             |         |
| 3,600.0   | 3,594.0               | 3,581.9               | 3,574.7               | 8.3              | 8.8           | 140.42                | 241.7                               | -91.2        | 368.7                  | 352.4                   | 16.31                  | 22.603            |                             |         |
| 3,700.0   | 3,693.7               | 3,681.3               | 3,673.9               | 8.6              | 9.0           | 140.39                | 247.3                               | -95.4        | 379.4                  | 362.6                   | 16.79                  | 22.589            |                             |         |
| 3,800.0   | 3,793.5               | 3,780.7               | 3,773.1               | 8.9              | 9.3           | 140.37                | 252.8                               | -99.5        | 390.0                  | 372.7                   | 17.27                  | 22.575            |                             |         |
| 3,900.0   | 3,893.3               | 3,880.2               | 3,872.3               | 9.1              | 9.5           | 140.35                | 258.4                               | -103.7       | 400.6                  | 382.8                   | 17.75                  | 22.562            |                             |         |
| 4,000.0   | 3,993.0               | 3,979.6               | 3,971.4               | 9.4              | 9.8           | 140.33                | 263.9                               | -107.8       | 411.2                  | 393.0                   | 18.24                  | 22.549            |                             |         |
| 4,100.0   | 4,092.8               | 4,079.0               | 4,070.6               | 9.6              | 10.0          | 140.31                | 269.5                               | -112.0       | 421.8                  | 403.1                   | 18.72                  | 22.537            |                             |         |
| 4,200.0   | 4,192.5               | 4,178.5               | 4,169.8               | 9.9              | 10.3          | 140.29                | 275.1                               | -116.1       | 432.4                  | 413.2                   | 19.20                  | 22.525            |                             |         |
| 4,300.0   | 4,292.3               | 4,277.9               | 4,269.0               | 10.2             | 10.5          | 140.27                | 280.6                               | -120.2       | 443.0                  | 423.4                   | 19.68                  | 22.513            |                             |         |
| 4,400.0   | 4,392.0               | 4,377.3               | 4,368.2               | 10.4             | 10.8          | 140.26                | 286.2                               | -124.4       | 453.6                  | 433.5                   | 20.16                  | 22.502            |                             |         |
| 4,500.0   | 4,491.8               | 4,476.8               | 4,467.4               | 10.7             | 11.1          | 140.24                | 291.7                               | -128.5       | 464.3                  | 443.6                   | 20.64                  | 22.491            |                             |         |
| 4,600.0   | 4,591.6               | 4,576.2               | 4,566.6               | 11.0             | 11.3          | 140.22                | 297.3                               | -132.7       | 474.9                  | 453.7                   | 21.12                  | 22.480            |                             |         |
| 4,700.0   | 4,691.3               | 4,675.6               | 4,665.8               | 11.2             | 11.6          | 140.21                | 302.9                               | -136.8       | 485.5                  | 463.9                   | 21.61                  | 22.470            |                             |         |
| 4,800.0   | 4,791.1               | 4,775.1               | 4,765.0               | 11.5             | 11.8          | 140.20                | 308.4                               | -141.0       | 496.1                  | 474.0                   | 22.09                  | 22.460            |                             |         |
| 4,900.0   | 4,890.8               | 4,874.5               | 4,864.2               | 11.7             | 12.1          | 140.18                | 314.0                               | -145.1       | 506.7                  | 484.1                   | 22.57                  | 22.450            |                             |         |
| 5,000.0   | 4,990.6               | 4,974.0               | 4,963.4               | 12.0             | 12.3          | 140.17                | 319.6                               | -149.3       | 517.3                  | 494.3                   | 23.05                  | 22.441            |                             |         |

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



# Cathedral Energy Services

## Anticollision Report

|                           |                               |                                     |  |
|---------------------------|-------------------------------|-------------------------------------|--|
| <b>Company:</b>           | Whiting Petroleum Corporation | <b>Local Co-ordinate Reference:</b> | Well Razor Federal #12F-1301A          |
| <b>Project:</b>           | Weld County, CO               | <b>TVD Reference:</b>               | WELL @ 4953.6usft (Original Well Elev) |
| <b>Reference Site:</b>    | S12-T10N-R58W                 | <b>MD Reference:</b>                | WELL @ 4953.6usft (Original Well Elev) |
| <b>Site Error:</b>        | 0.0usft                       | <b>North Reference:</b>             | True                                   |
| <b>Reference Well:</b>    | Razor Federal #12F-1301A      | <b>Survey Calculation Method:</b>   | Minimum Curvature                      |
| <b>Well Error:</b>        | 0.0usft                       | <b>Output errors are at</b>         | 2.00 sigma                             |
| <b>Reference Wellbore</b> | HZ                            | <b>Database:</b>                    | USA EDM 5000 Multi Users DB            |
| <b>Reference Design:</b>  | Plan #3                       | <b>Offset TVD Reference:</b>        | Offset Datum                           |

| Offset Design S12-T10N-R58W - Razor #12F-0102B - HZ - Plan #2 |                       |                       |                       |                  |               |                       |                                     |              |                        |                         |                        | Offset Site Error: | 0.0 usft |
|---|-----------------------|-----------------------|-----------------------|------------------|---------------|-----------------------|-------------------------------------|--------------|------------------------|-------------------------|------------------------|--------------------|----------|
| Survey Program: O-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   | 5,090.3               | 5,073.4               | 5,062.6               | 12.3             | 12.6          | 140.16                | 325.1                               | -153.4       | 527.9                  | 504.4                   | 23.54                  | 22.431             |          |
| 5,200.0   | 5,190.1               | 5,172.8               | 5,161.8               | 12.5             | 12.8          | 140.15                | 330.7                               | -157.5       | 538.5                  | 514.5                   | 24.02                  | 22.423             |          |
| 5,300.0   | 5,289.9               | 5,272.3               | 5,261.0               | 12.8             | 13.1          | 140.13                | 336.2                               | -161.7       | 549.2                  | 524.7                   | 24.50                  | 22.414             |          |
| 5,400.0   | 5,389.2               | 5,371.2               | 5,359.7               | 13.1             | 13.4          | 139.69                | 341.8                               | -165.8       | 562.7                  | 537.9                   | 24.78                  | 22.705             |          |
| 5,500.0   | 5,485.0               | 5,450.0               | 5,438.3               | 13.5             | 13.6          | 138.68                | 346.3                               | -169.2       | 589.9                  | 565.3                   | 24.59                  | 23.986             |          |
| 5,600.0   | 5,573.6               | 5,500.0               | 5,487.8               | 14.2             | 13.7          | 135.95                | 351.8                               | -173.3       | 635.7                  | 611.4                   | 24.22                  | 26.246             |          |
| 5,700.0   | 5,651.8               | 5,550.0               | 5,536.4               | 15.0             | 13.9          | 131.22                | 361.2                               | -180.3       | 698.6                  | 674.3                   | 24.23                  | 28.831             |          |
| 5,800.0   | 5,716.7               | 5,569.7               | 5,555.2               | 16.1             | 14.0          | 122.04                | 365.9                               | -183.8       | 774.1                  | 748.6                   | 25.56                  | 30.289             |          |
| 5,900.0   | 5,766.0               | 5,600.0               | 5,583.6               | 17.3             | 14.2          | 108.80                | 374.2                               | -190.0       | 858.8                  | 830.3                   | 28.50                  | 30.137             |          |
| 6,000.0   | 5,797.8               | 5,600.0               | 5,583.6               | 18.8             | 14.2          | 87.11                 | 374.2                               | -190.0       | 948.2                  | 916.7                   | 31.48                  | 30.125             |          |
| 6,100.0   | 5,811.0               | 5,600.0               | 5,583.6               | 20.4             | 14.2          | 64.00                 | 374.2                               | -190.0       | 1,039.1                | 1,008.9                 | 30.25                  | 34.352             |          |
| 6,200.0   | 5,811.3               | 5,600.0               | 5,583.6               | 21.9             | 14.2          | 57.27                 | 374.2                               | -190.0       | 1,130.4                | 1,100.5                 | 29.91                  | 37.800             |          |
| 6,300.0   | 5,811.3               | 5,600.0               | 5,583.6               | 23.4             | 14.2          | 52.45                 | 374.2                               | -190.0       | 1,224.5                | 1,194.9                 | 29.66                  | 41.287             |          |
| 6,400.0   | 5,811.3               | 5,600.0               | 5,583.6               | 25.0             | 14.2          | 45.55                 | 374.2                               | -190.0       | 1,320.7                | 1,292.4                 | 28.30                  | 46.664             |          |
| 6,500.0   | 5,811.3               | 5,600.0               | 5,583.6               | 26.6             | 14.2          | 35.46                 | 374.2                               | -190.0       | 1,418.2                | 1,393.3                 | 24.92                  | 56.912             |          |
| 6,600.0   | 5,811.3               | 5,583.1               | 5,567.8               | 28.2             | 14.1          | 18.41                 | 369.4                               | -186.4       | 1,516.4                | 1,499.1                 | 17.22                  | 88.059             |          |
| 6,700.0   | 5,811.3               | 5,577.2               | 5,562.3               | 29.8             | 14.1          | -0.37                 | 367.8                               | -185.2       | 1,615.1                | 1,603.5                 | 11.58                  | 139.429            |          |
| 6,800.0   | 5,811.3               | 5,571.1               | 5,556.5               | 31.4             | 14.0          | -19.34                | 366.2                               | -184.0       | 1,713.9                | 1,695.6                 | 18.26                  | 93.845             |          |
| 6,900.0   | 5,811.3               | 5,550.0               | 5,536.4               | 33.0             | 13.9          | -34.05                | 361.2                               | -180.3       | 1,812.7                | 1,785.0                 | 27.61                  | 65.655             |          |
| 7,000.0   | 5,811.3               | 5,550.0               | 5,536.4               | 34.6             | 13.9          | -45.67                | 361.2                               | -180.3       | 1,910.8                | 1,875.6                 | 35.13                  | 54.399             |          |
| 7,100.0   | 5,811.3               | 5,550.0               | 5,536.4               | 36.2             | 13.9          | -54.22                | 361.2                               | -180.3       | 2,008.3                | 1,967.9                 | 40.37                  | 49.744             |          |
| 7,200.0   | 5,811.3               | 5,550.0               | 5,536.4               | 37.7             | 13.9          | -60.49                | 361.2                               | -180.3       | 2,105.1                | 2,061.1                 | 44.01                  | 47.836             |          |
| 7,300.0   | 5,811.3               | 5,550.0               | 5,536.4               | 39.2             | 13.9          | -65.16                | 361.2                               | -180.3       | 2,201.1                | 2,154.5                 | 46.59                  | 47.247             |          |
| 7,400.0   | 5,811.3               | 5,550.0               | 5,536.4               | 40.7             | 13.9          | -68.71                | 361.2                               | -180.3       | 2,296.0                | 2,247.6                 | 48.46                  | 47.377             |          |
| 7,500.0   | 5,811.3               | 5,528.6               | 5,515.7               | 42.1             | 13.8          | -70.27                | 356.7                               | -176.9       | 2,389.5                | 2,340.1                 | 49.40                  | 48.370             |          |
| 7,600.0   | 5,811.3               | 5,523.3               | 5,510.5               | 43.6             | 13.8          | -72.04                | 355.7                               | -176.2       | 2,481.9                | 2,431.5                 | 50.45                  | 49.196             |          |
| 7,700.0   | 5,811.3               | 5,518.2               | 5,505.6               | 45.0             | 13.8          | -71.78                | 354.8                               | -175.5       | 2,574.2                | 2,522.3                 | 51.81                  | 49.680             |          |
| 7,800.0   | 5,811.3               | 5,500.0               | 5,487.8               | 46.4             | 13.7          | -70.84                | 351.8                               | -173.3       | 2,667.1                | 2,614.1                 | 52.93                  | 50.384             |          |
| 7,900.0   | 5,811.2               | 5,500.0               | 5,487.8               | 47.9             | 13.7          | -70.84                | 351.8                               | -173.3       | 2,760.2                | 2,705.8                 | 54.44                  | 50.704             |          |
| 8,000.0   | 5,811.2               | 5,500.0               | 5,487.8               | 49.4             | 13.7          | -70.84                | 351.8                               | -173.3       | 2,853.8                | 2,797.9                 | 55.96                  | 50.997             |          |
| 8,100.0   | 5,811.2               | 5,500.0               | 5,487.8               | 50.9             | 13.7          | -70.84                | 351.8                               | -173.3       | 2,947.9                | 2,890.4                 | 57.50                  | 51.265             |          |
| 8,200.0   | 5,811.2               | 5,500.0               | 5,487.8               | 52.5             | 13.7          | -70.84                | 351.8                               | -173.3       | 3,042.3                | 2,983.3                 | 59.06                  | 51.512             |          |
| 8,300.0   | 5,811.2               | 5,500.0               | 5,487.8               | 54.0             | 13.7          | -70.84                | 351.8                               | -173.3       | 3,137.1                | 3,076.5                 | 60.63                  | 51.739             |          |
| 8,400.0   | 5,811.2               | 5,500.0               | 5,487.8               | 55.6             | 13.7          | -70.84                | 351.8                               | -173.3       | 3,232.2                | 3,170.0                 | 62.22                  | 51.949             |          |
| 8,500.0   | 5,811.2               | 5,500.0               | 5,487.8               | 57.2             | 13.7          | -70.84                | 351.8                               | -173.3       | 3,327.6                | 3,263.7                 | 63.82                  | 52.144             |          |
| 8,600.0   | 5,811.2               | 5,500.0               | 5,487.8               | 58.9             | 13.7          | -70.84                | 351.8                               | -173.3       | 3,423.2                | 3,357.8                 | 65.42                  | 52.324             |          |
| 8,700.0   | 5,811.2               | 5,500.0               | 5,487.8               | 60.5             | 13.7          | -70.84                | 351.8                               | -173.3       | 3,519.1                | 3,452.0                 | 67.04                  | 52.492             |          |
| 8,800.0   | 5,811.2               | 5,500.0               | 5,487.8               | 62.2             | 13.7          | -70.84                | 351.8                               | -173.3       | 3,615.2                | 3,546.5                 | 68.67                  | 52.649             |          |
| 8,900.0   | 5,811.2               | 5,500.0               | 5,487.8               | 63.9             | 13.7          | -70.84                | 351.8                               | -173.3       | 3,711.5                | 3,641.2                 | 70.30                  | 52.795             |          |
| 9,000.0   | 5,811.2               | 5,477.5               | 5,465.5               | 65.6             | 13.7          | -69.67                | 348.9                               | -171.1       | 3,807.6                | 3,736.2                 | 71.38                  | 53.344             |          |
| 9,100.0   | 5,811.2               | 5,475.5               | 5,463.6               | 67.3             | 13.6          | -69.57                | 348.6                               | -170.9       | 3,904.2                | 3,831.3                 | 72.96                  | 53.509             |          |
| 9,200.0   | 5,811.2               | 5,473.6               | 5,461.7               | 69.0             | 13.6          | -69.47                | 348.4                               | -170.8       | 4,001.0                | 3,926.4                 | 74.56                  | 53.663             |          |
| 9,300.0   | 5,811.2               | 5,471.8               | 5,459.9               | 70.7             | 13.6          | -69.38                | 348.2                               | -170.6       | 4,097.9                | 4,021.8                 | 76.16                  | 53.808             |          |
| 9,400.0   | 5,811.2               | 5,450.0               | 5,438.3               | 72.5             | 13.6          | -68.25                | 346.3                               | -169.2       | 4,195.3                | 4,118.1                 | 77.20                  | 54.345             |          |
| 9,500.0   | 5,811.2               | 5,450.0               | 5,438.3               | 74.2             | 13.6          | -68.25                | 346.3                               | -169.2       | 4,292.4                | 4,213.6                 | 78.84                  | 54.442             |          |
| 9,600.0   | 5,811.2               | 5,450.0               | 5,438.3               | 76.0             | 13.6          | -68.25                | 346.3                               | -169.2       | 4,389.7                | 4,309.2                 | 80.50                  | 54.533             |          |
| 9,700.0   | 5,811.2               | 5,450.0               | 5,438.3               | 77.7             | 13.6          | -68.25                | 346.3                               | -169.2       | 4,487.1                | 4,404.9                 | 82.15                  | 54.620             |          |
| 9,800.0   | 5,811.2               | 5,450.0               | 5,438.3               | 79.5             | 13.6          | -68.25                | 346.3                               | -169.2       | 4,584.6                | 4,500.7                 | 83.87                  | 54.665             |          |
| 9,900.0   | 5,811.2               | 5,450.0               | 5,438.3               | 81.3             | 13.6          | -68.25                | 346.3                               | -169.2       | 4,682.2                | 4,596.6                 | 85.60                  | 54.695             |          |
| 10,000.0  | 5,811.2               | 5,450.0               | 5,438.3               | 83.1             | 13.6          | -68.25                | 346.3                               | -169.2       | 4,779.9                | 4,692.6                 | 87.35                  | 54.724             |          |
| 10,100.0  | 5,811.2               | 5,450.0               | 5,438.3               | 84.9             | 13.6          | -68.25                | 346.3                               | -169.2       | 4,877.7                | 4,788.6                 | 89.09                  | 54.750             |          |
| 10,200.0  | 5,811.1               | 5,450.0               | 5,438.3               | 86.7             | 13.6          | -68.25                | 346.3                               | -169.2       | 4,975.6                | 4,884.8                 | 90.84                  | 54.775             |          |

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



# Cathedral Energy Services

## Anticollision Report

|                           |                               |                                     |  |
|---------------------------|-------------------------------|-------------------------------------|--|
| <b>Company:</b>           | Whiting Petroleum Corporation | <b>Local Co-ordinate Reference:</b> | Well Razor Federal #12F-1301A          |
| <b>Project:</b>           | Weld County, CO               | <b>TVD Reference:</b>               | WELL @ 4953.6usft (Original Well Elev) |
| <b>Reference Site:</b>    | S12-T10N-R58W                 | <b>MD Reference:</b>                | WELL @ 4953.6usft (Original Well Elev) |
| <b>Site Error:</b>        | 0.0usft                       | <b>North Reference:</b>             | True                                   |
| <b>Reference Well:</b>    | Razor Federal #12F-1301A      | <b>Survey Calculation Method:</b>   | Minimum Curvature                      |
| <b>Well Error:</b>        | 0.0usft                       | <b>Output errors are at</b>         | 2.00 sigma                             |
| <b>Reference Wellbore</b> | HZ                            | <b>Database:</b>                    | USA EDM 5000 Multi Users DB            |
| <b>Reference Design:</b>  | Plan #3                       | <b>Offset TVD Reference:</b>        | Offset Datum                           |

| Offset Design S12-T10N-R58W - Razor #12F-0102B - 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 |                             |         |
| 10,300.0  | 5,811.1               | 5,450.0               | 5,438.3               | 88.5             | 13.6          | -68.25                | 346.3                               | -169.2       | 5,073.6                | 4,981.0                 | 92.59                  | 54.798            |                             |         |
| 10,400.0  | 5,811.1               | 5,450.0               | 5,438.3               | 90.3             | 13.6          | -68.25                | 346.3                               | -169.2       | 5,171.6                | 5,077.3                 | 94.34                  | 54.820            |                             |         |
| 10,500.0  | 5,811.1               | 5,450.0               | 5,438.3               | 92.1             | 13.6          | -68.25                | 346.3                               | -169.2       | 5,269.7                | 5,173.6                 | 96.09                  | 54.841            |                             |         |
| 10,600.0  | 5,811.1               | 5,450.0               | 5,438.3               | 93.9             | 13.6          | -68.25                | 346.3                               | -169.2       | 5,367.9                | 5,270.1                 | 97.85                  | 54.860            |                             |         |
| 10,700.0  | 5,811.1               | 5,450.0               | 5,438.3               | 95.7             | 13.6          | -68.25                | 346.3                               | -169.2       | 5,466.2                | 5,366.6                 | 99.61                  | 54.878            |                             |         |
| 10,800.0  | 5,811.1               | 5,450.0               | 5,438.3               | 97.5             | 13.6          | -68.25                | 346.3                               | -169.2       | 5,564.5                | 5,463.1                 | 101.37                 | 54.895            |                             |         |
| 10,900.0  | 5,811.1               | 5,450.0               | 5,438.3               | 99.4             | 13.6          | -68.25                | 346.3                               | -169.2       | 5,662.9                | 5,559.8                 | 103.13                 | 54.911            |                             |         |
| 11,000.0  | 5,811.1               | 5,450.0               | 5,438.3               | 101.2            | 13.6          | -68.25                | 346.3                               | -169.2       | 5,761.3                | 5,656.4                 | 104.89                 | 54.926            |                             |         |
| 11,100.0  | 5,811.1               | 5,450.0               | 5,438.3               | 103.0            | 13.6          | -68.25                | 346.3                               | -169.2       | 5,859.8                | 5,753.1                 | 106.66                 | 54.940            |                             |         |
| 11,200.0  | 5,811.1               | 5,450.0               | 5,438.3               | 104.9            | 13.6          | -68.25                | 346.3                               | -169.2       | 5,958.3                | 5,849.9                 | 108.42                 | 54.954            |                             |         |
| 11,300.0  | 5,811.1               | 5,450.0               | 5,438.3               | 106.7            | 13.6          | -68.25                | 346.3                               | -169.2       | 6,056.9                | 5,946.7                 | 110.19                 | 54.967            |                             |         |
| 11,400.0  | 5,811.1               | 5,450.0               | 5,438.3               | 108.6            | 13.6          | -68.25                | 346.3                               | -169.2       | 6,155.6                | 6,043.6                 | 111.96                 | 54.979            |                             |         |
| 11,500.0  | 5,811.1               | 5,450.0               | 5,438.3               | 110.4            | 13.6          | -68.25                | 346.3                               | -169.2       | 6,254.2                | 6,140.5                 | 113.73                 | 54.991            |                             |         |
| 11,600.0  | 5,811.1               | 5,450.0               | 5,438.3               | 112.3            | 13.6          | -68.25                | 346.3                               | -169.2       | 6,352.9                | 6,237.4                 | 115.50                 | 55.002            |                             |         |
| 11,700.0  | 5,811.1               | 5,450.0               | 5,438.3               | 114.1            | 13.6          | -68.25                | 346.3                               | -169.2       | 6,451.7                | 6,334.4                 | 117.28                 | 55.012            |                             |         |
| 11,800.0  | 5,811.1               | 5,445.0               | 5,433.3               | 116.0            | 13.6          | -68.00                | 345.9                               | -168.9       | 6,550.5                | 6,431.6                 | 118.86                 | 55.113            |                             |         |
| 11,900.0  | 5,811.1               | 5,444.4               | 5,432.7               | 117.8            | 13.5          | -67.96                | 345.9                               | -168.9       | 6,649.3                | 6,528.7                 | 120.60                 | 55.134            |                             |         |
| 12,000.0  | 5,811.1               | 5,439.0               | 5,427.3               | 119.7            | 13.5          | -67.69                | 345.6                               | -168.6       | 6,748.2                | 6,626.0                 | 122.15                 | 55.243            |                             |         |
| 12,100.0  | 5,811.1               | 5,439.0               | 5,427.3               | 121.6            | 13.5          | -67.69                | 345.6                               | -168.6       | 6,847.1                | 6,723.1                 | 123.93                 | 55.252            |                             |         |
| 12,200.0  | 5,811.1               | 5,439.0               | 5,427.3               | 123.4            | 13.5          | -67.69                | 345.6                               | -168.6       | 6,946.0                | 6,820.3                 | 125.70                 | 55.259            |                             |         |
| 12,300.0  | 5,811.1               | 5,439.0               | 5,427.3               | 125.3            | 13.5          | -67.69                | 345.6                               | -168.6       | 7,044.9                | 6,917.5                 | 127.47                 | 55.267            |                             |         |
| 12,400.0  | 5,811.1               | 5,439.0               | 5,427.3               | 127.2            | 13.5          | -67.69                | 345.6                               | -168.6       | 7,143.9                | 7,014.7                 | 129.24                 | 55.274            |                             |         |
| 12,500.0  | 5,811.0               | 5,439.0               | 5,427.3               | 129.0            | 13.5          | -67.69                | 345.6                               | -168.6       | 7,242.9                | 7,111.9                 | 131.02                 | 55.281            |                             |         |
| 12,600.0  | 5,811.0               | 5,439.0               | 5,427.3               | 130.9            | 13.5          | -67.69                | 345.6                               | -168.6       | 7,341.9                | 7,209.2                 | 132.79                 | 55.288            |                             |         |
| 12,700.0  | 5,811.0               | 5,439.0               | 5,427.3               | 132.8            | 13.5          | -67.69                | 345.6                               | -168.6       | 7,441.0                | 7,306.4                 | 134.57                 | 55.294            |                             |         |
| 12,800.0  | 5,811.0               | 5,439.0               | 5,427.3               | 134.6            | 13.5          | -67.69                | 345.6                               | -168.6       | 7,540.1                | 7,403.7                 | 136.35                 | 55.300            |                             |         |
| 12,900.0  | 5,811.0               | 5,437.2               | 5,425.5               | 136.5            | 13.5          | -67.60                | 345.5                               | -168.6       | 7,639.2                | 7,501.2                 | 138.04                 | 55.339            |                             |         |
| 13,000.0  | 5,811.0               | 5,431.6               | 5,420.0               | 138.4            | 13.5          | -67.31                | 345.2                               | -168.3       | 7,738.3                | 7,598.8                 | 139.56                 | 55.448            |                             |         |
| 13,100.0  | 5,811.0               | 5,426.0               | 5,414.4               | 140.3            | 13.5          | -67.02                | 344.8                               | -168.1       | 7,837.5                | 7,696.4                 | 141.07                 | 55.558            |                             |         |
| 13,200.0  | 5,811.0               | 5,420.5               | 5,408.8               | 142.1            | 13.5          | -66.74                | 344.5                               | -167.9       | 7,936.6                | 7,794.1                 | 142.57                 | 55.668            |                             |         |
| 13,300.0  | 5,811.0               | 5,414.9               | 5,403.2               | 144.0            | 13.5          | -66.46                | 344.2                               | -167.6       | 8,035.8                | 7,891.8                 | 144.06                 | 55.780            |                             |         |
| 13,400.0  | 5,811.0               | 5,409.3               | 5,397.6               | 145.9            | 13.5          | -66.18                | 343.9                               | -167.4       | 8,135.0                | 7,989.5                 | 145.55                 | 55.891            |                             |         |
| 13,500.0  | 5,811.0               | 5,403.7               | 5,392.0               | 147.8            | 13.4          | -65.90                | 343.6                               | -167.2       | 8,234.2                | 8,087.2                 | 147.03                 | 56.004            |                             |         |
| 13,600.0  | 5,811.0               | 5,398.1               | 5,386.5               | 149.7            | 13.4          | -65.62                | 343.3                               | -166.9       | 8,333.5                | 8,184.9                 | 148.50                 | 56.117            |                             |         |
| 13,700.0  | 5,811.0               | 5,392.5               | 5,380.9               | 151.6            | 13.4          | -65.34                | 343.0                               | -166.7       | 8,432.7                | 8,282.7                 | 149.97                 | 56.230            |                             |         |
| 13,800.0  | 5,811.0               | 5,386.9               | 5,375.3               | 153.4            | 13.4          | -65.06                | 342.7                               | -166.5       | 8,531.9                | 8,380.5                 | 151.43                 | 56.344            |                             |         |
| 13,900.0  | 5,811.0               | 5,381.3               | 5,369.7               | 155.3            | 13.4          | -64.79                | 342.3                               | -166.2       | 8,631.2                | 8,478.3                 | 152.88                 | 56.459            |                             |         |
| 13,919.8  | 5,811.0               | 5,380.2               | 5,368.6               | 155.7            | 13.4          | -64.74                | 342.3                               | -166.2       | 8,650.9                | 8,497.7                 | 153.16                 | 56.482            |                             |         |

# Cathedral Energy Services

## Anticollision Report

|                           |                               |                                     |  |
|---------------------------|-------------------------------|-------------------------------------|--|
| <b>Company:</b>           | Whiting Petroleum Corporation | <b>Local Co-ordinate Reference:</b> | Well Razor Federal #12F-1301A          |
| <b>Project:</b>           | Weld County, CO               | <b>TVD Reference:</b>               | WELL @ 4953.6usft (Original Well Elev) |
| <b>Reference Site:</b>    | S12-T10N-R58W                 | <b>MD Reference:</b>                | WELL @ 4953.6usft (Original Well Elev) |
| <b>Site Error:</b>        | 0.0usft                       | <b>North Reference:</b>             | True                                   |
| <b>Reference Well:</b>    | Razor Federal #12F-1301A      | <b>Survey Calculation Method:</b>   | Minimum Curvature                      |
| <b>Well Error:</b>        | 0.0usft                       | <b>Output errors are at</b>         | 2.00 sigma                             |
| <b>Reference Wellbore</b> | HZ                            | <b>Database:</b>                    | USA EDM 5000 Multi Users DB            |
| <b>Reference Design:</b>  | Plan #3                       | <b>Offset TVD Reference:</b>        | Offset Datum                           |

| Offset Design S12-T10N-R58W - Razor #12F-0103A - 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 |                             |         |
| 0.0   | 0.0                   | 0.0                   | 0.0                   | 0.0              | 0.0           | 41.43                 | 74.9                                | 66.1         | 99.9                   |                         |                        |                   |                             |         |
| 100.0   | 100.0                 | 100.0                 | 100.0                 | 0.1              | 0.1           | 41.43                 | 74.9                                | 66.1         | 99.9                   | 99.7                    | 0.19                   | 533.939           |                             |         |
| 200.0   | 200.0                 | 200.0                 | 200.0                 | 0.3              | 0.3           | 41.43                 | 74.9                                | 66.1         | 99.9                   | 99.2                    | 0.64                   | 156.883           |                             |         |
| 300.0   | 300.0                 | 300.0                 | 300.0                 | 0.5              | 0.5           | 41.43                 | 74.9                                | 66.1         | 99.9                   | 98.8                    | 1.09                   | 91.950            |                             |         |
| 400.0   | 400.0                 | 400.0                 | 400.0                 | 0.8              | 0.8           | 41.43                 | 74.9                                | 66.1         | 99.9                   | 98.3                    | 1.54                   | 65.033            |                             |         |
| 500.0   | 500.0                 | 500.0                 | 500.0                 | 1.0              | 1.0           | 41.43                 | 74.9                                | 66.1         | 99.9                   | 97.9                    | 1.99                   | 50.307            |                             |         |
| 600.0   | 600.0                 | 600.0                 | 600.0                 | 1.2              | 1.2           | 41.43                 | 74.9                                | 66.1         | 99.9                   | 97.4                    | 2.43                   | 41.018            |                             |         |
| 700.0   | 700.0                 | 700.0                 | 700.0                 | 1.4              | 1.4           | 41.43                 | 74.9                                | 66.1         | 99.9                   | 97.0                    | 2.88                   | 34.625            |                             |         |
| 800.0   | 800.0                 | 800.0                 | 800.0                 | 1.7              | 1.7           | 41.43                 | 74.9                                | 66.1         | 99.9                   | 96.5                    | 3.33                   | 29.956            |                             |         |
| 900.0   | 900.0                 | 900.0                 | 900.0                 | 1.9              | 1.9           | 41.43                 | 74.9                                | 66.1         | 99.9                   | 96.1                    | 3.78                   | 26.397            |                             |         |
| 966.7   | 966.7                 | 966.7                 | 966.7                 | 2.0              | 2.0           | 41.43                 | 74.9                                | 66.1         | 99.9                   | 95.8                    | 4.08                   | 24.460 CC         |                             |         |
| 1,000.0   | 1,000.0               | 1,000.0               | 1,000.0               | 2.1              | 2.1           | 41.43                 | 74.9                                | 66.1         | 99.9                   | 95.6                    | 4.23                   | 23.594 ES         |                             |         |
| 1,100.0   | 1,100.0               | 1,098.8               | 1,098.8               | 2.3              | 2.3           | 176.51                | 76.4                                | 65.2         | 102.2                  | 97.5                    | 4.65                   | 21.957            |                             |         |
| 1,200.0   | 1,199.8               | 1,197.2               | 1,197.0               | 2.5              | 2.6           | 174.14                | 80.8                                | 62.7         | 109.2                  | 104.2                   | 5.05                   | 21.607 SF         |                             |         |
| 1,300.0   | 1,299.6               | 1,296.5               | 1,296.1               | 2.7              | 2.8           | 171.37                | 86.8                                | 59.3         | 118.9                  | 113.4                   | 5.47                   | 21.727            |                             |         |
| 1,400.0   | 1,399.4               | 1,395.9               | 1,395.3               | 2.9              | 3.0           | 169.02                | 92.8                                | 55.8         | 128.8                  | 122.9                   | 5.90                   | 21.837            |                             |         |
| 1,500.0   | 1,499.1               | 1,495.3               | 1,494.4               | 3.1              | 3.3           | 167.01                | 98.8                                | 52.4         | 138.9                  | 132.6                   | 6.33                   | 21.934            |                             |         |
| 1,600.0   | 1,598.9               | 1,594.7               | 1,593.5               | 3.4              | 3.5           | 165.27                | 104.8                               | 48.9         | 149.2                  | 142.4                   | 6.77                   | 22.020            |                             |         |
| 1,700.0   | 1,698.6               | 1,694.0               | 1,692.7               | 3.6              | 3.7           | 163.75                | 110.8                               | 45.5         | 159.5                  | 152.3                   | 7.22                   | 22.096            |                             |         |
| 1,800.0   | 1,798.4               | 1,793.4               | 1,791.8               | 3.8              | 4.0           | 162.42                | 116.8                               | 42.0         | 170.0                  | 162.3                   | 7.67                   | 22.164            |                             |         |
| 1,900.0   | 1,898.1               | 1,892.8               | 1,891.0               | 4.1              | 4.2           | 161.25                | 122.8                               | 38.6         | 180.5                  | 172.4                   | 8.12                   | 22.225            |                             |         |
| 2,000.0   | 1,997.9               | 1,992.2               | 1,990.1               | 4.3              | 4.5           | 160.20                | 128.9                               | 35.1         | 191.1                  | 182.6                   | 8.58                   | 22.280            |                             |         |
| 2,100.0   | 2,097.6               | 2,091.6               | 2,089.2               | 4.5              | 4.7           | 159.26                | 134.9                               | 31.7         | 201.8                  | 192.8                   | 9.04                   | 22.329            |                             |         |
| 2,200.0   | 2,197.4               | 2,190.9               | 2,188.4               | 4.8              | 5.0           | 158.42                | 140.9                               | 28.2         | 212.5                  | 203.0                   | 9.50                   | 22.373            |                             |         |
| 2,300.0   | 2,297.2               | 2,290.3               | 2,287.5               | 5.0              | 5.2           | 157.66                | 146.9                               | 24.8         | 223.3                  | 213.3                   | 9.96                   | 22.414            |                             |         |
| 2,400.0   | 2,396.9               | 2,389.7               | 2,386.6               | 5.3              | 5.5           | 156.97                | 152.9                               | 21.3         | 234.1                  | 223.6                   | 10.43                  | 22.450            |                             |         |
| 2,500.0   | 2,496.7               | 2,489.1               | 2,485.8               | 5.5              | 5.7           | 156.34                | 158.9                               | 17.9         | 244.9                  | 234.0                   | 10.89                  | 22.483            |                             |         |
| 2,600.0   | 2,596.4               | 2,588.5               | 2,584.9               | 5.8              | 6.0           | 155.77                | 164.9                               | 14.4         | 255.7                  | 244.4                   | 11.36                  | 22.514            |                             |         |
| 2,700.0   | 2,696.2               | 2,687.8               | 2,684.0               | 6.0              | 6.2           | 155.24                | 170.9                               | 11.0         | 266.6                  | 254.8                   | 11.83                  | 22.542            |                             |         |
| 2,800.0   | 2,795.9               | 2,787.2               | 2,783.2               | 6.3              | 6.5           | 154.75                | 177.0                               | 7.5          | 277.5                  | 265.2                   | 12.30                  | 22.568            |                             |         |
| 2,900.0   | 2,895.7               | 2,886.6               | 2,882.3               | 6.5              | 6.7           | 154.30                | 183.0                               | 4.1          | 288.4                  | 275.6                   | 12.77                  | 22.591            |                             |         |
| 3,000.0   | 2,995.5               | 2,986.0               | 2,981.5               | 6.8              | 7.0           | 153.88                | 189.0                               | 0.6          | 299.3                  | 286.1                   | 13.24                  | 22.613            |                             |         |
| 3,100.0   | 3,095.2               | 3,085.3               | 3,080.6               | 7.1              | 7.2           | 153.49                | 195.0                               | -2.8         | 310.3                  | 296.5                   | 13.71                  | 22.634            |                             |         |
| 3,200.0   | 3,195.0               | 3,184.7               | 3,179.7               | 7.3              | 7.5           | 153.13                | 201.0                               | -6.3         | 321.2                  | 307.0                   | 14.18                  | 22.653            |                             |         |
| 3,300.0   | 3,294.7               | 3,284.1               | 3,278.9               | 7.6              | 7.7           | 152.79                | 207.0                               | -9.7         | 332.2                  | 317.5                   | 14.65                  | 22.670            |                             |         |
| 3,400.0   | 3,394.5               | 3,383.5               | 3,378.0               | 7.8              | 8.0           | 152.47                | 213.0                               | -13.2        | 343.1                  | 328.0                   | 15.13                  | 22.687            |                             |         |
| 3,500.0   | 3,494.2               | 3,482.9               | 3,477.1               | 8.1              | 8.2           | 152.18                | 219.0                               | -16.6        | 354.1                  | 338.5                   | 15.60                  | 22.702            |                             |         |
| 3,600.0   | 3,594.0               | 3,582.2               | 3,576.3               | 8.3              | 8.5           | 151.90                | 225.1                               | -20.1        | 365.1                  | 349.1                   | 16.07                  | 22.717            |                             |         |
| 3,700.0   | 3,693.7               | 3,681.6               | 3,675.4               | 8.6              | 8.7           | 151.63                | 231.1                               | -23.5        | 376.1                  | 359.6                   | 16.55                  | 22.730            |                             |         |
| 3,800.0   | 3,793.5               | 3,781.0               | 3,774.5               | 8.9              | 9.0           | 151.39                | 237.1                               | -27.0        | 387.1                  | 370.1                   | 17.02                  | 22.743            |                             |         |
| 3,900.0   | 3,893.3               | 3,880.4               | 3,873.7               | 9.1              | 9.2           | 151.15                | 243.1                               | -30.4        | 398.2                  | 380.7                   | 17.50                  | 22.755            |                             |         |
| 4,000.0   | 3,993.0               | 3,979.8               | 3,972.8               | 9.4              | 9.5           | 150.93                | 249.1                               | -33.9        | 409.2                  | 391.2                   | 17.97                  | 22.766            |                             |         |
| 4,100.0   | 4,092.8               | 4,079.1               | 4,072.0               | 9.6              | 9.7           | 150.72                | 255.1                               | -37.4        | 420.2                  | 401.8                   | 18.45                  | 22.777            |                             |         |
| 4,200.0   | 4,192.5               | 4,178.5               | 4,171.1               | 9.9              | 10.0          | 150.52                | 261.1                               | -40.8        | 431.2                  | 412.3                   | 18.92                  | 22.787            |                             |         |
| 4,300.0   | 4,292.3               | 4,277.9               | 4,270.2               | 10.2             | 10.3          | 150.33                | 267.1                               | -44.3        | 442.3                  | 422.9                   | 19.40                  | 22.797            |                             |         |
| 4,400.0   | 4,392.0               | 4,377.3               | 4,369.4               | 10.4             | 10.5          | 150.15                | 273.2                               | -47.7        | 453.3                  | 433.4                   | 19.88                  | 22.806            |                             |         |
| 4,500.0   | 4,491.8               | 4,476.6               | 4,468.5               | 10.7             | 10.8          | 149.98                | 279.2                               | -51.2        | 464.4                  | 444.0                   | 20.35                  | 22.815            |                             |         |
| 4,600.0   | 4,591.6               | 4,576.0               | 4,567.6               | 11.0             | 11.0          | 149.82                | 285.2                               | -54.6        | 475.4                  | 454.6                   | 20.83                  | 22.823            |                             |         |
| 4,700.0   | 4,691.3               | 4,675.4               | 4,666.8               | 11.2             | 11.3          | 149.66                | 291.2                               | -58.1        | 486.5                  | 465.2                   | 21.31                  | 22.831            |                             |         |
| 4,800.0   | 4,791.1               | 4,774.8               | 4,765.9               | 11.5             | 11.5          | 149.51                | 297.2                               | -61.5        | 497.5                  | 475.7                   | 21.78                  | 22.838            |                             |         |
| 4,900.0   | 4,890.8               | 4,874.2               | 4,865.0               | 11.7             | 11.8          | 149.37                | 303.2                               | -65.0        | 508.6                  | 486.3                   | 22.26                  | 22.846            |                             |         |
| 5,000.0   | 4,990.6               | 4,973.5               | 4,964.2               | 12.0             | 12.0          | 149.23                | 309.2                               | -68.4        | 519.7                  | 496.9                   | 22.74                  | 22.852            |                             |         |

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

# Cathedral Energy Services

## Anticollision Report

|                           |                               |                                     |  |
|---------------------------|-------------------------------|-------------------------------------|--|
| <b>Company:</b>           | Whiting Petroleum Corporation | <b>Local Co-ordinate Reference:</b> | Well Razor Federal #12F-1301A          |
| <b>Project:</b>           | Weld County, CO               | <b>TVD Reference:</b>               | WELL @ 4953.6usft (Original Well Elev) |
| <b>Reference Site:</b>    | S12-T10N-R58W                 | <b>MD Reference:</b>                | WELL @ 4953.6usft (Original Well Elev) |
| <b>Site Error:</b>        | 0.0usft                       | <b>North Reference:</b>             | True                                   |
| <b>Reference Well:</b>    | Razor Federal #12F-1301A      | <b>Survey Calculation Method:</b>   | Minimum Curvature                      |
| <b>Well Error:</b>        | 0.0usft                       | <b>Output errors are at</b>         | 2.00 sigma                             |
| <b>Reference Wellbore</b> | HZ                            | <b>Database:</b>                    | USA EDM 5000 Multi Users DB            |
| <b>Reference Design:</b>  | Plan #3                       | <b>Offset TVD Reference:</b>        | Offset Datum                           |

| Offset Design S12-T10N-R58W - Razor #12F-0103A - 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 |                             |  |
| 5,100.0   | 5,090.3               | 5,072.9               | 5,063.3               | 12.3             | 12.3          | 149.10                | 315.2                               | -71.9        | 530.7                  | 507.5                   | 23.22                  | 22.859            |                             |  |
| 5,200.0   | 5,190.1               | 5,172.3               | 5,162.5               | 12.5             | 12.5          | 148.98                | 321.3                               | -75.3        | 541.8                  | 518.1                   | 23.70                  | 22.865            |                             |  |
| 5,300.0   | 5,289.9               | 5,271.7               | 5,261.6               | 12.8             | 12.8          | 148.86                | 327.3                               | -78.8        | 552.9                  | 528.7                   | 24.17                  | 22.871            |                             |  |
| 5,400.0   | 5,389.2               | 5,350.0               | 5,339.7               | 13.1             | 13.0          | 148.23                | 332.1                               | -81.6        | 567.6                  | 543.3                   | 24.36                  | 23.299            |                             |  |
| 5,500.0   | 5,485.0               | 5,400.0               | 5,389.2               | 13.5             | 13.2          | 146.20                | 338.3                               | -85.1        | 602.7                  | 578.7                   | 23.99                  | 25.125            |                             |  |
| 5,600.0   | 5,573.6               | 5,450.0               | 5,437.8               | 14.2             | 13.4          | 142.46                | 348.6                               | -91.0        | 657.7                  | 634.3                   | 23.43                  | 28.073            |                             |  |
| 5,700.0   | 5,651.8               | 5,486.5               | 5,472.4               | 15.0             | 13.5          | 135.95                | 358.6                               | -96.7        | 728.9                  | 705.6                   | 23.33                  | 31.247            |                             |  |
| 5,800.0   | 5,716.7               | 5,500.0               | 5,485.0               | 16.1             | 13.6          | 123.84                | 362.8                               | -99.2        | 811.9                  | 786.9                   | 25.04                  | 32.429            |                             |  |
| 5,900.0   | 5,766.0               | 5,529.0               | 5,511.6               | 17.3             | 13.7          | 105.53                | 372.9                               | -104.9       | 901.7                  | 872.9                   | 28.77                  | 31.338            |                             |  |
| 6,000.0   | 5,797.8               | 5,550.0               | 5,530.4               | 18.8             | 13.9          | 80.40                 | 380.9                               | -109.5       | 995.2                  | 964.1                   | 31.11                  | 31.991            |                             |  |
| 6,100.0   | 5,811.0               | 5,550.0               | 5,530.4               | 20.4             | 13.9          | 54.56                 | 380.9                               | -109.5       | 1,088.4                | 1,060.8                 | 27.64                  | 39.383            |                             |  |
| 6,200.0   | 5,811.3               | 5,531.5               | 5,513.8               | 21.9             | 13.8          | 44.34                 | 373.8                               | -105.4       | 1,180.7                | 1,155.3                 | 25.31                  | 46.649            |                             |  |
| 6,300.0   | 5,811.3               | 5,525.3               | 5,508.2               | 23.4             | 13.7          | 36.89                 | 371.5                               | -104.1       | 1,275.2                | 1,251.9                 | 23.30                  | 54.735            |                             |  |
| 6,400.0   | 5,811.3               | 5,518.7               | 5,502.2               | 25.0             | 13.7          | 27.12                 | 369.1                               | -102.8       | 1,371.4                | 1,351.7                 | 19.70                  | 69.616            |                             |  |
| 6,500.0   | 5,811.3               | 5,500.0               | 5,485.0               | 26.6             | 13.6          | 13.70                 | 362.8                               | -99.2        | 1,468.7                | 1,454.6                 | 14.09                  | 104.270           |                             |  |
| 6,600.0   | 5,811.3               | 5,500.0               | 5,485.0               | 28.2             | 13.6          | 0.36                  | 362.8                               | -99.2        | 1,566.3                | 1,555.4                 | 10.90                  | 143.755           |                             |  |
| 6,700.0   | 5,811.3               | 5,500.0               | 5,485.0               | 29.8             | 13.6          | -13.90                | 362.8                               | -99.2        | 1,664.2                | 1,649.5                 | 14.69                  | 113.270           |                             |  |
| 6,800.0   | 5,811.3               | 5,500.0               | 5,485.0               | 31.4             | 13.6          | -27.32                | 362.8                               | -99.2        | 1,762.1                | 1,739.3                 | 22.76                  | 77.428            |                             |  |
| 6,900.0   | 5,811.3               | 5,482.0               | 5,468.1               | 33.0             | 13.5          | -37.79                | 357.2                               | -95.9        | 1,859.5                | 1,829.7                 | 29.71                  | 62.579            |                             |  |
| 7,000.0   | 5,811.3               | 5,474.7               | 5,461.2               | 34.6             | 13.5          | -46.18                | 355.1                               | -94.7        | 1,956.4                | 1,921.1                 | 35.26                  | 55.480            |                             |  |
| 7,100.0   | 5,811.3               | 5,467.5               | 5,454.4               | 36.2             | 13.4          | -52.64                | 353.1                               | -93.6        | 2,052.6                | 2,013.2                 | 39.42                  | 52.070            |                             |  |
| 7,200.0   | 5,811.3               | 5,450.0               | 5,437.8               | 37.7             | 13.4          | -57.02                | 348.6                               | -91.0        | 2,148.0                | 2,105.8                 | 42.22                  | 50.880            |                             |  |
| 7,300.0   | 5,811.3               | 5,450.0               | 5,437.8               | 39.2             | 13.4          | -61.36                | 348.6                               | -91.0        | 2,242.3                | 2,197.5                 | 44.80                  | 50.047            |                             |  |
| 7,400.0   | 5,811.3               | 5,450.0               | 5,437.8               | 40.7             | 13.4          | -64.85                | 348.6                               | -91.0        | 2,335.5                | 2,288.7                 | 46.78                  | 49.921            |                             |  |
| 7,500.0   | 5,811.3               | 5,450.0               | 5,437.8               | 42.1             | 13.4          | -67.69                | 348.6                               | -91.0        | 2,427.6                | 2,379.3                 | 48.30                  | 50.262            |                             |  |
| 7,600.0   | 5,811.3               | 5,450.0               | 5,437.8               | 43.6             | 13.4          | -69.76                | 348.6                               | -91.0        | 2,518.3                | 2,468.8                 | 49.50                  | 50.876            |                             |  |
| 7,700.0   | 5,811.3               | 5,429.9               | 5,418.4               | 45.0             | 13.3          | -68.86                | 344.0                               | -88.3        | 2,608.7                | 2,558.1                 | 50.57                  | 51.589            |                             |  |
| 7,800.0   | 5,811.3               | 5,424.9               | 5,413.5               | 46.4             | 13.3          | -68.63                | 342.9                               | -87.7        | 2,699.9                | 2,647.9                 | 51.93                  | 51.986            |                             |  |
| 7,900.0   | 5,811.2               | 5,420.2               | 5,409.0               | 47.9             | 13.2          | -68.42                | 342.0                               | -87.2        | 2,791.6                | 2,738.3                 | 53.33                  | 52.349            |                             |  |
| 8,000.0   | 5,811.2               | 5,400.0               | 5,389.2               | 49.4             | 13.2          | -67.50                | 338.3                               | -85.1        | 2,884.1                | 2,829.6                 | 54.41                  | 53.004            |                             |  |
| 8,100.0   | 5,811.2               | 5,400.0               | 5,389.2               | 50.9             | 13.2          | -67.50                | 338.3                               | -85.1        | 2,976.7                | 2,920.8                 | 55.93                  | 53.224            |                             |  |
| 8,200.0   | 5,811.2               | 5,400.0               | 5,389.2               | 52.5             | 13.2          | -67.50                | 338.3                               | -85.1        | 3,069.8                | 3,012.3                 | 57.46                  | 53.427            |                             |  |
| 8,300.0   | 5,811.2               | 5,400.0               | 5,389.2               | 54.0             | 13.2          | -67.50                | 338.3                               | -85.1        | 3,163.3                | 3,104.3                 | 59.00                  | 53.612            |                             |  |
| 8,400.0   | 5,811.2               | 5,400.0               | 5,389.2               | 55.6             | 13.2          | -67.50                | 338.3                               | -85.1        | 3,257.2                | 3,196.7                 | 60.56                  | 53.784            |                             |  |
| 8,500.0   | 5,811.2               | 5,400.0               | 5,389.2               | 57.2             | 13.2          | -67.50                | 338.3                               | -85.1        | 3,351.5                | 3,289.4                 | 62.13                  | 53.943            |                             |  |
| 8,600.0   | 5,811.2               | 5,400.0               | 5,389.2               | 58.9             | 13.2          | -67.50                | 338.3                               | -85.1        | 3,446.1                | 3,382.4                 | 63.71                  | 54.090            |                             |  |
| 8,700.0   | 5,811.2               | 5,400.0               | 5,389.2               | 60.5             | 13.2          | -67.50                | 338.3                               | -85.1        | 3,540.9                | 3,475.6                 | 65.30                  | 54.227            |                             |  |
| 8,800.0   | 5,811.2               | 5,400.0               | 5,389.2               | 62.2             | 13.2          | -67.50                | 338.3                               | -85.1        | 3,636.1                | 3,569.2                 | 66.90                  | 54.354            |                             |  |
| 8,900.0   | 5,811.2               | 5,400.0               | 5,389.2               | 63.9             | 13.2          | -67.50                | 338.3                               | -85.1        | 3,731.5                | 3,663.0                 | 68.50                  | 54.473            |                             |  |
| 9,000.0   | 5,811.2               | 5,400.0               | 5,389.2               | 65.6             | 13.2          | -67.50                | 338.3                               | -85.1        | 3,827.2                | 3,757.0                 | 70.11                  | 54.585            |                             |  |
| 9,100.0   | 5,811.2               | 5,400.0               | 5,389.2               | 67.3             | 13.2          | -67.50                | 338.3                               | -85.1        | 3,923.0                | 3,851.3                 | 71.73                  | 54.689            |                             |  |
| 9,200.0   | 5,811.2               | 5,400.0               | 5,389.2               | 69.0             | 13.2          | -67.50                | 338.3                               | -85.1        | 4,019.1                | 3,945.7                 | 73.36                  | 54.787            |                             |  |
| 9,300.0   | 5,811.2               | 5,400.0               | 5,389.2               | 70.7             | 13.2          | -67.50                | 338.3                               | -85.1        | 4,115.3                | 4,040.3                 | 74.99                  | 54.880            |                             |  |
| 9,400.0   | 5,811.2               | 5,376.9               | 5,366.5               | 72.5             | 13.1          | -66.46                | 335.0                               | -83.2        | 4,211.3                | 4,135.3                 | 76.01                  | 55.404            |                             |  |
| 9,500.0   | 5,811.2               | 5,375.1               | 5,364.7               | 74.2             | 13.1          | -66.38                | 334.7                               | -83.0        | 4,307.8                | 4,230.2                 | 77.59                  | 55.519            |                             |  |
| 9,600.0   | 5,811.2               | 5,373.4               | 5,363.0               | 76.0             | 13.1          | -66.30                | 334.5                               | -82.9        | 4,404.5                | 4,325.3                 | 79.19                  | 55.621            |                             |  |
| 9,700.0   | 5,811.2               | 5,371.8               | 5,361.3               | 77.7             | 13.1          | -66.23                | 334.3                               | -82.8        | 4,501.3                | 4,420.5                 | 80.85                  | 55.672            |                             |  |
| 9,800.0   | 5,811.2               | 5,350.0               | 5,339.7               | 79.5             | 13.0          | -65.25                | 332.1                               | -81.6        | 4,598.6                | 4,516.6                 | 81.95                  | 56.112            |                             |  |
| 9,900.0   | 5,811.2               | 5,350.0               | 5,339.7               | 81.3             | 13.0          | -65.25                | 332.1                               | -81.6        | 4,695.6                | 4,611.9                 | 83.66                  | 56.127            |                             |  |
| 10,000.0  | 5,811.2               | 5,350.0               | 5,339.7               | 83.1             | 13.0          | -65.25                | 332.1                               | -81.6        | 4,792.7                | 4,707.4                 | 85.37                  | 56.141            |                             |  |
| 10,100.0  | 5,811.2               | 5,350.0               | 5,339.7               | 84.9             | 13.0          | -65.25                | 332.1                               | -81.6        | 4,890.0                | 4,802.9                 | 87.08                  | 56.154            |                             |  |
| 10,200.0  | 5,811.1               | 5,350.0               | 5,339.7               | 86.7             | 13.0          | -65.25                | 332.1                               | -81.6        | 4,987.4                | 4,898.6                 | 88.80                  | 56.166            |                             |  |

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

# Cathedral Energy Services

## Anticollision Report

|                           |                               |                                     |  |
|---------------------------|-------------------------------|-------------------------------------|--|
| <b>Company:</b>           | Whiting Petroleum Corporation | <b>Local Co-ordinate Reference:</b> | Well Razor Federal #12F-1301A          |
| <b>Project:</b>           | Weld County, CO               | <b>TVD Reference:</b>               | WELL @ 4953.6usft (Original Well Elev) |
| <b>Reference Site:</b>    | S12-T10N-R58W                 | <b>MD Reference:</b>                | WELL @ 4953.6usft (Original Well Elev) |
| <b>Site Error:</b>        | 0.0usft                       | <b>North Reference:</b>             | True                                   |
| <b>Reference Well:</b>    | Razor Federal #12F-1301A      | <b>Survey Calculation Method:</b>   | Minimum Curvature                      |
| <b>Well Error:</b>        | 0.0usft                       | <b>Output errors are at</b>         | 2.00 sigma                             |
| <b>Reference Wellbore</b> | HZ                            | <b>Database:</b>                    | USA EDM 5000 Multi Users DB            |
| <b>Reference Design:</b>  | Plan #3                       | <b>Offset TVD Reference:</b>        | Offset Datum                           |

| Offset Design S12-T10N-R58W - Razor #12F-0103A - 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 |                             |         |
| 10,300.0  | 5,811.1               | 5,350.0               | 5,339.7               | 88.5             | 13.0          | -65.25                | 332.1                               | -81.6        | 5,084.8                | 4,994.3                 | 90.51                  | 56.177            |                             |         |
| 10,400.0  | 5,811.1               | 5,350.0               | 5,339.7               | 90.3             | 13.0          | -65.25                | 332.1                               | -81.6        | 5,182.4                | 5,090.2                 | 92.23                  | 56.188            |                             |         |
| 10,500.0  | 5,811.1               | 5,350.0               | 5,339.7               | 92.1             | 13.0          | -65.25                | 332.1                               | -81.6        | 5,280.0                | 5,186.1                 | 93.96                  | 56.197            |                             |         |
| 10,600.0  | 5,811.1               | 5,350.0               | 5,339.7               | 93.9             | 13.0          | -65.25                | 332.1                               | -81.6        | 5,377.8                | 5,282.1                 | 95.68                  | 56.206            |                             |         |
| 10,700.0  | 5,811.1               | 5,350.0               | 5,339.7               | 95.7             | 13.0          | -65.25                | 332.1                               | -81.6        | 5,475.6                | 5,378.2                 | 97.41                  | 56.214            |                             |         |
| 10,800.0  | 5,811.1               | 5,350.0               | 5,339.7               | 97.5             | 13.0          | -65.25                | 332.1                               | -81.6        | 5,573.5                | 5,474.4                 | 99.13                  | 56.222            |                             |         |
| 10,900.0  | 5,811.1               | 5,350.0               | 5,339.7               | 99.4             | 13.0          | -65.25                | 332.1                               | -81.6        | 5,671.5                | 5,570.6                 | 100.86                 | 56.229            |                             |         |
| 11,000.0  | 5,811.1               | 5,350.0               | 5,339.7               | 101.2            | 13.0          | -65.25                | 332.1                               | -81.6        | 5,769.5                | 5,666.9                 | 102.59                 | 56.236            |                             |         |
| 11,100.0  | 5,811.1               | 5,350.0               | 5,339.7               | 103.0            | 13.0          | -65.25                | 332.1                               | -81.6        | 5,867.6                | 5,763.3                 | 104.33                 | 56.242            |                             |         |
| 11,200.0  | 5,811.1               | 5,350.0               | 5,339.7               | 104.9            | 13.0          | -65.25                | 332.1                               | -81.6        | 5,965.8                | 5,859.7                 | 106.06                 | 56.248            |                             |         |
| 11,300.0  | 5,811.1               | 5,350.0               | 5,339.7               | 106.7            | 13.0          | -65.25                | 332.1                               | -81.6        | 6,064.0                | 5,956.2                 | 107.80                 | 56.254            |                             |         |
| 11,400.0  | 5,811.1               | 5,350.0               | 5,339.7               | 108.6            | 13.0          | -65.25                | 332.1                               | -81.6        | 6,162.3                | 6,052.8                 | 109.53                 | 56.259            |                             |         |
| 11,500.0  | 5,811.1               | 5,350.0               | 5,339.7               | 110.4            | 13.0          | -65.25                | 332.1                               | -81.6        | 6,260.7                | 6,149.4                 | 111.27                 | 56.264            |                             |         |
| 11,600.0  | 5,811.1               | 5,350.0               | 5,339.7               | 112.3            | 13.0          | -65.25                | 332.1                               | -81.6        | 6,359.1                | 6,246.0                 | 113.01                 | 56.269            |                             |         |
| 11,700.0  | 5,811.1               | 5,350.0               | 5,339.7               | 114.1            | 13.0          | -65.25                | 332.1                               | -81.6        | 6,457.5                | 6,342.7                 | 114.75                 | 56.273            |                             |         |
| 11,800.0  | 5,811.1               | 5,350.0               | 5,339.7               | 116.0            | 13.0          | -65.25                | 332.1                               | -81.6        | 6,556.0                | 6,439.5                 | 116.49                 | 56.277            |                             |         |
| 11,900.0  | 5,811.1               | 5,350.0               | 5,339.7               | 117.8            | 13.0          | -65.25                | 332.1                               | -81.6        | 6,654.5                | 6,536.3                 | 118.24                 | 56.281            |                             |         |
| 12,000.0  | 5,811.1               | 5,350.0               | 5,339.7               | 119.7            | 13.0          | -65.25                | 332.1                               | -81.6        | 6,753.1                | 6,633.1                 | 119.98                 | 56.285            |                             |         |
| 12,100.0  | 5,811.1               | 5,350.0               | 5,339.7               | 121.6            | 13.0          | -65.25                | 332.1                               | -81.6        | 6,851.7                | 6,730.0                 | 121.73                 | 56.288            |                             |         |
| 12,200.0  | 5,811.1               | 5,350.0               | 5,339.7               | 123.4            | 13.0          | -65.25                | 332.1                               | -81.6        | 6,950.4                | 6,826.9                 | 123.47                 | 56.292            |                             |         |
| 12,300.0  | 5,811.1               | 5,350.0               | 5,339.7               | 125.3            | 13.0          | -65.25                | 332.1                               | -81.6        | 7,049.1                | 6,923.9                 | 125.22                 | 56.295            |                             |         |
| 12,400.0  | 5,811.1               | 5,350.0               | 5,339.7               | 127.2            | 13.0          | -65.25                | 332.1                               | -81.6        | 7,147.8                | 7,020.8                 | 126.96                 | 56.298            |                             |         |
| 12,500.0  | 5,811.0               | 5,350.0               | 5,339.7               | 129.0            | 13.0          | -65.25                | 332.1                               | -81.6        | 7,246.6                | 7,117.9                 | 128.71                 | 56.301            |                             |         |
| 12,600.0  | 5,811.0               | 5,343.5               | 5,333.3               | 130.9            | 13.0          | -64.96                | 331.7                               | -81.3        | 7,345.3                | 7,215.2                 | 130.18                 | 56.423            |                             |         |
| 12,700.0  | 5,811.0               | 5,337.0               | 5,326.8               | 132.8            | 13.0          | -64.66                | 331.2                               | -81.0        | 7,444.2                | 7,312.6                 | 131.64                 | 56.548            |                             |         |
| 12,800.0  | 5,811.0               | 5,337.0               | 5,326.8               | 134.6            | 13.0          | -64.66                | 331.2                               | -81.0        | 7,543.1                | 7,409.7                 | 133.39                 | 56.550            |                             |         |
| 12,900.0  | 5,811.0               | 5,337.0               | 5,326.8               | 136.5            | 13.0          | -64.66                | 331.2                               | -81.0        | 7,641.9                | 7,506.8                 | 135.13                 | 56.552            |                             |         |
| 13,000.0  | 5,811.0               | 5,337.0               | 5,326.8               | 138.4            | 13.0          | -64.66                | 331.2                               | -81.0        | 7,740.8                | 7,604.0                 | 136.88                 | 56.554            |                             |         |
| 13,100.0  | 5,811.0               | 5,337.0               | 5,326.8               | 140.3            | 13.0          | -64.66                | 331.2                               | -81.0        | 7,839.8                | 7,701.2                 | 138.62                 | 56.556            |                             |         |
| 13,200.0  | 5,811.0               | 5,337.0               | 5,326.8               | 142.1            | 13.0          | -64.66                | 331.2                               | -81.0        | 7,938.7                | 7,798.4                 | 140.37                 | 56.557            |                             |         |
| 13,300.0  | 5,811.0               | 5,337.0               | 5,326.8               | 144.0            | 13.0          | -64.66                | 331.2                               | -81.0        | 8,037.7                | 7,895.6                 | 142.11                 | 56.559            |                             |         |
| 13,400.0  | 5,811.0               | 5,337.0               | 5,326.8               | 145.9            | 13.0          | -64.66                | 331.2                               | -81.0        | 8,136.8                | 7,992.9                 | 143.86                 | 56.561            |                             |         |
| 13,500.0  | 5,811.0               | 5,337.0               | 5,326.8               | 147.8            | 13.0          | -64.66                | 331.2                               | -81.0        | 8,235.8                | 8,090.2                 | 145.61                 | 56.562            |                             |         |
| 13,600.0  | 5,811.0               | 5,337.0               | 5,326.8               | 149.7            | 13.0          | -64.66                | 331.2                               | -81.0        | 8,334.9                | 8,187.5                 | 147.35                 | 56.564            |                             |         |
| 13,700.0  | 5,811.0               | 5,337.0               | 5,326.8               | 151.6            | 13.0          | -64.66                | 331.2                               | -81.0        | 8,433.9                | 8,284.8                 | 149.10                 | 56.565            |                             |         |
| 13,800.0  | 5,811.0               | 5,337.0               | 5,326.8               | 153.4            | 13.0          | -64.66                | 331.2                               | -81.0        | 8,533.0                | 8,382.2                 | 150.85                 | 56.567            |                             |         |
| 13,900.0  | 5,811.0               | 5,337.0               | 5,326.8               | 155.3            | 13.0          | -64.66                | 331.2                               | -81.0        | 8,632.2                | 8,479.6                 | 152.60                 | 56.568            |                             |         |
| 13,919.8  | 5,811.0               | 5,336.6               | 5,326.4               | 155.7            | 13.0          | -64.64                | 331.2                               | -81.0        | 8,651.8                | 8,498.9                 | 152.93                 | 56.575            |                             |         |

# Cathedral Energy Services

## Anticollision Report

|                           |                               |                                     |  |
|---------------------------|-------------------------------|-------------------------------------|--|
| <b>Company:</b>           | Whiting Petroleum Corporation | <b>Local Co-ordinate Reference:</b> | Well Razor Federal #12F-1301A          |
| <b>Project:</b>           | Weld County, CO               | <b>TVD Reference:</b>               | WELL @ 4953.6usft (Original Well Elev) |
| <b>Reference Site:</b>    | S12-T10N-R58W                 | <b>MD Reference:</b>                | WELL @ 4953.6usft (Original Well Elev) |
| <b>Site Error:</b>        | 0.0usft                       | <b>North Reference:</b>             | True                                   |
| <b>Reference Well:</b>    | Razor Federal #12F-1301A      | <b>Survey Calculation Method:</b>   | Minimum Curvature                      |
| <b>Well Error:</b>        | 0.0usft                       | <b>Output errors are at</b>         | 2.00 sigma                             |
| <b>Reference Wellbore</b> | HZ                            | <b>Database:</b>                    | USA EDM 5000 Multi Users DB            |
| <b>Reference Design:</b>  | Plan #3                       | <b>Offset TVD Reference:</b>        | Offset Datum                           |

| Offset Design S12-T10N-R58W - Razor #12F-0104B - HZ - Plan #2 |                       |                       |                       |                  |               |                       |                                     |              |                        |                         |                        |                   | Offset Site Error: 0.0 usft |         |
|---|-----------------------|-----------------------|-----------------------|------------------|---------------|-----------------------|-------------------------------------|--------------|------------------------|-------------------------|------------------------|-------------------|-----------------------------|---------|
| Survey Program: O-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 |                             |         |
| 0.0   | 0.0                   | 0.0                   | 0.0                   | 0.0              | 0.0           | 52.93                 | 74.9                                | 99.1         | 124.2                  |                         |                        |                   |                             |         |
| 100.0   | 100.0                 | 100.0                 | 100.0                 | 0.1              | 0.1           | 52.93                 | 74.9                                | 99.1         | 124.2                  | 124.1                   | 0.19                   | 664.251           |                             |         |
| 200.0   | 200.0                 | 200.0                 | 200.0                 | 0.3              | 0.3           | 52.93                 | 74.9                                | 99.1         | 124.2                  | 123.6                   | 0.64                   | 195.172           |                             |         |
| 300.0   | 300.0                 | 300.0                 | 300.0                 | 0.5              | 0.5           | 52.93                 | 74.9                                | 99.1         | 124.2                  | 123.2                   | 1.09                   | 114.391           |                             |         |
| 400.0   | 400.0                 | 400.0                 | 400.0                 | 0.8              | 0.8           | 52.93                 | 74.9                                | 99.1         | 124.2                  | 122.7                   | 1.54                   | 80.905            |                             |         |
| 500.0   | 500.0                 | 500.0                 | 500.0                 | 1.0              | 1.0           | 52.93                 | 74.9                                | 99.1         | 124.2                  | 122.3                   | 1.99                   | 62.585            |                             |         |
| 600.0   | 600.0                 | 600.0                 | 600.0                 | 1.2              | 1.2           | 52.93                 | 74.9                                | 99.1         | 124.2                  | 121.8                   | 2.43                   | 51.029            |                             |         |
| 700.0   | 700.0                 | 700.0                 | 700.0                 | 1.4              | 1.4           | 52.93                 | 74.9                                | 99.1         | 124.2                  | 121.4                   | 2.88                   | 43.076            |                             |         |
| 766.7   | 766.7                 | 766.7                 | 766.7                 | 1.6              | 1.6           | 52.93                 | 74.9                                | 99.1         | 124.2                  | 121.1                   | 3.18                   | 39.022 CC         |                             |         |
| 800.0   | 800.0                 | 800.0                 | 800.0                 | 1.7              | 1.7           | 52.93                 | 74.9                                | 99.1         | 124.2                  | 120.9                   | 3.33                   | 37.268 ES         |                             |         |
| 900.0   | 900.0                 | 898.4                 | 898.4                 | 1.9              | 1.9           | 52.21                 | 76.5                                | 98.7         | 124.9                  | 121.1                   | 3.78                   | 33.034            |                             |         |
| 1,000.0   | 1,000.0               | 996.6                 | 996.4                 | 2.1              | 2.1           | 50.09                 | 81.4                                | 97.3         | 126.9                  | 122.7                   | 4.23                   | 30.000            |                             |         |
| 1,100.0   | 1,100.0               | 1,096.2               | 1,095.8               | 2.3              | 2.3           | -176.80               | 88.1                                | 95.4         | 131.7                  | 127.0                   | 4.66                   | 28.273            |                             |         |
| 1,200.0   | 1,199.8               | 1,195.6               | 1,195.0               | 2.5              | 2.6           | -179.45               | 94.8                                | 93.6         | 140.2                  | 135.2                   | 5.07                   | 27.658            |                             |         |
| 1,300.0   | 1,299.6               | 1,294.9               | 1,294.0               | 2.7              | 2.8           | 178.23                | 101.4                               | 91.7         | 150.8                  | 145.3                   | 5.49                   | 27.452            |                             |         |
| 1,400.0   | 1,399.4               | 1,394.2               | 1,393.0               | 2.9              | 3.0           | 176.21                | 108.1                               | 89.8         | 161.5                  | 155.6                   | 5.92                   | 27.277            |                             |         |
| 1,500.0   | 1,499.1               | 1,493.4               | 1,492.1               | 3.1              | 3.3           | 174.44                | 114.8                               | 87.9         | 172.5                  | 166.1                   | 6.36                   | 27.128            |                             |         |
| 1,600.0   | 1,598.9               | 1,592.7               | 1,591.1               | 3.4              | 3.5           | 172.89                | 121.4                               | 86.1         | 183.6                  | 176.8                   | 6.80                   | 27.001            |                             |         |
| 1,700.0   | 1,698.6               | 1,692.0               | 1,690.1               | 3.6              | 3.8           | 171.51                | 128.1                               | 84.2         | 194.8                  | 187.5                   | 7.24                   | 26.891            |                             |         |
| 1,800.0   | 1,798.4               | 1,791.2               | 1,789.1               | 3.8              | 4.0           | 170.29                | 134.8                               | 82.3         | 206.1                  | 198.4                   | 7.69                   | 26.796            |                             |         |
| 1,900.0   | 1,898.1               | 1,890.5               | 1,888.2               | 4.1              | 4.3           | 169.19                | 141.4                               | 80.5         | 217.4                  | 209.3                   | 8.14                   | 26.712            |                             |         |
| 2,000.0   | 1,997.9               | 1,989.8               | 1,987.2               | 4.3              | 4.5           | 168.20                | 148.1                               | 78.6         | 228.9                  | 220.3                   | 8.59                   | 26.639            |                             |         |
| 2,100.0   | 2,097.6               | 2,089.0               | 2,086.2               | 4.5              | 4.8           | 167.30                | 154.8                               | 76.7         | 240.4                  | 231.4                   | 9.05                   | 26.575            |                             |         |
| 2,200.0   | 2,197.4               | 2,188.3               | 2,185.3               | 4.8              | 5.0           | 166.49                | 161.4                               | 74.9         | 252.0                  | 242.5                   | 9.50                   | 26.517            |                             |         |
| 2,300.0   | 2,297.2               | 2,287.6               | 2,284.3               | 5.0              | 5.3           | 165.75                | 168.1                               | 73.0         | 263.6                  | 253.6                   | 9.96                   | 26.466            |                             |         |
| 2,400.0   | 2,396.9               | 2,386.8               | 2,383.3               | 5.3              | 5.5           | 165.07                | 174.8                               | 71.1         | 275.2                  | 264.8                   | 10.42                  | 26.419            |                             |         |
| 2,500.0   | 2,496.7               | 2,486.1               | 2,482.3               | 5.5              | 5.8           | 164.45                | 181.4                               | 69.2         | 286.9                  | 276.0                   | 10.88                  | 26.377            |                             |         |
| 2,600.0   | 2,596.4               | 2,585.4               | 2,581.4               | 5.8              | 6.0           | 163.87                | 188.1                               | 67.4         | 298.6                  | 287.3                   | 11.34                  | 26.339            |                             |         |
| 2,700.0   | 2,696.2               | 2,684.6               | 2,680.4               | 6.0              | 6.3           | 163.34                | 194.8                               | 65.5         | 310.4                  | 298.6                   | 11.80                  | 26.305            |                             |         |
| 2,800.0   | 2,795.9               | 2,783.9               | 2,779.4               | 6.3              | 6.5           | 162.85                | 201.4                               | 63.6         | 322.2                  | 309.9                   | 12.26                  | 26.273            |                             |         |
| 2,900.0   | 2,895.7               | 2,883.2               | 2,878.4               | 6.5              | 6.8           | 162.39                | 208.1                               | 61.8         | 333.9                  | 321.2                   | 12.73                  | 26.244            |                             |         |
| 3,000.0   | 2,995.5               | 2,982.5               | 2,977.5               | 6.8              | 7.0           | 161.96                | 214.8                               | 59.9         | 345.8                  | 332.6                   | 13.19                  | 26.217            |                             |         |
| 3,100.0   | 3,095.2               | 3,081.7               | 3,076.5               | 7.1              | 7.3           | 161.56                | 221.4                               | 58.0         | 357.6                  | 343.9                   | 13.65                  | 26.192            |                             |         |
| 3,200.0   | 3,195.0               | 3,181.0               | 3,175.5               | 7.3              | 7.5           | 161.19                | 228.1                               | 56.2         | 369.4                  | 355.3                   | 14.12                  | 26.168            |                             |         |
| 3,300.0   | 3,294.7               | 3,280.3               | 3,274.5               | 7.6              | 7.8           | 160.84                | 234.8                               | 54.3         | 381.3                  | 366.7                   | 14.58                  | 26.147            |                             |         |
| 3,400.0   | 3,394.5               | 3,379.5               | 3,373.6               | 7.8              | 8.0           | 160.51                | 241.4                               | 52.4         | 393.2                  | 378.1                   | 15.05                  | 26.127            |                             |         |
| 3,500.0   | 3,494.2               | 3,478.8               | 3,472.6               | 8.1              | 8.3           | 160.20                | 248.1                               | 50.5         | 405.1                  | 389.5                   | 15.51                  | 26.108            |                             |         |
| 3,600.0   | 3,594.0               | 3,578.1               | 3,571.6               | 8.3              | 8.6           | 159.91                | 254.8                               | 48.7         | 417.0                  | 401.0                   | 15.98                  | 26.091            |                             |         |
| 3,700.0   | 3,693.7               | 3,677.3               | 3,670.6               | 8.6              | 8.8           | 159.64                | 261.4                               | 46.8         | 428.9                  | 412.4                   | 16.45                  | 26.074            |                             |         |
| 3,800.0   | 3,793.5               | 3,776.6               | 3,769.7               | 8.9              | 9.1           | 159.38                | 268.1                               | 44.9         | 440.8                  | 423.9                   | 16.91                  | 26.059            |                             |         |
| 3,900.0   | 3,893.3               | 3,875.9               | 3,868.7               | 9.1              | 9.3           | 159.13                | 274.8                               | 43.1         | 452.7                  | 435.3                   | 17.38                  | 26.044            |                             |         |
| 4,000.0   | 3,993.0               | 3,975.1               | 3,967.7               | 9.4              | 9.6           | 158.89                | 281.4                               | 41.2         | 464.6                  | 446.8                   | 17.85                  | 26.030            |                             |         |
| 4,100.0   | 4,092.8               | 4,074.4               | 4,066.8               | 9.6              | 9.8           | 158.67                | 288.1                               | 39.3         | 476.6                  | 458.3                   | 18.32                  | 26.017            |                             |         |
| 4,200.0   | 4,192.5               | 4,173.7               | 4,165.8               | 9.9              | 10.1          | 158.46                | 294.8                               | 37.4         | 488.5                  | 469.7                   | 18.79                  | 26.005            |                             |         |
| 4,300.0   | 4,292.3               | 4,272.9               | 4,264.8               | 10.2             | 10.3          | 158.26                | 301.4                               | 35.6         | 500.5                  | 481.2                   | 19.25                  | 25.993            |                             |         |
| 4,400.0   | 4,392.0               | 4,372.2               | 4,363.8               | 10.4             | 10.6          | 158.07                | 308.1                               | 33.7         | 512.4                  | 492.7                   | 19.72                  | 25.982            |                             |         |
| 4,500.0   | 4,491.8               | 4,471.5               | 4,462.9               | 10.7             | 10.8          | 157.88                | 314.8                               | 31.8         | 524.4                  | 504.2                   | 20.19                  | 25.971            |                             |         |
| 4,600.0   | 4,591.6               | 4,570.7               | 4,561.9               | 11.0             | 11.1          | 157.71                | 321.4                               | 30.0         | 536.4                  | 515.7                   | 20.66                  | 25.961            |                             |         |
| 4,700.0   | 4,691.3               | 4,670.0               | 4,660.9               | 11.2             | 11.3          | 157.54                | 328.1                               | 28.1         | 548.3                  | 527.2                   | 21.13                  | 25.952            |                             |         |
| 4,800.0   | 4,791.1               | 4,769.3               | 4,759.9               | 11.5             | 11.6          | 157.38                | 334.8                               | 26.2         | 560.3                  | 538.7                   | 21.60                  | 25.943            |                             |         |
| 4,900.0   | 4,890.8               | 4,868.5               | 4,859.0               | 11.7             | 11.9          | 157.23                | 341.4                               | 24.4         | 572.3                  | 550.2                   | 22.07                  | 25.934            |                             |         |
| 5,000.0   | 4,990.6               | 4,967.8               | 4,958.0               | 12.0             | 12.1          | 157.08                | 348.1                               | 22.5         | 584.3                  | 561.7                   | 22.54                  | 25.926            |                             |         |

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

# Cathedral Energy Services

## Anticollision Report

|                           |                               |                                     |  |
|---------------------------|-------------------------------|-------------------------------------|--|
| <b>Company:</b>           | Whiting Petroleum Corporation | <b>Local Co-ordinate Reference:</b> | Well Razor Federal #12F-1301A          |
| <b>Project:</b>           | Weld County, CO               | <b>TVD Reference:</b>               | WELL @ 4953.6usft (Original Well Elev) |
| <b>Reference Site:</b>    | S12-T10N-R58W                 | <b>MD Reference:</b>                | WELL @ 4953.6usft (Original Well Elev) |
| <b>Site Error:</b>        | 0.0usft                       | <b>North Reference:</b>             | True                                   |
| <b>Reference Well:</b>    | Razor Federal #12F-1301A      | <b>Survey Calculation Method:</b>   | Minimum Curvature                      |
| <b>Well Error:</b>        | 0.0usft                       | <b>Output errors are at</b>         | 2.00 sigma                             |
| <b>Reference Wellbore</b> | HZ                            | <b>Database:</b>                    | USA EDM 5000 Multi Users DB            |
| <b>Reference Design:</b>  | Plan #3                       | <b>Offset TVD Reference:</b>        | Offset Datum                           |

| Offset Design S12-T10N-R58W - Razor #12F-0104B - 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 |                             |  |
| 5,100.0   | 5,090.3               | 5,067.1               | 5,057.0               | 12.3             | 12.4          | 156.94                | 354.8                               | 20.6         | 596.3                  | 573.3                   | 23.01                  | 25.918            |                             |  |
| 5,200.0   | 5,190.1               | 5,166.4               | 5,156.0               | 12.5             | 12.6          | 156.80                | 361.4                               | 18.7         | 608.3                  | 584.8                   | 23.48                  | 25.910            |                             |  |
| 5,300.0   | 5,289.9               | 5,265.6               | 5,255.1               | 12.8             | 12.9          | 156.67                | 368.1                               | 16.9         | 620.3                  | 596.3                   | 23.95                  | 25.903 SF         |                             |  |
| 5,400.0   | 5,389.2               | 5,364.3               | 5,353.5               | 13.1             | 13.1          | 156.19                | 374.7                               | 15.0         | 635.7                  | 611.6                   | 24.13                  | 26.345            |                             |  |
| 5,500.0   | 5,485.0               | 5,450.0               | 5,439.0               | 13.5             | 13.3          | 155.24                | 380.6                               | 13.4         | 667.2                  | 643.6                   | 23.60                  | 28.267            |                             |  |
| 5,600.0   | 5,573.6               | 5,500.0               | 5,488.5               | 14.2             | 13.5          | 152.95                | 387.4                               | 11.5         | 718.9                  | 696.3                   | 22.55                  | 31.877            |                             |  |
| 5,700.0   | 5,651.8               | 5,522.7               | 5,510.7               | 15.0             | 13.6          | 148.15                | 391.9                               | 10.2         | 788.3                  | 766.7                   | 21.55                  | 36.579            |                             |  |
| 5,800.0   | 5,716.7               | 5,550.0               | 5,537.1               | 16.1             | 13.7          | 139.47                | 398.7                               | 8.3          | 871.2                  | 849.2                   | 21.95                  | 39.685            |                             |  |
| 5,900.0   | 5,766.0               | 5,550.0               | 5,537.1               | 17.3             | 13.7          | 119.90                | 398.7                               | 8.3          | 962.8                  | 936.3                   | 26.47                  | 36.367            |                             |  |
| 6,000.0   | 5,797.8               | 5,567.7               | 5,554.0               | 18.8             | 13.8          | 87.28                 | 403.8                               | 6.9          | 1,058.4                | 1,026.7                 | 31.64                  | 33.455            |                             |  |
| 6,100.0   | 5,811.0               | 5,566.5               | 5,552.8               | 20.4             | 13.8          | 51.58                 | 403.4                               | 7.0          | 1,154.5                | 1,127.7                 | 26.88                  | 42.946            |                             |  |
| 6,200.0   | 5,811.3               | 5,550.0               | 5,537.1               | 21.9             | 13.7          | 39.02                 | 398.7                               | 8.3          | 1,250.0                | 1,226.7                 | 23.31                  | 53.624            |                             |  |
| 6,300.0   | 5,811.3               | 5,550.0               | 5,537.1               | 23.4             | 13.7          | 29.72                 | 398.7                               | 8.3          | 1,346.6                | 1,326.5                 | 20.15                  | 66.841            |                             |  |
| 6,400.0   | 5,811.3               | 5,550.0               | 5,537.1               | 25.0             | 13.7          | 17.26                 | 398.7                               | 8.3          | 1,444.2                | 1,429.2                 | 15.03                  | 96.082            |                             |  |
| 6,500.0   | 5,811.3               | 5,550.0               | 5,537.1               | 26.6             | 13.7          | 1.76                  | 398.7                               | 8.3          | 1,542.5                | 1,532.1                 | 10.43                  | 147.908           |                             |  |
| 6,600.0   | 5,811.3               | 5,550.0               | 5,537.1               | 28.2             | 13.7          | -15.03                | 398.7                               | 8.3          | 1,641.0                | 1,626.2                 | 14.74                  | 111.292           |                             |  |
| 6,700.0   | 5,811.3               | 5,531.1               | 5,518.9               | 29.8             | 13.6          | -29.30                | 393.9                               | 9.6          | 1,739.0                | 1,715.7                 | 23.33                  | 74.540            |                             |  |
| 6,800.0   | 5,811.3               | 5,525.7               | 5,513.6               | 31.4             | 13.6          | -40.76                | 392.6                               | 10.0         | 1,837.0                | 1,806.2                 | 30.80                  | 59.641            |                             |  |
| 6,900.0   | 5,811.3               | 5,520.5               | 5,508.5               | 33.0             | 13.6          | -49.42                | 391.5                               | 10.3         | 1,934.3                | 1,898.0                 | 36.36                  | 53.194            |                             |  |
| 7,000.0   | 5,811.3               | 5,500.0               | 5,488.5               | 34.6             | 13.5          | -54.71                | 387.4                               | 11.5         | 2,031.2                | 1,991.4                 | 39.82                  | 51.005            |                             |  |
| 7,100.0   | 5,811.3               | 5,500.0               | 5,488.5               | 36.2             | 13.5          | -60.05                | 387.4                               | 11.5         | 2,127.0                | 2,083.9                 | 43.09                  | 49.362            |                             |  |
| 7,200.0   | 5,811.3               | 5,500.0               | 5,488.5               | 37.7             | 13.5          | -64.21                | 387.4                               | 11.5         | 2,221.7                | 2,176.2                 | 45.56                  | 48.760            |                             |  |
| 7,300.0   | 5,811.3               | 5,500.0               | 5,488.5               | 39.2             | 13.5          | -67.50                | 387.4                               | 11.5         | 2,315.4                | 2,268.0                 | 47.46                  | 48.782            |                             |  |
| 7,400.0   | 5,811.3               | 5,500.0               | 5,488.5               | 40.7             | 13.5          | -70.14                | 387.4                               | 11.5         | 2,407.9                | 2,359.0                 | 48.93                  | 49.211            |                             |  |
| 7,500.0   | 5,811.3               | 5,500.0               | 5,488.5               | 42.1             | 13.5          | -72.29                | 387.4                               | 11.5         | 2,499.2                | 2,449.1                 | 50.06                  | 49.926            |                             |  |
| 7,600.0   | 5,811.3               | 5,500.0               | 5,488.5               | 43.6             | 13.5          | -73.86                | 387.4                               | 11.5         | 2,589.0                | 2,538.0                 | 51.00                  | 50.769            |                             |  |
| 7,700.0   | 5,811.3               | 5,500.0               | 5,488.5               | 45.0             | 13.5          | -73.86                | 387.4                               | 11.5         | 2,678.7                | 2,626.3                 | 52.47                  | 51.053            |                             |  |
| 7,800.0   | 5,811.3               | 5,500.0               | 5,488.5               | 46.4             | 13.5          | -73.86                | 387.4                               | 11.5         | 2,769.2                | 2,715.2                 | 53.97                  | 51.311            |                             |  |
| 7,900.0   | 5,811.2               | 5,500.0               | 5,488.5               | 47.9             | 13.5          | -73.86                | 387.4                               | 11.5         | 2,860.3                | 2,804.8                 | 55.49                  | 51.544            |                             |  |
| 8,000.0   | 5,811.2               | 5,478.7               | 5,467.4               | 49.4             | 13.4          | -72.88                | 383.9                               | 12.4         | 2,951.5                | 2,894.8                 | 56.68                  | 52.074            |                             |  |
| 8,100.0   | 5,811.2               | 5,476.2               | 5,465.0               | 50.9             | 13.4          | -72.77                | 383.6                               | 12.5         | 3,043.6                | 2,985.4                 | 58.19                  | 52.303            |                             |  |
| 8,200.0   | 5,811.2               | 5,473.8               | 5,462.6               | 52.5             | 13.4          | -72.66                | 383.3                               | 12.6         | 3,136.1                | 3,076.4                 | 59.72                  | 52.513            |                             |  |
| 8,300.0   | 5,811.2               | 5,471.6               | 5,460.4               | 54.0             | 13.4          | -72.56                | 383.0                               | 12.7         | 3,229.1                | 3,167.9                 | 61.27                  | 52.706            |                             |  |
| 8,400.0   | 5,811.2               | 5,450.0               | 5,439.0               | 55.6             | 13.3          | -71.57                | 380.6                               | 13.4         | 3,322.9                | 3,260.4                 | 62.46                  | 53.202            |                             |  |
| 8,500.0   | 5,811.2               | 5,450.0               | 5,439.0               | 57.2             | 13.3          | -71.57                | 380.6                               | 13.4         | 3,416.6                | 3,352.5                 | 64.06                  | 53.333            |                             |  |
| 8,600.0   | 5,811.2               | 5,450.0               | 5,439.0               | 58.9             | 13.3          | -71.57                | 380.6                               | 13.4         | 3,510.6                | 3,444.9                 | 65.67                  | 53.455            |                             |  |
| 8,700.0   | 5,811.2               | 5,450.0               | 5,439.0               | 60.5             | 13.3          | -71.57                | 380.6                               | 13.4         | 3,604.9                | 3,537.6                 | 67.30                  | 53.568            |                             |  |
| 8,800.0   | 5,811.2               | 5,450.0               | 5,439.0               | 62.2             | 13.3          | -71.57                | 380.6                               | 13.4         | 3,699.6                | 3,630.7                 | 68.93                  | 53.673            |                             |  |
| 8,900.0   | 5,811.2               | 5,450.0               | 5,439.0               | 63.9             | 13.3          | -71.57                | 380.6                               | 13.4         | 3,794.5                | 3,724.0                 | 70.57                  | 53.771            |                             |  |
| 9,000.0   | 5,811.2               | 5,450.0               | 5,439.0               | 65.6             | 13.3          | -71.57                | 380.6                               | 13.4         | 3,889.7                | 3,817.5                 | 72.22                  | 53.862            |                             |  |
| 9,100.0   | 5,811.2               | 5,450.0               | 5,439.0               | 67.3             | 13.3          | -71.57                | 380.6                               | 13.4         | 3,985.1                | 3,911.3                 | 73.87                  | 53.948            |                             |  |
| 9,200.0   | 5,811.2               | 5,450.0               | 5,439.0               | 69.0             | 13.3          | -71.57                | 380.6                               | 13.4         | 4,080.8                | 4,005.2                 | 75.53                  | 54.029            |                             |  |
| 9,300.0   | 5,811.2               | 5,450.0               | 5,439.0               | 70.7             | 13.3          | -71.57                | 380.6                               | 13.4         | 4,176.6                | 4,099.4                 | 77.19                  | 54.105            |                             |  |
| 9,400.0   | 5,811.2               | 5,450.0               | 5,439.0               | 72.5             | 13.3          | -71.57                | 380.6                               | 13.4         | 4,272.6                | 4,193.8                 | 78.87                  | 54.176            |                             |  |
| 9,500.0   | 5,811.2               | 5,450.0               | 5,439.0               | 74.2             | 13.3          | -71.57                | 380.6                               | 13.4         | 4,368.8                | 4,288.3                 | 80.54                  | 54.244            |                             |  |
| 9,600.0   | 5,811.2               | 5,450.0               | 5,439.0               | 76.0             | 13.3          | -71.57                | 380.6                               | 13.4         | 4,465.2                | 4,383.0                 | 82.22                  | 54.308            |                             |  |
| 9,700.0   | 5,811.2               | 5,450.0               | 5,439.0               | 77.7             | 13.3          | -71.57                | 380.6                               | 13.4         | 4,561.8                | 4,477.8                 | 83.97                  | 54.327            |                             |  |
| 9,800.0   | 5,811.2               | 5,450.0               | 5,439.0               | 79.5             | 13.3          | -71.57                | 380.6                               | 13.4         | 4,658.4                | 4,572.7                 | 85.73                  | 54.336            |                             |  |
| 9,900.0   | 5,811.2               | 5,450.0               | 5,439.0               | 81.3             | 13.3          | -71.57                | 380.6                               | 13.4         | 4,755.2                | 4,667.7                 | 87.50                  | 54.345            |                             |  |
| 10,000.0  | 5,811.2               | 5,450.0               | 5,439.0               | 83.1             | 13.3          | -71.57                | 380.6                               | 13.4         | 4,852.2                | 4,762.9                 | 89.27                  | 54.352            |                             |  |
| 10,100.0  | 5,811.2               | 5,450.0               | 5,439.0               | 84.9             | 13.3          | -71.57                | 380.6                               | 13.4         | 4,949.3                | 4,858.2                 | 91.05                  | 54.359            |                             |  |
| 10,200.0  | 5,811.1               | 5,450.0               | 5,439.0               | 86.7             | 13.3          | -71.57                | 380.6                               | 13.4         | 5,046.4                | 4,953.6                 | 92.83                  | 54.365            |                             |  |

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

# Cathedral Energy Services

## Anticollision Report

|                           |                               |                                     |  |
|---------------------------|-------------------------------|-------------------------------------|--|
| <b>Company:</b>           | Whiting Petroleum Corporation | <b>Local Co-ordinate Reference:</b> | Well Razor Federal #12F-1301A          |
| <b>Project:</b>           | Weld County, CO               | <b>TVD Reference:</b>               | WELL @ 4953.6usft (Original Well Elev) |
| <b>Reference Site:</b>    | S12-T10N-R58W                 | <b>MD Reference:</b>                | WELL @ 4953.6usft (Original Well Elev) |
| <b>Site Error:</b>        | 0.0usft                       | <b>North Reference:</b>             | True                                   |
| <b>Reference Well:</b>    | Razor Federal #12F-1301A      | <b>Survey Calculation Method:</b>   | Minimum Curvature                      |
| <b>Well Error:</b>        | 0.0usft                       | <b>Output errors are at</b>         | 2.00 sigma                             |
| <b>Reference Wellbore</b> | HZ                            | <b>Database:</b>                    | USA EDM 5000 Multi Users DB            |
| <b>Reference Design:</b>  | Plan #3                       | <b>Offset TVD Reference:</b>        | Offset Datum                           |

| Offset Design S12-T10N-R58W - Razor #12F-0104B - 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 |                             |         |
| 10,300.0  | 5,811.1               | 5,450.0               | 5,439.0               | 88.5             | 13.3          | -71.57                | 380.6                               | 13.4         | 5,143.7                | 5,049.1                 | 94.61                  | 54.370            |                             |         |
| 10,400.0  | 5,811.1               | 5,444.2               | 5,433.2               | 90.3             | 13.3          | -71.31                | 380.1                               | 13.5         | 5,241.1                | 5,144.8                 | 96.24                  | 54.457            |                             |         |
| 10,500.0  | 5,811.1               | 5,443.4               | 5,432.4               | 92.1             | 13.3          | -71.28                | 380.1                               | 13.5         | 5,338.6                | 5,240.6                 | 98.00                  | 54.473            |                             |         |
| 10,600.0  | 5,811.1               | 5,438.0               | 5,427.0               | 93.9             | 13.3          | -71.03                | 379.7                               | 13.6         | 5,436.2                | 5,336.5                 | 99.65                  | 54.554            |                             |         |
| 10,700.0  | 5,811.1               | 5,438.0               | 5,427.0               | 95.7             | 13.3          | -71.03                | 379.7                               | 13.6         | 5,533.8                | 5,432.4                 | 101.43                 | 54.557            |                             |         |
| 10,800.0  | 5,811.1               | 5,438.0               | 5,427.0               | 97.5             | 13.3          | -71.03                | 379.7                               | 13.6         | 5,631.5                | 5,528.3                 | 103.22                 | 54.560            |                             |         |
| 10,900.0  | 5,811.1               | 5,438.0               | 5,427.0               | 99.4             | 13.3          | -71.03                | 379.7                               | 13.6         | 5,729.3                | 5,624.3                 | 105.01                 | 54.562            |                             |         |
| 11,000.0  | 5,811.1               | 5,438.0               | 5,427.0               | 101.2            | 13.3          | -71.03                | 379.7                               | 13.6         | 5,827.2                | 5,720.4                 | 106.80                 | 54.564            |                             |         |
| 11,100.0  | 5,811.1               | 5,438.0               | 5,427.0               | 103.0            | 13.3          | -71.03                | 379.7                               | 13.6         | 5,925.2                | 5,816.6                 | 108.59                 | 54.566            |                             |         |
| 11,200.0  | 5,811.1               | 5,438.0               | 5,427.0               | 104.9            | 13.3          | -71.03                | 379.7                               | 13.6         | 6,023.2                | 5,912.8                 | 110.38                 | 54.567            |                             |         |
| 11,300.0  | 5,811.1               | 5,438.0               | 5,427.0               | 106.7            | 13.3          | -71.03                | 379.7                               | 13.6         | 6,121.3                | 6,009.1                 | 112.18                 | 54.569            |                             |         |
| 11,400.0  | 5,811.1               | 5,432.1               | 5,421.1               | 108.6            | 13.3          | -70.76                | 379.3                               | 13.7         | 6,219.4                | 6,105.6                 | 113.80                 | 54.654            |                             |         |
| 11,500.0  | 5,811.1               | 5,425.4               | 5,414.4               | 110.4            | 13.3          | -70.46                | 378.8                               | 13.9         | 6,317.6                | 6,202.2                 | 115.39                 | 54.752            |                             |         |
| 11,600.0  | 5,811.1               | 5,418.7               | 5,407.7               | 112.3            | 13.3          | -70.16                | 378.4                               | 14.0         | 6,415.9                | 6,298.9                 | 116.97                 | 54.850            |                             |         |
| 11,700.0  | 5,811.1               | 5,411.9               | 5,401.0               | 114.1            | 13.2          | -69.85                | 377.9                               | 14.1         | 6,514.2                | 6,395.6                 | 118.55                 | 54.948            |                             |         |
| 11,800.0  | 5,811.1               | 5,405.2               | 5,394.3               | 116.0            | 13.2          | -69.55                | 377.5                               | 14.2         | 6,612.5                | 6,492.4                 | 120.12                 | 55.048            |                             |         |
| 11,900.0  | 5,811.1               | 5,398.5               | 5,387.6               | 117.8            | 13.2          | -69.26                | 377.0                               | 14.4         | 6,710.9                | 6,589.2                 | 121.69                 | 55.148            |                             |         |
| 12,000.0  | 5,811.1               | 5,391.8               | 5,380.9               | 119.7            | 13.2          | -68.96                | 376.6                               | 14.5         | 6,809.3                | 6,686.1                 | 123.25                 | 55.249            |                             |         |
| 12,100.0  | 5,811.1               | 5,385.0               | 5,374.2               | 121.6            | 13.2          | -68.66                | 376.1                               | 14.6         | 6,907.8                | 6,783.0                 | 124.80                 | 55.351            |                             |         |
| 12,200.0  | 5,811.1               | 5,378.3               | 5,367.5               | 123.4            | 13.2          | -68.37                | 375.7                               | 14.8         | 7,006.3                | 6,879.9                 | 126.35                 | 55.453            |                             |         |
| 12,300.0  | 5,811.1               | 5,371.6               | 5,360.8               | 125.3            | 13.1          | -68.07                | 375.2                               | 14.9         | 7,104.8                | 6,976.9                 | 127.88                 | 55.556            |                             |         |
| 12,400.0  | 5,811.1               | 5,364.9               | 5,354.1               | 127.2            | 13.1          | -67.78                | 374.8                               | 15.0         | 7,203.3                | 7,073.9                 | 129.42                 | 55.660            |                             |         |
| 12,500.0  | 5,811.0               | 5,358.2               | 5,347.4               | 129.0            | 13.1          | -67.49                | 374.3                               | 15.1         | 7,301.9                | 7,171.0                 | 130.94                 | 55.765            |                             |         |
| 12,600.0  | 5,811.0               | 5,351.4               | 5,340.7               | 130.9            | 13.1          | -67.20                | 373.9                               | 15.3         | 7,400.6                | 7,268.1                 | 132.46                 | 55.871            |                             |         |
| 12,700.0  | 5,811.0               | 5,344.7               | 5,334.0               | 132.8            | 13.1          | -66.91                | 373.4                               | 15.4         | 7,499.2                | 7,365.3                 | 133.97                 | 55.977            |                             |         |
| 12,800.0  | 5,811.0               | 5,338.0               | 5,327.3               | 134.6            | 13.1          | -66.62                | 373.0                               | 15.5         | 7,597.9                | 7,462.4                 | 135.47                 | 56.084            |                             |         |
| 12,900.0  | 5,811.0               | 5,331.3               | 5,320.6               | 136.5            | 13.0          | -66.34                | 372.5                               | 15.6         | 7,696.6                | 7,559.7                 | 136.97                 | 56.192            |                             |         |
| 13,000.0  | 5,811.0               | 5,324.6               | 5,313.9               | 138.4            | 13.0          | -66.05                | 372.1                               | 15.8         | 7,795.4                | 7,656.9                 | 138.46                 | 56.301            |                             |         |
| 13,100.0  | 5,811.0               | 5,317.8               | 5,307.2               | 140.3            | 13.0          | -65.77                | 371.6                               | 15.9         | 7,894.1                | 7,754.2                 | 139.94                 | 56.410            |                             |         |
| 13,200.0  | 5,811.0               | 5,311.1               | 5,300.5               | 142.1            | 13.0          | -65.49                | 371.2                               | 16.0         | 7,992.9                | 7,851.5                 | 141.42                 | 56.520            |                             |         |
| 13,300.0  | 5,811.0               | 5,304.4               | 5,293.7               | 144.0            | 13.0          | -65.21                | 370.7                               | 16.1         | 8,091.8                | 7,948.9                 | 142.88                 | 56.631            |                             |         |
| 13,400.0  | 5,811.0               | 5,297.7               | 5,287.0               | 145.9            | 13.0          | -64.93                | 370.3                               | 16.3         | 8,190.6                | 8,046.3                 | 144.35                 | 56.743            |                             |         |
| 13,500.0  | 5,811.0               | 5,291.0               | 5,280.3               | 147.8            | 12.9          | -64.65                | 369.8                               | 16.4         | 8,289.5                | 8,143.7                 | 145.80                 | 56.856            |                             |         |
| 13,600.0  | 5,811.0               | 5,284.2               | 5,273.6               | 149.7            | 12.9          | -64.37                | 369.4                               | 16.5         | 8,388.3                | 8,241.1                 | 147.24                 | 56.969            |                             |         |
| 13,700.0  | 5,811.0               | 5,277.5               | 5,266.9               | 151.6            | 12.9          | -64.10                | 368.9                               | 16.7         | 8,487.3                | 8,338.6                 | 148.68                 | 57.083            |                             |         |
| 13,800.0  | 5,811.0               | 5,270.8               | 5,260.2               | 153.4            | 12.9          | -63.82                | 368.5                               | 16.8         | 8,586.2                | 8,436.1                 | 150.11                 | 57.198            |                             |         |
| 13,900.0  | 5,811.0               | 5,264.1               | 5,253.5               | 155.3            | 12.9          | -63.55                | 368.0                               | 16.9         | 8,685.1                | 8,533.6                 | 151.54                 | 57.314            |                             |         |
| 13,919.8  | 5,811.0               | 5,262.7               | 5,252.2               | 155.7            | 12.9          | -63.50                | 367.9                               | 16.9         | 8,704.7                | 8,552.9                 | 151.82                 | 57.337            |                             |         |



# Cathedral Energy Services

## Anticollision Report

|                           |                               |                                     |  |
|---------------------------|-------------------------------|-------------------------------------|--|
| <b>Company:</b>           | Whiting Petroleum Corporation | <b>Local Co-ordinate Reference:</b> | Well Razor Federal #12F-1301A          |
| <b>Project:</b>           | Weld County, CO               | <b>TVD Reference:</b>               | WELL @ 4953.6usft (Original Well Elev) |
| <b>Reference Site:</b>    | S12-T10N-R58W                 | <b>MD Reference:</b>                | WELL @ 4953.6usft (Original Well Elev) |
| <b>Site Error:</b>        | 0.0usft                       | <b>North Reference:</b>             | True                                   |
| <b>Reference Well:</b>    | Razor Federal #12F-1301A      | <b>Survey Calculation Method:</b>   | Minimum Curvature                      |
| <b>Well Error:</b>        | 0.0usft                       | <b>Output errors are at</b>         | 2.00 sigma                             |
| <b>Reference Wellbore</b> | HZ                            | <b>Database:</b>                    | USA EDM 5000 Multi Users DB            |
| <b>Reference Design:</b>  | Plan #3                       | <b>Offset TVD Reference:</b>        | Offset Datum                           |

| Offset Design S12-T10N-R58W - Razor #12F-0105A - 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 |                             |  |
| 0.0   | 0.0                   | 0.0                   | 0.0                   | 0.0              | 0.0           | 60.47                 | 74.9                                | 132.2        | 151.9                  |                         |                        |                   |                             |  |
| 100.0   | 100.0                 | 100.0                 | 100.0                 | 0.1              | 0.1           | 60.47                 | 74.9                                | 132.2        | 151.9                  | 151.7                   | 0.19                   | 812.171           |                             |  |
| 200.0   | 200.0                 | 200.0                 | 200.0                 | 0.3              | 0.3           | 60.47                 | 74.9                                | 132.2        | 151.9                  | 151.3                   | 0.64                   | 238.634           |                             |  |
| 300.0   | 300.0                 | 300.0                 | 300.0                 | 0.5              | 0.5           | 60.47                 | 74.9                                | 132.2        | 151.9                  | 150.8                   | 1.09                   | 139.865           |                             |  |
| 400.0   | 400.0                 | 400.0                 | 400.0                 | 0.8              | 0.8           | 60.47                 | 74.9                                | 132.2        | 151.9                  | 150.4                   | 1.54                   | 98.922            |                             |  |
| 500.0   | 500.0                 | 500.0                 | 500.0                 | 1.0              | 1.0           | 60.47                 | 74.9                                | 132.2        | 151.9                  | 149.9                   | 1.99                   | 76.521            |                             |  |
| 600.0   | 600.0                 | 600.0                 | 600.0                 | 1.2              | 1.2           | 60.47                 | 74.9                                | 132.2        | 151.9                  | 149.5                   | 2.43                   | 62.393            |                             |  |
| 700.0   | 700.0                 | 700.0                 | 700.0                 | 1.4              | 1.4           | 60.47                 | 74.9                                | 132.2        | 151.9                  | 149.0                   | 2.88                   | 52.668            |                             |  |
| 800.0   | 800.0                 | 800.0                 | 800.0                 | 1.7              | 1.7           | 60.47                 | 74.9                                | 132.2        | 151.9                  | 148.6                   | 3.33                   | 45.566            |                             |  |
| 900.0   | 900.0                 | 900.0                 | 900.0                 | 1.9              | 1.9           | 60.47                 | 74.9                                | 132.2        | 151.9                  | 148.1                   | 3.78                   | 40.152            |                             |  |
| 1,000.0   | 1,000.0               | 1,000.0               | 1,000.0               | 2.1              | 2.1           | 60.47                 | 74.9                                | 132.2        | 151.9                  | 147.7                   | 4.23                   | 35.888 CC, ES     |                             |  |
| 1,100.0   | 1,100.0               | 1,100.0               | 1,100.0               | 2.3              | 2.3           | -163.77               | 74.9                                | 132.2        | 153.6                  | 148.9                   | 4.66                   | 32.978            |                             |  |
| 1,200.0   | 1,199.8               | 1,197.4               | 1,197.4               | 2.5              | 2.6           | -164.79               | 76.5                                | 132.1        | 159.4                  | 154.3                   | 5.05                   | 31.528            |                             |  |
| 1,300.0   | 1,299.6               | 1,294.3               | 1,294.1               | 2.7              | 2.8           | -166.90               | 81.4                                | 131.7        | 168.5                  | 163.0                   | 5.46                   | 30.844            |                             |  |
| 1,400.0   | 1,399.4               | 1,393.3               | 1,392.9               | 2.9              | 3.0           | -169.35               | 88.3                                | 131.2        | 178.8                  | 172.9                   | 5.88                   | 30.387            |                             |  |
| 1,500.0   | 1,499.1               | 1,492.5               | 1,491.8               | 3.1              | 3.2           | -171.55               | 95.2                                | 130.7        | 189.4                  | 183.1                   | 6.31                   | 30.006            |                             |  |
| 1,600.0   | 1,598.9               | 1,591.7               | 1,590.8               | 3.4              | 3.5           | -173.50               | 102.1                               | 130.2        | 200.2                  | 193.5                   | 6.74                   | 29.685            |                             |  |
| 1,700.0   | 1,698.6               | 1,690.9               | 1,689.7               | 3.6              | 3.7           | -175.26               | 109.0                               | 129.7        | 211.3                  | 204.1                   | 7.18                   | 29.413            |                             |  |
| 1,800.0   | 1,798.4               | 1,790.0               | 1,788.7               | 3.8              | 3.9           | -176.84               | 115.9                               | 129.1        | 222.5                  | 214.9                   | 7.62                   | 29.182            |                             |  |
| 1,900.0   | 1,898.1               | 1,889.2               | 1,887.6               | 4.1              | 4.2           | -178.27               | 122.8                               | 128.6        | 233.9                  | 225.8                   | 8.07                   | 28.983            |                             |  |
| 2,000.0   | 1,997.9               | 1,988.4               | 1,986.6               | 4.3              | 4.4           | -179.56               | 129.7                               | 128.1        | 245.4                  | 236.9                   | 8.52                   | 28.814            |                             |  |
| 2,100.0   | 2,097.6               | 2,087.6               | 2,085.5               | 4.5              | 4.7           | 179.26                | 136.6                               | 127.6        | 257.0                  | 248.0                   | 8.96                   | 28.667            |                             |  |
| 2,200.0   | 2,197.4               | 2,186.8               | 2,184.5               | 4.8              | 4.9           | 178.18                | 143.5                               | 127.1        | 268.7                  | 259.3                   | 9.42                   | 28.540            |                             |  |
| 2,300.0   | 2,297.2               | 2,286.0               | 2,283.4               | 5.0              | 5.2           | 177.19                | 150.4                               | 126.6        | 280.5                  | 270.6                   | 9.87                   | 28.429            |                             |  |
| 2,400.0   | 2,396.9               | 2,385.2               | 2,382.4               | 5.3              | 5.4           | 176.29                | 157.3                               | 126.1        | 292.4                  | 282.1                   | 10.32                  | 28.332            |                             |  |
| 2,500.0   | 2,496.7               | 2,484.4               | 2,481.3               | 5.5              | 5.6           | 175.45                | 164.2                               | 125.6        | 304.3                  | 293.6                   | 10.77                  | 28.246            |                             |  |
| 2,600.0   | 2,596.4               | 2,583.6               | 2,580.3               | 5.8              | 5.9           | 174.68                | 171.1                               | 125.1        | 316.3                  | 305.1                   | 11.23                  | 28.170            |                             |  |
| 2,700.0   | 2,696.2               | 2,682.8               | 2,679.2               | 6.0              | 6.1           | 173.96                | 178.0                               | 124.6        | 328.4                  | 316.7                   | 11.69                  | 28.103            |                             |  |
| 2,800.0   | 2,795.9               | 2,781.9               | 2,778.2               | 6.3              | 6.4           | 173.30                | 184.9                               | 124.1        | 340.5                  | 328.4                   | 12.14                  | 28.042            |                             |  |
| 2,900.0   | 2,895.7               | 2,881.1               | 2,877.1               | 6.5              | 6.6           | 172.68                | 191.8                               | 123.5        | 352.7                  | 340.1                   | 12.60                  | 27.988            |                             |  |
| 3,000.0   | 2,995.5               | 2,980.3               | 2,976.1               | 6.8              | 6.9           | 172.10                | 198.7                               | 123.0        | 364.8                  | 351.8                   | 13.06                  | 27.940            |                             |  |
| 3,100.0   | 3,095.2               | 3,079.5               | 3,075.0               | 7.1              | 7.1           | 171.56                | 205.6                               | 122.5        | 377.1                  | 363.5                   | 13.52                  | 27.896            |                             |  |
| 3,200.0   | 3,195.0               | 3,178.7               | 3,174.0               | 7.3              | 7.4           | 171.05                | 212.5                               | 122.0        | 389.3                  | 375.3                   | 13.98                  | 27.856            |                             |  |
| 3,300.0   | 3,294.7               | 3,277.9               | 3,272.9               | 7.6              | 7.6           | 170.57                | 219.4                               | 121.5        | 401.6                  | 387.2                   | 14.44                  | 27.820            |                             |  |
| 3,400.0   | 3,394.5               | 3,377.1               | 3,371.9               | 7.8              | 7.9           | 170.12                | 226.3                               | 121.0        | 413.9                  | 399.0                   | 14.90                  | 27.787            |                             |  |
| 3,500.0   | 3,494.2               | 3,476.3               | 3,470.8               | 8.1              | 8.1           | 169.70                | 233.2                               | 120.5        | 426.2                  | 410.9                   | 15.36                  | 27.757            |                             |  |
| 3,600.0   | 3,594.0               | 3,575.5               | 3,569.8               | 8.3              | 8.4           | 169.30                | 240.1                               | 120.0        | 438.6                  | 422.8                   | 15.82                  | 27.729            |                             |  |
| 3,700.0   | 3,693.7               | 3,674.7               | 3,668.7               | 8.6              | 8.6           | 168.93                | 247.0                               | 119.5        | 450.9                  | 434.7                   | 16.28                  | 27.704            |                             |  |
| 3,800.0   | 3,793.5               | 3,773.8               | 3,767.7               | 8.9              | 8.9           | 168.57                | 253.9                               | 119.0        | 463.3                  | 446.6                   | 16.74                  | 27.681            |                             |  |
| 3,900.0   | 3,893.3               | 3,873.0               | 3,866.6               | 9.1              | 9.1           | 168.23                | 260.8                               | 118.5        | 475.7                  | 458.5                   | 17.20                  | 27.659            |                             |  |
| 4,000.0   | 3,993.0               | 3,972.2               | 3,965.5               | 9.4              | 9.4           | 167.91                | 267.7                               | 117.9        | 488.2                  | 470.5                   | 17.66                  | 27.639            |                             |  |
| 4,100.0   | 4,092.8               | 4,071.4               | 4,064.5               | 9.6              | 9.7           | 167.61                | 274.6                               | 117.4        | 500.6                  | 482.5                   | 18.12                  | 27.621            |                             |  |
| 4,200.0   | 4,192.5               | 4,170.6               | 4,163.4               | 9.9              | 9.9           | 167.32                | 281.5                               | 116.9        | 513.0                  | 494.5                   | 18.59                  | 27.604            |                             |  |
| 4,300.0   | 4,292.3               | 4,269.8               | 4,262.4               | 10.2             | 10.2          | 167.04                | 288.4                               | 116.4        | 525.5                  | 506.4                   | 19.05                  | 27.588            |                             |  |
| 4,400.0   | 4,392.0               | 4,369.0               | 4,361.3               | 10.4             | 10.4          | 166.78                | 295.3                               | 115.9        | 538.0                  | 518.5                   | 19.51                  | 27.573            |                             |  |
| 4,500.0   | 4,491.8               | 4,468.2               | 4,460.3               | 10.7             | 10.7          | 166.53                | 302.2                               | 115.4        | 550.5                  | 530.5                   | 19.97                  | 27.559            |                             |  |
| 4,600.0   | 4,591.6               | 4,567.4               | 4,559.2               | 11.0             | 10.9          | 166.29                | 309.1                               | 114.9        | 562.9                  | 542.5                   | 20.44                  | 27.546            |                             |  |
| 4,700.0   | 4,691.3               | 4,666.5               | 4,658.2               | 11.2             | 11.2          | 166.06                | 316.0                               | 114.4        | 575.4                  | 554.5                   | 20.90                  | 27.534            |                             |  |
| 4,800.0   | 4,791.1               | 4,765.7               | 4,757.1               | 11.5             | 11.4          | 165.84                | 322.9                               | 113.9        | 588.0                  | 566.6                   | 21.36                  | 27.522            |                             |  |
| 4,900.0   | 4,890.8               | 4,864.9               | 4,856.1               | 11.7             | 11.7          | 165.62                | 329.8                               | 113.4        | 600.5                  | 578.6                   | 21.83                  | 27.511            |                             |  |
| 5,000.0   | 4,990.6               | 4,964.1               | 4,955.0               | 12.0             | 11.9          | 165.42                | 336.7                               | 112.9        | 613.0                  | 590.7                   | 22.29                  | 27.501            |                             |  |
| 5,100.0   | 5,090.3               | 5,063.3               | 5,054.0               | 12.3             | 12.2          | 165.23                | 343.6                               | 112.3        | 625.5                  | 602.8                   | 22.75                  | 27.492            |                             |  |

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



# Cathedral Energy Services

## Anticollision Report

|                           |                               |                                     |  |
|---------------------------|-------------------------------|-------------------------------------|--|
| <b>Company:</b>           | Whiting Petroleum Corporation | <b>Local Co-ordinate Reference:</b> | Well Razor Federal #12F-1301A          |
| <b>Project:</b>           | Weld County, CO               | <b>TVD Reference:</b>               | WELL @ 4953.6usft (Original Well Elev) |
| <b>Reference Site:</b>    | S12-T10N-R58W                 | <b>MD Reference:</b>                | WELL @ 4953.6usft (Original Well Elev) |
| <b>Site Error:</b>        | 0.0usft                       | <b>North Reference:</b>             | True                                   |
| <b>Reference Well:</b>    | Razor Federal #12F-1301A      | <b>Survey Calculation Method:</b>   | Minimum Curvature                      |
| <b>Well Error:</b>        | 0.0usft                       | <b>Output errors are at</b>         | 2.00 sigma                             |
| <b>Reference Wellbore</b> | HZ                            | <b>Database:</b>                    | USA EDM 5000 Multi Users DB            |
| <b>Reference Design:</b>  | Plan #3                       | <b>Offset TVD Reference:</b>        | Offset Datum                           |

| Offset Design S12-T10N-R58W - Razor #12F-0105A - 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   | 5,190.1               | 5,162.5               | 5,152.9               | 12.5             | 12.4          | 165.04                | 350.5                               | 111.8        | 638.1                  | 614.9                   | 23.22                  | 27.483            |                             |         |
| 5,300.0   | 5,289.9               | 5,261.7               | 5,251.9               | 12.8             | 12.7          | 164.86                | 357.4                               | 111.3        | 650.6                  | 626.9                   | 23.68                  | 27.474 SF         |                             |         |
| 5,400.0   | 5,389.2               | 5,350.0               | 5,340.0               | 13.1             | 12.9          | 164.41                | 363.8                               | 110.9        | 667.0                  | 643.2                   | 23.81                  | 28.012            |                             |         |
| 5,500.0   | 5,485.0               | 5,400.0               | 5,389.4               | 13.5             | 13.1          | 163.17                | 371.0                               | 110.3        | 705.0                  | 681.9                   | 23.11                  | 30.510            |                             |         |
| 5,600.0   | 5,573.6               | 5,428.4               | 5,417.2               | 14.2             | 13.2          | 160.71                | 377.1                               | 109.9        | 764.4                  | 742.6                   | 21.79                  | 35.087            |                             |         |
| 5,700.0   | 5,651.8               | 5,450.0               | 5,438.0               | 15.0             | 13.3          | 156.01                | 382.8                               | 109.4        | 840.8                  | 820.5                   | 20.35                  | 41.325            |                             |         |
| 5,800.0   | 5,716.7               | 5,475.5               | 5,462.2               | 16.1             | 13.4          | 146.56                | 390.7                               | 108.9        | 929.1                  | 908.8                   | 20.31                  | 45.753            |                             |         |
| 5,900.0   | 5,766.0               | 5,500.0               | 5,485.1               | 17.3             | 13.5          | 124.44                | 399.3                               | 108.2        | 1,024.7                | 999.2                   | 25.50                  | 40.185            |                             |         |
| 6,000.0   | 5,797.8               | 5,500.0               | 5,485.1               | 18.8             | 13.5          | 72.00                 | 399.3                               | 108.2        | 1,122.7                | 1,092.2                 | 30.47                  | 36.841            |                             |         |
| 6,100.0   | 5,811.0               | 5,500.0               | 5,485.1               | 20.4             | 13.5          | 35.16                 | 399.3                               | 108.2        | 1,220.0                | 1,199.4                 | 20.63                  | 59.145            |                             |         |
| 6,200.0   | 5,811.3               | 5,477.2               | 5,463.8               | 21.9             | 13.4          | 22.25                 | 391.2                               | 108.8        | 1,315.1                | 1,299.4                 | 15.67                  | 83.916            |                             |         |
| 6,300.0   | 5,811.3               | 5,469.5               | 5,456.5               | 23.4             | 13.3          | 11.42                 | 388.7                               | 109.0        | 1,411.3                | 1,399.7                 | 11.68                  | 120.869           |                             |         |
| 6,400.0   | 5,811.3               | 5,450.0               | 5,438.0               | 25.0             | 13.3          | -0.95                 | 382.8                               | 109.4        | 1,508.4                | 1,498.8                 | 9.56                   | 157.704           |                             |         |
| 6,500.0   | 5,811.3               | 5,450.0               | 5,438.0               | 26.6             | 13.3          | -12.87                | 382.8                               | 109.4        | 1,605.4                | 1,592.5                 | 12.92                  | 124.270           |                             |         |
| 6,600.0   | 5,811.3               | 5,450.0               | 5,438.0               | 28.2             | 13.3          | -24.41                | 382.8                               | 109.4        | 1,702.5                | 1,682.9                 | 19.60                  | 86.863            |                             |         |
| 6,700.0   | 5,811.3               | 5,450.0               | 5,438.0               | 29.8             | 13.3          | -34.67                | 382.8                               | 109.4        | 1,799.5                | 1,773.1                 | 26.33                  | 68.334            |                             |         |
| 6,800.0   | 5,811.3               | 5,450.0               | 5,438.0               | 31.4             | 13.3          | -43.28                | 382.8                               | 109.4        | 1,896.0                | 1,863.9                 | 32.08                  | 59.100            |                             |         |
| 6,900.0   | 5,811.3               | 5,430.1               | 5,418.8               | 33.0             | 13.2          | -49.00                | 377.6                               | 109.8        | 1,991.5                | 1,955.6                 | 35.98                  | 55.358            |                             |         |
| 7,000.0   | 5,811.3               | 5,424.7               | 5,413.5               | 34.6             | 13.2          | -54.29                | 376.2                               | 109.9        | 2,086.5                | 2,047.0                 | 39.48                  | 52.848            |                             |         |
| 7,100.0   | 5,811.3               | 5,419.6               | 5,408.6               | 36.2             | 13.1          | -58.57                | 375.1                               | 110.0        | 2,180.5                | 2,138.3                 | 42.27                  | 51.590            |                             |         |
| 7,200.0   | 5,811.3               | 5,400.0               | 5,389.4               | 37.7             | 13.1          | -61.23                | 371.0                               | 110.3        | 2,273.7                | 2,229.6                 | 44.10                  | 51.553            |                             |         |
| 7,300.0   | 5,811.3               | 5,400.0               | 5,389.4               | 39.2             | 13.1          | -64.38                | 371.0                               | 110.3        | 2,365.4                | 2,319.4                 | 46.03                  | 51.389            |                             |         |
| 7,400.0   | 5,811.3               | 5,400.0               | 5,389.4               | 40.7             | 13.1          | -67.00                | 371.0                               | 110.3        | 2,455.9                | 2,408.3                 | 47.56                  | 51.642            |                             |         |
| 7,500.0   | 5,811.3               | 5,400.0               | 5,389.4               | 42.1             | 13.1          | -69.20                | 371.0                               | 110.3        | 2,545.0                | 2,496.3                 | 48.75                  | 52.204            |                             |         |
| 7,600.0   | 5,811.3               | 5,400.0               | 5,389.4               | 43.6             | 13.1          | -70.84                | 371.0                               | 110.3        | 2,632.7                | 2,583.0                 | 49.75                  | 52.921            |                             |         |
| 7,700.0   | 5,811.3               | 5,400.0               | 5,389.4               | 45.0             | 13.1          | -70.84                | 371.0                               | 110.3        | 2,720.4                | 2,669.2                 | 51.20                  | 53.131            |                             |         |
| 7,800.0   | 5,811.3               | 5,400.0               | 5,389.4               | 46.4             | 13.1          | -70.84                | 371.0                               | 110.3        | 2,808.9                | 2,756.3                 | 52.68                  | 53.318            |                             |         |
| 7,900.0   | 5,811.2               | 5,400.0               | 5,389.4               | 47.9             | 13.1          | -70.84                | 371.0                               | 110.3        | 2,898.2                | 2,844.0                 | 54.19                  | 53.487            |                             |         |
| 8,000.0   | 5,811.2               | 5,400.0               | 5,389.4               | 49.4             | 13.1          | -70.84                | 371.0                               | 110.3        | 2,988.2                | 2,932.4                 | 55.71                  | 53.638            |                             |         |
| 8,100.0   | 5,811.2               | 5,400.0               | 5,389.4               | 50.9             | 13.1          | -70.84                | 371.0                               | 110.3        | 3,078.7                | 3,021.5                 | 57.25                  | 53.776            |                             |         |
| 8,200.0   | 5,811.2               | 5,400.0               | 5,389.4               | 52.5             | 13.1          | -70.84                | 371.0                               | 110.3        | 3,169.9                | 3,111.1                 | 58.81                  | 53.901            |                             |         |
| 8,300.0   | 5,811.2               | 5,378.7               | 5,368.4               | 54.0             | 13.0          | -69.97                | 367.3                               | 110.6        | 3,261.1                | 3,201.1                 | 60.00                  | 54.352            |                             |         |
| 8,400.0   | 5,811.2               | 5,376.5               | 5,366.2               | 55.6             | 13.0          | -69.88                | 367.0                               | 110.6        | 3,353.1                | 3,291.5                 | 61.54                  | 54.489            |                             |         |
| 8,500.0   | 5,811.2               | 5,374.4               | 5,364.1               | 57.2             | 13.0          | -69.79                | 366.7                               | 110.6        | 3,445.5                | 3,382.5                 | 63.09                  | 54.616            |                             |         |
| 8,600.0   | 5,811.2               | 5,372.4               | 5,362.2               | 58.9             | 13.0          | -69.71                | 366.4                               | 110.7        | 3,538.4                | 3,473.8                 | 64.65                  | 54.734            |                             |         |
| 8,700.0   | 5,811.2               | 5,350.0               | 5,340.0               | 60.5             | 12.9          | -68.80                | 363.8                               | 110.9        | 3,632.1                | 3,566.3                 | 65.81                  | 55.190            |                             |         |
| 8,800.0   | 5,811.2               | 5,350.0               | 5,340.0               | 62.2             | 12.9          | -68.80                | 363.8                               | 110.9        | 3,725.6                | 3,658.2                 | 67.42                  | 55.260            |                             |         |
| 8,900.0   | 5,811.2               | 5,350.0               | 5,340.0               | 63.9             | 12.9          | -68.80                | 363.8                               | 110.9        | 3,819.4                | 3,750.4                 | 69.04                  | 55.325            |                             |         |
| 9,000.0   | 5,811.2               | 5,350.0               | 5,340.0               | 65.6             | 12.9          | -68.80                | 363.8                               | 110.9        | 3,913.6                | 3,842.9                 | 70.66                  | 55.386            |                             |         |
| 9,100.0   | 5,811.2               | 5,350.0               | 5,340.0               | 67.3             | 12.9          | -68.80                | 363.8                               | 110.9        | 4,008.0                | 3,935.7                 | 72.29                  | 55.442            |                             |         |
| 9,200.0   | 5,811.2               | 5,350.0               | 5,340.0               | 69.0             | 12.9          | -68.80                | 363.8                               | 110.9        | 4,102.7                | 4,028.8                 | 73.93                  | 55.496            |                             |         |
| 9,300.0   | 5,811.2               | 5,350.0               | 5,340.0               | 70.7             | 12.9          | -68.80                | 363.8                               | 110.9        | 4,197.6                | 4,122.1                 | 75.57                  | 55.546            |                             |         |
| 9,400.0   | 5,811.2               | 5,350.0               | 5,340.0               | 72.5             | 12.9          | -68.80                | 363.8                               | 110.9        | 4,292.8                | 4,215.6                 | 77.22                  | 55.594            |                             |         |
| 9,500.0   | 5,811.2               | 5,350.0               | 5,340.0               | 74.2             | 12.9          | -68.80                | 363.8                               | 110.9        | 4,388.2                | 4,309.3                 | 78.93                  | 55.596            |                             |         |
| 9,600.0   | 5,811.2               | 5,350.0               | 5,340.0               | 76.0             | 12.9          | -68.80                | 363.8                               | 110.9        | 4,483.8                | 4,403.1                 | 80.66                  | 55.587            |                             |         |
| 9,700.0   | 5,811.2               | 5,350.0               | 5,340.0               | 77.7             | 12.9          | -68.80                | 363.8                               | 110.9        | 4,579.5                | 4,497.1                 | 82.40                  | 55.578            |                             |         |
| 9,800.0   | 5,811.2               | 5,350.0               | 5,340.0               | 79.5             | 12.9          | -68.80                | 363.8                               | 110.9        | 4,675.5                | 4,591.4                 | 84.14                  | 55.569            |                             |         |
| 9,900.0   | 5,811.2               | 5,350.0               | 5,340.0               | 81.3             | 12.9          | -68.80                | 363.8                               | 110.9        | 4,771.6                | 4,685.7                 | 85.88                  | 55.561            |                             |         |
| 10,000.0  | 5,811.2               | 5,350.0               | 5,340.0               | 83.1             | 12.9          | -68.80                | 363.8                               | 110.9        | 4,867.9                | 4,780.3                 | 87.63                  | 55.552            |                             |         |
| 10,100.0  | 5,811.2               | 5,350.0               | 5,340.0               | 84.9             | 12.9          | -68.80                | 363.8                               | 110.9        | 4,964.3                | 4,874.9                 | 89.38                  | 55.544            |                             |         |
| 10,200.0  | 5,811.1               | 5,350.0               | 5,340.0               | 86.7             | 12.9          | -68.80                | 363.8                               | 110.9        | 5,060.9                | 4,969.7                 | 91.13                  | 55.535            |                             |         |
| 10,300.0  | 5,811.1               | 5,350.0               | 5,340.0               | 88.5             | 12.9          | -68.80                | 363.8                               | 110.9        | 5,157.6                | 5,064.7                 | 92.88                  | 55.527            |                             |         |

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

# Cathedral Energy Services

## Anticollision Report

|                           |                               |                                     |  |
|---------------------------|-------------------------------|-------------------------------------|--|
| <b>Company:</b>           | Whiting Petroleum Corporation | <b>Local Co-ordinate Reference:</b> | Well Razor Federal #12F-1301A          |
| <b>Project:</b>           | Weld County, CO               | <b>TVD Reference:</b>               | WELL @ 4953.6usft (Original Well Elev) |
| <b>Reference Site:</b>    | S12-T10N-R58W                 | <b>MD Reference:</b>                | WELL @ 4953.6usft (Original Well Elev) |
| <b>Site Error:</b>        | 0.0usft                       | <b>North Reference:</b>             | True                                   |
| <b>Reference Well:</b>    | Razor Federal #12F-1301A      | <b>Survey Calculation Method:</b>   | Minimum Curvature                      |
| <b>Well Error:</b>        | 0.0usft                       | <b>Output errors are at</b>         | 2.00 sigma                             |
| <b>Reference Wellbore</b> | HZ                            | <b>Database:</b>                    | USA EDM 5000 Multi Users DB            |
| <b>Reference Design:</b>  | Plan #3                       | <b>Offset TVD Reference:</b>        | Offset Datum                           |

| Offset Design S12-T10N-R58W - Razor #12F-0105A - 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  | Vertical Depth | Measured Depth | Vertical Depth | Reference       | Offset | Highside Toolface | Offset Wellbore Centre | Between Centres | Between Ellipses | Total Uncertainty Axis | Separation Factor |        |                             |         |
| (usft)  | (usft)         | (usft)         | (usft)         | (usft)          | (usft) | (°)               | +N/-S (usft)           | +E/-W (usft)    | (usft)           | (usft)                 |                   |        |                             |         |
| 10,400.0  | 5,811.1        | 5,350.0        | 5,340.0        | 90.3            | 12.9   | -68.80            | 363.8                  | 110.9           | 5,254.4          | 5,159.7                | 94.64             | 55.519 |                             |         |
| 10,500.0  | 5,811.1        | 5,350.0        | 5,340.0        | 92.1            | 12.9   | -68.80            | 363.8                  | 110.9           | 5,351.3          | 5,254.9                | 96.40             | 55.511 |                             |         |
| 10,600.0  | 5,811.1        | 5,350.0        | 5,340.0        | 93.9            | 12.9   | -68.80            | 363.8                  | 110.9           | 5,448.3          | 5,350.2                | 98.16             | 55.503 |                             |         |
| 10,700.0  | 5,811.1        | 5,350.0        | 5,340.0        | 95.7            | 12.9   | -68.80            | 363.8                  | 110.9           | 5,545.5          | 5,445.6                | 99.93             | 55.496 |                             |         |
| 10,800.0  | 5,811.1        | 5,350.0        | 5,340.0        | 97.5            | 12.9   | -68.80            | 363.8                  | 110.9           | 5,642.7          | 5,541.0                | 101.69            | 55.489 |                             |         |
| 10,900.0  | 5,811.1        | 5,350.0        | 5,340.0        | 99.4            | 12.9   | -68.80            | 363.8                  | 110.9           | 5,740.1          | 5,636.6                | 103.46            | 55.482 |                             |         |
| 11,000.0  | 5,811.1        | 5,350.0        | 5,340.0        | 101.2           | 12.9   | -68.80            | 363.8                  | 110.9           | 5,837.5          | 5,732.3                | 105.23            | 55.475 |                             |         |
| 11,100.0  | 5,811.1        | 5,343.3        | 5,333.3        | 103.0           | 12.9   | -68.53            | 363.2                  | 110.9           | 5,935.0          | 5,828.2                | 106.81            | 55.565 |                             |         |
| 11,200.0  | 5,811.1        | 5,342.6        | 5,332.6        | 104.9           | 12.9   | -68.50            | 363.1                  | 110.9           | 6,032.6          | 5,924.0                | 108.56            | 55.569 |                             |         |
| 11,300.0  | 5,811.1        | 5,336.0        | 5,326.0        | 106.7           | 12.9   | -68.23            | 362.6                  | 110.9           | 6,130.3          | 6,020.1                | 110.14            | 55.660 |                             |         |
| 11,400.0  | 5,811.1        | 5,336.0        | 5,326.0        | 108.6           | 12.9   | -68.23            | 362.6                  | 110.9           | 6,228.0          | 6,116.1                | 111.91            | 55.653 |                             |         |
| 11,500.0  | 5,811.1        | 5,336.0        | 5,326.0        | 110.4           | 12.9   | -68.23            | 362.6                  | 110.9           | 6,325.8          | 6,212.1                | 113.68            | 55.647 |                             |         |
| 11,600.0  | 5,811.1        | 5,336.0        | 5,326.0        | 112.3           | 12.9   | -68.23            | 362.6                  | 110.9           | 6,423.7          | 6,308.2                | 115.45            | 55.640 |                             |         |
| 11,700.0  | 5,811.1        | 5,336.0        | 5,326.0        | 114.1           | 12.9   | -68.23            | 362.6                  | 110.9           | 6,521.6          | 6,404.4                | 117.22            | 55.634 |                             |         |
| 11,800.0  | 5,811.1        | 5,336.0        | 5,326.0        | 116.0           | 12.9   | -68.23            | 362.6                  | 110.9           | 6,619.6          | 6,500.6                | 119.00            | 55.628 |                             |         |
| 11,900.0  | 5,811.1        | 5,336.0        | 5,326.0        | 117.8           | 12.9   | -68.23            | 362.6                  | 110.9           | 6,717.7          | 6,596.9                | 120.77            | 55.623 |                             |         |
| 12,000.0  | 5,811.1        | 5,336.0        | 5,326.0        | 119.7           | 12.9   | -68.23            | 362.6                  | 110.9           | 6,815.8          | 6,693.2                | 122.55            | 55.617 |                             |         |
| 12,100.0  | 5,811.1        | 5,336.0        | 5,326.0        | 121.6           | 12.9   | -68.23            | 362.6                  | 110.9           | 6,913.9          | 6,789.6                | 124.33            | 55.612 |                             |         |
| 12,200.0  | 5,811.1        | 5,336.0        | 5,326.0        | 123.4           | 12.9   | -68.23            | 362.6                  | 110.9           | 7,012.2          | 6,886.1                | 126.10            | 55.607 |                             |         |
| 12,300.0  | 5,811.1        | 5,336.0        | 5,326.0        | 125.3           | 12.9   | -68.23            | 362.6                  | 110.9           | 7,110.4          | 6,982.5                | 127.88            | 55.601 |                             |         |
| 12,400.0  | 5,811.1        | 5,332.9        | 5,323.0        | 127.2           | 12.9   | -68.11            | 362.4                  | 111.0           | 7,208.7          | 7,079.2                | 129.56            | 55.641 |                             |         |
| 12,500.0  | 5,811.0        | 5,326.0        | 5,316.0        | 129.0           | 12.8   | -67.83            | 361.9                  | 111.0           | 7,307.1          | 7,176.0                | 131.10            | 55.737 |                             |         |
| 12,600.0  | 5,811.0        | 5,319.0        | 5,309.1        | 130.9           | 12.8   | -67.55            | 361.4                  | 111.0           | 7,405.5          | 7,272.9                | 132.63            | 55.835 |                             |         |
| 12,700.0  | 5,811.0        | 5,312.1        | 5,302.1        | 132.8           | 12.8   | -67.27            | 360.9                  | 111.1           | 7,503.9          | 7,369.8                | 134.16            | 55.933 |                             |         |
| 12,800.0  | 5,811.0        | 5,305.1        | 5,295.2        | 134.6           | 12.8   | -66.99            | 360.5                  | 111.1           | 7,602.4          | 7,466.7                | 135.68            | 56.033 |                             |         |
| 12,900.0  | 5,811.0        | 5,298.1        | 5,288.2        | 136.5           | 12.8   | -66.71            | 360.0                  | 111.1           | 7,700.9          | 7,563.7                | 137.19            | 56.133 |                             |         |
| 13,000.0  | 5,811.0        | 5,291.2        | 5,281.3        | 138.4           | 12.8   | -66.44            | 359.5                  | 111.2           | 7,799.4          | 7,660.7                | 138.70            | 56.233 |                             |         |
| 13,100.0  | 5,811.0        | 5,284.2        | 5,274.4        | 140.3           | 12.7   | -66.17            | 359.0                  | 111.2           | 7,898.0          | 7,757.8                | 140.20            | 56.335 |                             |         |
| 13,200.0  | 5,811.0        | 5,277.3        | 5,267.4        | 142.1           | 12.7   | -65.89            | 358.5                  | 111.2           | 7,996.5          | 7,854.9                | 141.69            | 56.438 |                             |         |
| 13,300.0  | 5,811.0        | 5,270.3        | 5,260.5        | 144.0           | 12.7   | -65.62            | 358.0                  | 111.3           | 8,095.2          | 7,952.0                | 143.17            | 56.541 |                             |         |
| 13,400.0  | 5,811.0        | 5,263.3        | 5,253.5        | 145.9           | 12.7   | -65.35            | 357.6                  | 111.3           | 8,193.8          | 8,049.2                | 144.65            | 56.645 |                             |         |
| 13,500.0  | 5,811.0        | 5,256.4        | 5,246.6        | 147.8           | 12.7   | -65.08            | 357.1                  | 111.3           | 8,292.5          | 8,146.4                | 146.12            | 56.750 |                             |         |
| 13,600.0  | 5,811.0        | 5,249.4        | 5,239.6        | 149.7           | 12.7   | -64.81            | 356.6                  | 111.4           | 8,391.2          | 8,243.6                | 147.59            | 56.856 |                             |         |
| 13,700.0  | 5,811.0        | 5,242.5        | 5,232.7        | 151.6           | 12.6   | -64.55            | 356.1                  | 111.4           | 8,489.9          | 8,340.9                | 149.04            | 56.963 |                             |         |
| 13,800.0  | 5,811.0        | 5,235.5        | 5,225.7        | 153.4           | 12.6   | -64.28            | 355.6                  | 111.5           | 8,588.6          | 8,438.2                | 150.49            | 57.070 |                             |         |
| 13,900.0  | 5,811.0        | 5,228.5        | 5,218.8        | 155.3           | 12.6   | -64.02            | 355.1                  | 111.5           | 8,687.4          | 8,535.5                | 151.94            | 57.178 |                             |         |
| 13,919.8  | 5,811.0        | 5,227.2        | 5,217.4        | 155.7           | 12.6   | -63.97            | 355.0                  | 111.5           | 8,707.0          | 8,554.8                | 152.22            | 57.200 |                             |         |

# Cathedral Energy Services

## Anticollision Report

|                           |                               |                                     |  |
|---------------------------|-------------------------------|-------------------------------------|--|
| <b>Company:</b>           | Whiting Petroleum Corporation | <b>Local Co-ordinate Reference:</b> | Well Razor Federal #12F-1301A          |
| <b>Project:</b>           | Weld County, CO               | <b>TVD Reference:</b>               | WELL @ 4953.6usft (Original Well Elev) |
| <b>Reference Site:</b>    | S12-T10N-R58W                 | <b>MD Reference:</b>                | WELL @ 4953.6usft (Original Well Elev) |
| <b>Site Error:</b>        | 0.0usft                       | <b>North Reference:</b>             | True                                   |
| <b>Reference Well:</b>    | Razor Federal #12F-1301A      | <b>Survey Calculation Method:</b>   | Minimum Curvature                      |
| <b>Well Error:</b>        | 0.0usft                       | <b>Output errors are at</b>         | 2.00 sigma                             |
| <b>Reference Wellbore</b> | HZ                            | <b>Database:</b>                    | USA EDM 5000 Multi Users DB            |
| <b>Reference Design:</b>  | Plan #3                       | <b>Offset TVD Reference:</b>        | Offset Datum                           |

| Offset Design S12-T10N-R58W - Razor #12F-0106B - 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 |                             |         |
| 0.0   | 0.0                   | 0.0                   | 0.0                   | 0.0              | 0.0           | 65.51                 | 74.9                                | 164.4        | 180.7                  |                         |                        |                   |                             |         |
| 100.0   | 100.0                 | 100.0                 | 100.0                 | 0.1              | 0.1           | 65.51                 | 74.9                                | 164.4        | 180.7                  | 180.5                   | 0.19                   | 966.107           |                             |         |
| 200.0   | 200.0                 | 200.0                 | 200.0                 | 0.3              | 0.3           | 65.51                 | 74.9                                | 164.4        | 180.7                  | 180.1                   | 0.64                   | 283.864           |                             |         |
| 300.0   | 300.0                 | 300.0                 | 300.0                 | 0.5              | 0.5           | 65.51                 | 74.9                                | 164.4        | 180.7                  | 179.6                   | 1.09                   | 166.374           |                             |         |
| 400.0   | 400.0                 | 400.0                 | 400.0                 | 0.8              | 0.8           | 65.51                 | 74.9                                | 164.4        | 180.7                  | 179.2                   | 1.54                   | 117.671           |                             |         |
| 500.0   | 500.0                 | 500.0                 | 500.0                 | 1.0              | 1.0           | 65.51                 | 74.9                                | 164.4        | 180.7                  | 178.7                   | 1.99                   | 91.025            |                             |         |
| 600.0   | 600.0                 | 600.0                 | 600.0                 | 1.2              | 1.2           | 65.51                 | 74.9                                | 164.4        | 180.7                  | 178.3                   | 2.43                   | 74.218            |                             |         |
| 666.7   | 666.7                 | 666.7                 | 666.7                 | 1.4              | 1.4           | 65.51                 | 74.9                                | 164.4        | 180.7                  | 178.0                   | 2.73                   | 66.085 CC         |                             |         |
| 700.0   | 700.0                 | 700.0                 | 700.0                 | 1.4              | 1.4           | 65.51                 | 74.9                                | 164.4        | 180.7                  | 177.8                   | 2.88                   | 62.651 ES         |                             |         |
| 800.0   | 800.0                 | 796.1                 | 796.1                 | 1.7              | 1.7           | 65.13                 | 76.4                                | 164.9        | 181.8                  | 178.5                   | 3.33                   | 54.663            |                             |         |
| 900.0   | 900.0                 | 891.9                 | 891.8                 | 1.9              | 1.9           | 63.99                 | 81.1                                | 166.2        | 185.1                  | 181.3                   | 3.77                   | 49.087            |                             |         |
| 1,000.0   | 1,000.0               | 991.3                 | 990.9                 | 2.1              | 2.1           | 62.43                 | 87.8                                | 168.0        | 189.8                  | 185.6                   | 4.22                   | 44.940            |                             |         |
| 1,100.0   | 1,100.0               | 1,091.0               | 1,090.3               | 2.3              | 2.3           | -163.24               | 94.4                                | 169.9        | 196.3                  | 191.7                   | 4.65                   | 42.230            |                             |         |
| 1,200.0   | 1,199.8               | 1,190.2               | 1,189.4               | 2.5              | 2.6           | -164.97               | 101.1                               | 171.8        | 206.3                  | 201.3                   | 5.06                   | 40.791            |                             |         |
| 1,300.0   | 1,299.6               | 1,289.3               | 1,288.2               | 2.7              | 2.8           | -166.70               | 107.8                               | 173.6        | 218.2                  | 212.7                   | 5.48                   | 39.854            |                             |         |
| 1,400.0   | 1,399.4               | 1,388.4               | 1,387.1               | 2.9              | 3.1           | -168.25               | 114.4                               | 175.5        | 230.3                  | 224.4                   | 5.90                   | 39.035            |                             |         |
| 1,500.0   | 1,499.1               | 1,487.5               | 1,485.9               | 3.1              | 3.3           | -169.65               | 121.1                               | 177.3        | 242.5                  | 236.2                   | 6.33                   | 38.317            |                             |         |
| 1,600.0   | 1,598.9               | 1,586.6               | 1,584.8               | 3.4              | 3.5           | -170.91               | 127.7                               | 179.2        | 254.8                  | 248.1                   | 6.76                   | 37.686            |                             |         |
| 1,700.0   | 1,698.6               | 1,685.7               | 1,683.6               | 3.6              | 3.8           | -172.06               | 134.4                               | 181.1        | 267.3                  | 260.1                   | 7.20                   | 37.132            |                             |         |
| 1,800.0   | 1,798.4               | 1,784.8               | 1,782.4               | 3.8              | 4.0           | -173.10               | 141.1                               | 182.9        | 279.9                  | 272.2                   | 7.64                   | 36.640            |                             |         |
| 1,900.0   | 1,898.1               | 1,883.8               | 1,881.3               | 4.1              | 4.3           | -174.05               | 147.7                               | 184.8        | 292.5                  | 284.4                   | 8.08                   | 36.203            |                             |         |
| 2,000.0   | 1,997.9               | 1,982.9               | 1,980.1               | 4.3              | 4.5           | -174.93               | 154.4                               | 186.6        | 305.2                  | 296.7                   | 8.52                   | 35.812            |                             |         |
| 2,100.0   | 2,097.6               | 2,082.0               | 2,079.0               | 4.5              | 4.8           | -175.73               | 161.0                               | 188.5        | 318.0                  | 309.0                   | 8.97                   | 35.461            |                             |         |
| 2,200.0   | 2,197.4               | 2,181.1               | 2,177.8               | 4.8              | 5.0           | -176.47               | 167.7                               | 190.4        | 330.8                  | 321.4                   | 9.41                   | 35.144            |                             |         |
| 2,300.0   | 2,297.2               | 2,280.2               | 2,276.7               | 5.0              | 5.3           | -177.16               | 174.3                               | 192.2        | 343.7                  | 333.8                   | 9.86                   | 34.857            |                             |         |
| 2,400.0   | 2,396.9               | 2,379.3               | 2,375.5               | 5.3              | 5.5           | -177.80               | 181.0                               | 194.1        | 356.6                  | 346.3                   | 10.31                  | 34.597            |                             |         |
| 2,500.0   | 2,496.7               | 2,478.4               | 2,474.4               | 5.5              | 5.8           | -178.39               | 187.7                               | 195.9        | 369.6                  | 358.8                   | 10.76                  | 34.359            |                             |         |
| 2,600.0   | 2,596.4               | 2,577.4               | 2,573.2               | 5.8              | 6.0           | -178.94               | 194.3                               | 197.8        | 382.6                  | 371.4                   | 11.21                  | 34.141            |                             |         |
| 2,700.0   | 2,696.2               | 2,676.5               | 2,672.0               | 6.0              | 6.3           | -179.46               | 201.0                               | 199.7        | 395.6                  | 384.0                   | 11.66                  | 33.940            |                             |         |
| 2,800.0   | 2,795.9               | 2,775.6               | 2,770.9               | 6.3              | 6.5           | -179.94               | 207.6                               | 201.5        | 408.7                  | 396.6                   | 12.11                  | 33.756            |                             |         |
| 2,900.0   | 2,895.7               | 2,874.7               | 2,869.7               | 6.5              | 6.8           | 179.61                | 214.3                               | 203.4        | 421.8                  | 409.2                   | 12.56                  | 33.585            |                             |         |
| 3,000.0   | 2,995.5               | 2,973.8               | 2,968.6               | 6.8              | 7.0           | 179.18                | 220.9                               | 205.2        | 434.9                  | 421.9                   | 13.01                  | 33.427            |                             |         |
| 3,100.0   | 3,095.2               | 3,072.9               | 3,067.4               | 7.1              | 7.3           | 178.78                | 227.6                               | 207.1        | 448.0                  | 434.6                   | 13.46                  | 33.280            |                             |         |
| 3,200.0   | 3,195.0               | 3,172.0               | 3,166.3               | 7.3              | 7.6           | 178.40                | 234.3                               | 208.9        | 461.2                  | 447.3                   | 13.92                  | 33.143            |                             |         |
| 3,300.0   | 3,294.7               | 3,271.0               | 3,265.1               | 7.6              | 7.8           | 178.04                | 240.9                               | 210.8        | 474.4                  | 460.0                   | 14.37                  | 33.016            |                             |         |
| 3,400.0   | 3,394.5               | 3,370.1               | 3,364.0               | 7.8              | 8.1           | 177.71                | 247.6                               | 212.7        | 487.6                  | 472.8                   | 14.82                  | 32.896            |                             |         |
| 3,500.0   | 3,494.2               | 3,469.2               | 3,462.8               | 8.1              | 8.3           | 177.39                | 254.2                               | 214.5        | 500.8                  | 485.5                   | 15.28                  | 32.784            |                             |         |
| 3,600.0   | 3,594.0               | 3,568.3               | 3,561.6               | 8.3              | 8.6           | 177.08                | 260.9                               | 216.4        | 514.0                  | 498.3                   | 15.73                  | 32.679            |                             |         |
| 3,700.0   | 3,693.7               | 3,667.4               | 3,660.5               | 8.6              | 8.8           | 176.79                | 267.5                               | 218.2        | 527.3                  | 511.1                   | 16.18                  | 32.580            |                             |         |
| 3,800.0   | 3,793.5               | 3,766.5               | 3,759.3               | 8.9              | 9.1           | 176.52                | 274.2                               | 220.1        | 540.5                  | 523.9                   | 16.64                  | 32.486            |                             |         |
| 3,900.0   | 3,893.3               | 3,865.6               | 3,858.2               | 9.1              | 9.3           | 176.26                | 280.9                               | 222.0        | 553.8                  | 536.7                   | 17.09                  | 32.398            |                             |         |
| 4,000.0   | 3,993.0               | 3,964.6               | 3,957.0               | 9.4              | 9.6           | 176.01                | 287.5                               | 223.8        | 567.1                  | 549.5                   | 17.55                  | 32.315            |                             |         |
| 4,100.0   | 4,092.8               | 4,063.7               | 4,055.9               | 9.6              | 9.8           | 175.77                | 294.2                               | 225.7        | 580.3                  | 562.3                   | 18.00                  | 32.236            |                             |         |
| 4,200.0   | 4,192.5               | 4,162.8               | 4,154.7               | 9.9              | 10.1          | 175.55                | 300.8                               | 227.5        | 593.6                  | 575.2                   | 18.46                  | 32.161            |                             |         |
| 4,300.0   | 4,292.3               | 4,261.9               | 4,253.5               | 10.2             | 10.3          | 175.33                | 307.5                               | 229.4        | 606.9                  | 588.0                   | 18.91                  | 32.090            |                             |         |
| 4,400.0   | 4,392.0               | 4,361.0               | 4,352.4               | 10.4             | 10.6          | 175.12                | 314.1                               | 231.2        | 620.2                  | 600.9                   | 19.37                  | 32.022            |                             |         |
| 4,500.0   | 4,491.8               | 4,460.1               | 4,451.2               | 10.7             | 10.8          | 174.92                | 320.8                               | 233.1        | 633.6                  | 613.7                   | 19.82                  | 31.958            |                             |         |
| 4,600.0   | 4,591.6               | 4,559.2               | 4,550.1               | 11.0             | 11.1          | 174.73                | 327.5                               | 235.0        | 646.9                  | 626.6                   | 20.28                  | 31.897            |                             |         |
| 4,700.0   | 4,691.3               | 4,658.2               | 4,648.9               | 11.2             | 11.3          | 174.55                | 334.1                               | 236.8        | 660.2                  | 639.5                   | 20.74                  | 31.838            |                             |         |
| 4,800.0   | 4,791.1               | 4,757.3               | 4,747.8               | 11.5             | 11.6          | 174.37                | 340.8                               | 238.7        | 673.6                  | 652.4                   | 21.19                  | 31.783            |                             |         |
| 4,900.0   | 4,890.8               | 4,856.4               | 4,846.6               | 11.7             | 11.9          | 174.20                | 347.4                               | 240.5        | 686.9                  | 665.3                   | 21.65                  | 31.729            |                             |         |
| 5,000.0   | 4,990.6               | 4,955.5               | 4,945.5               | 12.0             | 12.1          | 174.04                | 354.1                               | 242.4        | 700.3                  | 678.1                   | 22.11                  | 31.678            |                             |         |

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

# Cathedral Energy Services

## Anticollision Report

|                           |                               |                                     |  |
|---------------------------|-------------------------------|-------------------------------------|--|
| <b>Company:</b>           | Whiting Petroleum Corporation | <b>Local Co-ordinate Reference:</b> | Well Razor Federal #12F-1301A          |
| <b>Project:</b>           | Weld County, CO               | <b>TVD Reference:</b>               | WELL @ 4953.6usft (Original Well Elev) |
| <b>Reference Site:</b>    | S12-T10N-R58W                 | <b>MD Reference:</b>                | WELL @ 4953.6usft (Original Well Elev) |
| <b>Site Error:</b>        | 0.0usft                       | <b>North Reference:</b>             | True                                   |
| <b>Reference Well:</b>    | Razor Federal #12F-1301A      | <b>Survey Calculation Method:</b>   | Minimum Curvature                      |
| <b>Well Error:</b>        | 0.0usft                       | <b>Output errors are at</b>         | 2.00 sigma                             |
| <b>Reference Wellbore</b> | HZ                            | <b>Database:</b>                    | USA EDM 5000 Multi Users DB            |
| <b>Reference Design:</b>  | Plan #3                       | <b>Offset TVD Reference:</b>        | Offset Datum                           |

| Offset Design S12-T10N-R58W - Razor #12F-0106B - 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 |                             |  |
| 5,100.0   | 5,090.3               | 5,054.6               | 5,044.3               | 12.3             | 12.4          | 173.88                | 360.7                               | 244.3        | 713.6                  | 691.0                   | 22.56                  | 31.629            |                             |  |
| 5,200.0   | 5,190.1               | 5,153.7               | 5,143.1               | 12.5             | 12.6          | 173.73                | 367.4                               | 246.1        | 727.0                  | 704.0                   | 23.02                  | 31.582            |                             |  |
| 5,300.0   | 5,289.9               | 5,252.8               | 5,242.0               | 12.8             | 12.9          | 173.59                | 374.1                               | 248.0        | 740.3                  | 716.9                   | 23.48                  | 31.537 SF         |                             |  |
| 5,400.0   | 5,389.2               | 5,351.2               | 5,340.2               | 13.1             | 13.1          | 173.33                | 380.7                               | 249.8        | 757.4                  | 733.8                   | 23.59                  | 32.106            |                             |  |
| 5,500.0   | 5,485.0               | 5,439.0               | 5,427.8               | 13.5             | 13.3          | 172.89                | 386.6                               | 251.5        | 791.7                  | 768.8                   | 22.84                  | 34.659            |                             |  |
| 5,600.0   | 5,573.6               | 5,475.6               | 5,464.2               | 14.2             | 13.5          | 172.01                | 390.3                               | 252.5        | 846.0                  | 824.7                   | 21.25                  | 39.811            |                             |  |
| 5,700.0   | 5,651.8               | 5,500.0               | 5,488.2               | 15.0             | 13.5          | 170.25                | 394.1                               | 253.6        | 918.9                  | 899.9                   | 19.05                  | 48.238            |                             |  |
| 5,800.0   | 5,716.7               | 5,520.5               | 5,508.3               | 16.1             | 13.6          | 166.54                | 398.1                               | 254.7        | 1,005.4                | 988.7                   | 16.72                  | 60.118            |                             |  |
| 5,900.0   | 5,766.0               | 5,531.0               | 5,518.5               | 17.3             | 13.6          | 155.62                | 400.5                               | 255.4        | 1,100.5                | 1,083.7                 | 16.78                  | 65.578            |                             |  |
| 6,000.0   | 5,797.8               | 5,550.0               | 5,536.9               | 18.8             | 13.7          | 95.71                 | 405.3                               | 256.7        | 1,199.9                | 1,167.9                 | 32.05                  | 37.438            |                             |  |
| 6,100.0   | 5,811.0               | 5,531.6               | 5,519.1               | 20.4             | 13.7          | 21.12                 | 400.7                               | 255.4        | 1,298.7                | 1,284.1                 | 14.62                  | 88.851            |                             |  |
| 6,200.0   | 5,811.3               | 5,525.4               | 5,513.1               | 21.9             | 13.6          | 7.30                  | 399.2                               | 255.0        | 1,396.2                | 1,386.5                 | 9.67                   | 144.360           |                             |  |
| 6,300.0   | 5,811.3               | 5,519.5               | 5,507.4               | 23.4             | 13.6          | -6.82                 | 397.9                               | 254.6        | 1,493.9                | 1,484.2                 | 9.79                   | 152.550           |                             |  |
| 6,400.0   | 5,811.3               | 5,500.0               | 5,488.2               | 25.0             | 13.5          | -19.88                | 394.1                               | 253.6        | 1,592.1                | 1,576.2                 | 15.87                  | 100.288           |                             |  |
| 6,500.0   | 5,811.3               | 5,500.0               | 5,488.2               | 26.6             | 13.5          | -31.84                | 394.1                               | 253.6        | 1,689.6                | 1,666.4                 | 23.23                  | 72.734            |                             |  |
| 6,600.0   | 5,811.3               | 5,500.0               | 5,488.2               | 28.2             | 13.5          | -41.83                | 394.1                               | 253.6        | 1,786.8                | 1,757.2                 | 29.64                  | 60.295            |                             |  |
| 6,700.0   | 5,811.3               | 5,500.0               | 5,488.2               | 29.8             | 13.5          | -49.78                | 394.1                               | 253.6        | 1,883.6                | 1,848.8                 | 34.73                  | 54.240            |                             |  |
| 6,800.0   | 5,811.3               | 5,500.0               | 5,488.2               | 31.4             | 13.5          | -56.01                | 394.1                               | 253.6        | 1,979.6                | 1,940.9                 | 38.68                  | 51.176            |                             |  |
| 6,900.0   | 5,811.3               | 5,500.0               | 5,488.2               | 33.0             | 13.5          | -60.89                | 394.1                               | 253.6        | 2,074.8                | 2,033.0                 | 41.77                  | 49.667            |                             |  |
| 7,000.0   | 5,811.3               | 5,500.0               | 5,488.2               | 34.6             | 13.5          | -64.75                | 394.1                               | 253.6        | 2,169.0                | 2,124.8                 | 44.22                  | 49.047            |                             |  |
| 7,100.0   | 5,811.3               | 5,500.0               | 5,488.2               | 36.2             | 13.5          | -67.83                | 394.1                               | 253.6        | 2,262.2                | 2,216.0                 | 46.19                  | 48.978            |                             |  |
| 7,200.0   | 5,811.3               | 5,500.0               | 5,488.2               | 37.7             | 13.5          | -70.33                | 394.1                               | 253.6        | 2,354.1                | 2,306.4                 | 47.77                  | 49.278            |                             |  |
| 7,300.0   | 5,811.3               | 5,500.0               | 5,488.2               | 39.2             | 13.5          | -72.39                | 394.1                               | 253.6        | 2,444.8                | 2,395.7                 | 49.05                  | 49.844            |                             |  |
| 7,400.0   | 5,811.3               | 5,477.1               | 5,465.6               | 40.7             | 13.5          | -73.04                | 390.5                               | 252.6        | 2,533.4                | 2,483.7                 | 49.72                  | 50.956            |                             |  |
| 7,500.0   | 5,811.3               | 5,474.7               | 5,463.3               | 42.1             | 13.4          | -74.46                | 390.1                               | 252.5        | 2,621.0                | 2,570.5                 | 50.51                  | 51.888            |                             |  |
| 7,600.0   | 5,811.3               | 5,472.5               | 5,461.1               | 43.6             | 13.4          | -75.52                | 389.9                               | 252.4        | 2,707.1                | 2,655.9                 | 51.23                  | 52.847            |                             |  |
| 7,700.0   | 5,811.3               | 5,450.0               | 5,438.7               | 45.0             | 13.4          | -74.64                | 387.4                               | 251.7        | 2,793.6                | 2,741.2                 | 52.42                  | 53.292            |                             |  |
| 7,800.0   | 5,811.3               | 5,450.0               | 5,438.7               | 46.4             | 13.4          | -74.64                | 387.4                               | 251.7        | 2,880.4                | 2,826.5                 | 53.92                  | 53.416            |                             |  |
| 7,900.0   | 5,811.2               | 5,450.0               | 5,438.7               | 47.9             | 13.4          | -74.64                | 387.4                               | 251.7        | 2,968.1                | 2,912.7                 | 55.45                  | 53.525            |                             |  |
| 8,000.0   | 5,811.2               | 5,450.0               | 5,438.7               | 49.4             | 13.4          | -74.64                | 387.4                               | 251.7        | 3,056.5                | 2,999.5                 | 57.00                  | 53.623            |                             |  |
| 8,100.0   | 5,811.2               | 5,450.0               | 5,438.7               | 50.9             | 13.4          | -74.64                | 387.4                               | 251.7        | 3,145.7                | 3,087.1                 | 58.57                  | 53.710            |                             |  |
| 8,200.0   | 5,811.2               | 5,450.0               | 5,438.7               | 52.5             | 13.4          | -74.64                | 387.4                               | 251.7        | 3,235.4                | 3,175.3                 | 60.15                  | 53.788            |                             |  |
| 8,300.0   | 5,811.2               | 5,450.0               | 5,438.7               | 54.0             | 13.4          | -74.64                | 387.4                               | 251.7        | 3,325.8                | 3,264.0                 | 61.75                  | 53.859            |                             |  |
| 8,400.0   | 5,811.2               | 5,450.0               | 5,438.7               | 55.6             | 13.4          | -74.64                | 387.4                               | 251.7        | 3,416.6                | 3,353.3                 | 63.36                  | 53.923            |                             |  |
| 8,500.0   | 5,811.2               | 5,450.0               | 5,438.7               | 57.2             | 13.4          | -74.64                | 387.4                               | 251.7        | 3,508.0                | 3,443.0                 | 64.98                  | 53.982            |                             |  |
| 8,600.0   | 5,811.2               | 5,450.0               | 5,438.7               | 58.9             | 13.4          | -74.64                | 387.4                               | 251.7        | 3,599.9                | 3,533.2                 | 66.62                  | 54.036            |                             |  |
| 8,700.0   | 5,811.2               | 5,450.0               | 5,438.7               | 60.5             | 13.4          | -74.64                | 387.4                               | 251.7        | 3,692.1                | 3,623.9                 | 68.26                  | 54.086            |                             |  |
| 8,800.0   | 5,811.2               | 5,450.0               | 5,438.7               | 62.2             | 13.4          | -74.64                | 387.4                               | 251.7        | 3,784.8                | 3,714.9                 | 69.92                  | 54.133            |                             |  |
| 8,900.0   | 5,811.2               | 5,450.0               | 5,438.7               | 63.9             | 13.4          | -74.64                | 387.4                               | 251.7        | 3,877.8                | 3,806.2                 | 71.58                  | 54.176            |                             |  |
| 9,000.0   | 5,811.2               | 5,450.0               | 5,438.7               | 65.6             | 13.4          | -74.64                | 387.4                               | 251.7        | 3,971.1                | 3,897.9                 | 73.25                  | 54.216            |                             |  |
| 9,100.0   | 5,811.2               | 5,450.0               | 5,438.7               | 67.3             | 13.4          | -74.64                | 387.4                               | 251.7        | 4,064.8                | 3,989.9                 | 74.92                  | 54.254            |                             |  |
| 9,200.0   | 5,811.2               | 5,450.0               | 5,438.7               | 69.0             | 13.4          | -74.64                | 387.4                               | 251.7        | 4,158.8                | 4,082.2                 | 76.60                  | 54.289            |                             |  |
| 9,300.0   | 5,811.2               | 5,450.0               | 5,438.7               | 70.7             | 13.4          | -74.64                | 387.4                               | 251.7        | 4,253.0                | 4,174.7                 | 78.29                  | 54.323            |                             |  |
| 9,400.0   | 5,811.2               | 5,450.0               | 5,438.7               | 72.5             | 13.4          | -74.64                | 387.4                               | 251.7        | 4,347.5                | 4,267.5                 | 79.99                  | 54.350            |                             |  |
| 9,500.0   | 5,811.2               | 5,450.0               | 5,438.7               | 74.2             | 13.4          | -74.64                | 387.4                               | 251.7        | 4,442.3                | 4,360.5                 | 81.77                  | 54.328            |                             |  |
| 9,600.0   | 5,811.2               | 5,450.0               | 5,438.7               | 76.0             | 13.4          | -74.64                | 387.4                               | 251.7        | 4,537.2                | 4,453.7                 | 83.55                  | 54.307            |                             |  |
| 9,700.0   | 5,811.2               | 5,450.0               | 5,438.7               | 77.7             | 13.4          | -74.64                | 387.4                               | 251.7        | 4,632.4                | 4,547.1                 | 85.33                  | 54.286            |                             |  |
| 9,800.0   | 5,811.2               | 5,444.3               | 5,433.1               | 79.5             | 13.4          | -74.41                | 387.0                               | 251.6        | 4,727.8                | 4,640.7                 | 87.02                  | 54.327            |                             |  |
| 9,900.0   | 5,811.2               | 5,439.0               | 5,427.8               | 81.3             | 13.3          | -74.20                | 386.6                               | 251.5        | 4,823.3                | 4,734.6                 | 88.72                  | 54.366            |                             |  |
| 10,000.0  | 5,811.2               | 5,439.0               | 5,427.8               | 83.1             | 13.3          | -74.20                | 386.6                               | 251.5        | 4,919.1                | 4,828.5                 | 90.51                  | 54.347            |                             |  |
| 10,100.0  | 5,811.2               | 5,439.0               | 5,427.8               | 84.9             | 13.3          | -74.20                | 386.6                               | 251.5        | 5,015.0                | 4,922.6                 | 92.31                  | 54.329            |                             |  |
| 10,200.0  | 5,811.1               | 5,439.0               | 5,427.8               | 86.7             | 13.3          | -74.20                | 386.6                               | 251.5        | 5,111.0                | 5,016.9                 | 94.11                  | 54.311            |                             |  |

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

# Cathedral Energy Services

## Anticollision Report

|                           |                               |                                     |  |
|---------------------------|-------------------------------|-------------------------------------|--|
| <b>Company:</b>           | Whiting Petroleum Corporation | <b>Local Co-ordinate Reference:</b> | Well Razor Federal #12F-1301A          |
| <b>Project:</b>           | Weld County, CO               | <b>TVD Reference:</b>               | WELL @ 4953.6usft (Original Well Elev) |
| <b>Reference Site:</b>    | S12-T10N-R58W                 | <b>MD Reference:</b>                | WELL @ 4953.6usft (Original Well Elev) |
| <b>Site Error:</b>        | 0.0usft                       | <b>North Reference:</b>             | True                                   |
| <b>Reference Well:</b>    | Razor Federal #12F-1301A      | <b>Survey Calculation Method:</b>   | Minimum Curvature                      |
| <b>Well Error:</b>        | 0.0usft                       | <b>Output errors are at</b>         | 2.00 sigma                             |
| <b>Reference Wellbore</b> | HZ                            | <b>Database:</b>                    | USA EDM 5000 Multi Users DB            |
| <b>Reference Design:</b>  | Plan #3                       | <b>Offset TVD Reference:</b>        | Offset Datum                           |

| Offset Design S12-T10N-R58W - Razor #12F-0106B - 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 |                             |         |
| 10,300.0  | 5,811.1               | 5,439.0               | 5,427.8               | 88.5             | 13.3          | -74.20                | 386.6                               | 251.5               | 5,207.2                | 5,111.3                 | 95.91                  | 54.294            |                             |         |
| 10,400.0  | 5,811.1               | 5,439.0               | 5,427.8               | 90.3             | 13.3          | -74.20                | 386.6                               | 251.5               | 5,303.5                | 5,205.8                 | 97.71                  | 54.278            |                             |         |
| 10,500.0  | 5,811.1               | 5,439.0               | 5,427.8               | 92.1             | 13.3          | -74.20                | 386.6                               | 251.5               | 5,400.0                | 5,300.5                 | 99.52                  | 54.262            |                             |         |
| 10,600.0  | 5,811.1               | 5,439.0               | 5,427.8               | 93.9             | 13.3          | -74.20                | 386.6                               | 251.5               | 5,496.6                | 5,395.3                 | 101.33                 | 54.247            |                             |         |
| 10,700.0  | 5,811.1               | 5,432.3               | 5,421.1               | 95.7             | 13.3          | -73.94                | 386.1                               | 251.3               | 5,593.3                | 5,490.3                 | 103.00                 | 54.304            |                             |         |
| 10,800.0  | 5,811.1               | 5,425.6               | 5,414.4               | 97.5             | 13.3          | -73.68                | 385.7                               | 251.2               | 5,690.1                | 5,585.5                 | 104.67                 | 54.362            |                             |         |
| 10,900.0  | 5,811.1               | 5,418.9               | 5,407.7               | 99.4             | 13.3          | -73.42                | 385.2                               | 251.1               | 5,787.1                | 5,680.7                 | 106.34                 | 54.421            |                             |         |
| 11,000.0  | 5,811.1               | 5,412.1               | 5,401.0               | 101.2            | 13.3          | -73.15                | 384.8                               | 251.0               | 5,884.1                | 5,776.1                 | 108.00                 | 54.480            |                             |         |
| 11,100.0  | 5,811.1               | 5,405.4               | 5,394.3               | 103.0            | 13.3          | -72.89                | 384.3                               | 250.8               | 5,981.2                | 5,871.5                 | 109.66                 | 54.541            |                             |         |
| 11,200.0  | 5,811.1               | 5,398.7               | 5,387.6               | 104.9            | 13.2          | -72.63                | 383.9                               | 250.7               | 6,078.4                | 5,967.0                 | 111.32                 | 54.603            |                             |         |
| 11,300.0  | 5,811.1               | 5,392.0               | 5,380.9               | 106.7            | 13.2          | -72.37                | 383.4                               | 250.6               | 6,175.6                | 6,062.7                 | 112.97                 | 54.666            |                             |         |
| 11,400.0  | 5,811.1               | 5,385.3               | 5,374.2               | 108.6            | 13.2          | -72.12                | 383.0                               | 250.5               | 6,273.0                | 6,158.4                 | 114.62                 | 54.730            |                             |         |
| 11,500.0  | 5,811.1               | 5,378.5               | 5,367.5               | 110.4            | 13.2          | -71.86                | 382.5                               | 250.3               | 6,370.4                | 6,254.2                 | 116.26                 | 54.795            |                             |         |
| 11,600.0  | 5,811.1               | 5,371.8               | 5,360.7               | 112.3            | 13.2          | -71.60                | 382.1                               | 250.2               | 6,467.9                | 6,350.0                 | 117.90                 | 54.860            |                             |         |
| 11,700.0  | 5,811.1               | 5,365.1               | 5,354.0               | 114.1            | 13.2          | -71.34                | 381.6                               | 250.1               | 6,565.5                | 6,446.0                 | 119.53                 | 54.927            |                             |         |
| 11,800.0  | 5,811.1               | 5,358.4               | 5,347.3               | 116.0            | 13.1          | -71.09                | 381.2                               | 250.0               | 6,663.1                | 6,542.0                 | 121.16                 | 54.995            |                             |         |
| 11,900.0  | 5,811.1               | 5,351.6               | 5,340.6               | 117.8            | 13.1          | -70.83                | 380.7                               | 249.8               | 6,760.8                | 6,638.0                 | 122.78                 | 55.063            |                             |         |
| 12,000.0  | 5,811.1               | 5,344.9               | 5,333.9               | 119.7            | 13.1          | -70.58                | 380.3                               | 249.7               | 6,858.6                | 6,734.2                 | 124.40                 | 55.133            |                             |         |
| 12,100.0  | 5,811.1               | 5,338.2               | 5,327.2               | 121.6            | 13.1          | -70.32                | 379.8                               | 249.6               | 6,956.4                | 6,830.4                 | 126.01                 | 55.203            |                             |         |
| 12,200.0  | 5,811.1               | 5,331.5               | 5,320.5               | 123.4            | 13.1          | -70.07                | 379.4                               | 249.5               | 7,054.2                | 6,926.6                 | 127.62                 | 55.275            |                             |         |
| 12,300.0  | 5,811.1               | 5,324.7               | 5,313.8               | 125.3            | 13.1          | -69.82                | 378.9                               | 249.3               | 7,152.2                | 7,022.9                 | 129.22                 | 55.347            |                             |         |
| 12,400.0  | 5,811.1               | 5,318.0               | 5,307.1               | 127.2            | 13.0          | -69.57                | 378.4                               | 249.2               | 7,250.1                | 7,119.3                 | 130.82                 | 55.420            |                             |         |
| 12,500.0  | 5,811.0               | 5,311.3               | 5,300.4               | 129.0            | 13.0          | -69.32                | 378.0                               | 249.1               | 7,348.2                | 7,215.7                 | 132.41                 | 55.495            |                             |         |
| 12,600.0  | 5,811.0               | 5,304.6               | 5,293.7               | 130.9            | 13.0          | -69.07                | 377.5                               | 248.9               | 7,446.2                | 7,312.2                 | 134.00                 | 55.570            |                             |         |
| 12,700.0  | 5,811.0               | 5,297.9               | 5,287.0               | 132.8            | 13.0          | -68.82                | 377.1                               | 248.8               | 7,544.3                | 7,408.8                 | 135.58                 | 55.646            |                             |         |
| 12,800.0  | 5,811.0               | 5,291.1               | 5,280.3               | 134.6            | 13.0          | -68.57                | 376.6                               | 248.7               | 7,642.5                | 7,505.3                 | 137.15                 | 55.722            |                             |         |
| 12,900.0  | 5,811.0               | 5,284.4               | 5,273.6               | 136.5            | 12.9          | -68.32                | 376.2                               | 248.6               | 7,740.7                | 7,602.0                 | 138.72                 | 55.800            |                             |         |
| 13,000.0  | 5,811.0               | 5,277.7               | 5,266.9               | 138.4            | 12.9          | -68.08                | 375.7                               | 248.4               | 7,838.9                | 7,698.6                 | 140.28                 | 55.879            |                             |         |
| 13,100.0  | 5,811.0               | 5,271.0               | 5,260.2               | 140.3            | 12.9          | -67.83                | 375.3                               | 248.3               | 7,937.2                | 7,795.3                 | 141.84                 | 55.958            |                             |         |
| 13,200.0  | 5,811.0               | 5,264.2               | 5,253.4               | 142.1            | 12.9          | -67.58                | 374.8                               | 248.2               | 8,035.5                | 7,892.1                 | 143.39                 | 56.038            |                             |         |
| 13,300.0  | 5,811.0               | 5,257.5               | 5,246.7               | 144.0            | 12.9          | -67.34                | 374.4                               | 248.1               | 8,133.8                | 7,988.9                 | 144.94                 | 56.119            |                             |         |
| 13,400.0  | 5,811.0               | 5,250.8               | 5,240.0               | 145.9            | 12.9          | -67.10                | 373.9                               | 247.9               | 8,232.2                | 8,085.7                 | 146.48                 | 56.201            |                             |         |
| 13,500.0  | 5,811.0               | 5,244.1               | 5,233.3               | 147.8            | 12.8          | -66.85                | 373.5                               | 247.8               | 8,330.6                | 8,182.6                 | 148.01                 | 56.284            |                             |         |
| 13,600.0  | 5,811.0               | 5,237.3               | 5,226.6               | 149.7            | 12.8          | -66.61                | 373.0                               | 247.7               | 8,429.1                | 8,279.5                 | 149.54                 | 56.368            |                             |         |
| 13,700.0  | 5,811.0               | 5,230.6               | 5,219.9               | 151.6            | 12.8          | -66.37                | 372.6                               | 247.6               | 8,527.6                | 8,376.5                 | 151.06                 | 56.452            |                             |         |
| 13,800.0  | 5,811.0               | 5,223.9               | 5,213.2               | 153.4            | 12.8          | -66.13                | 372.1                               | 247.4               | 8,626.1                | 8,473.5                 | 152.57                 | 56.537            |                             |         |
| 13,900.0  | 5,811.0               | 5,217.2               | 5,206.5               | 155.3            | 12.8          | -65.89                | 371.7                               | 247.3               | 8,724.6                | 8,570.5                 | 154.08                 | 56.623            |                             |         |
| 13,919.8  | 5,811.0               | 5,215.8               | 5,205.2               | 155.7            | 12.8          | -65.85                | 371.6                               | 247.3               | 8,744.1                | 8,589.8                 | 154.38                 | 56.640            |                             |         |

# Cathedral Energy Services

## Anticollision Report

|                           |                               |                                     |  |
|---------------------------|-------------------------------|-------------------------------------|--|
| <b>Company:</b>           | Whiting Petroleum Corporation | <b>Local Co-ordinate Reference:</b> | Well Razor Federal #12F-1301A          |
| <b>Project:</b>           | Weld County, CO               | <b>TVD Reference:</b>               | WELL @ 4953.6usft (Original Well Elev) |
| <b>Reference Site:</b>    | S12-T10N-R58W                 | <b>MD Reference:</b>                | WELL @ 4953.6usft (Original Well Elev) |
| <b>Site Error:</b>        | 0.0usft                       | <b>North Reference:</b>             | True                                   |
| <b>Reference Well:</b>    | Razor Federal #12F-1301A      | <b>Survey Calculation Method:</b>   | Minimum Curvature                      |
| <b>Well Error:</b>        | 0.0usft                       | <b>Output errors are at</b>         | 2.00 sigma                             |
| <b>Reference Wellbore</b> | HZ                            | <b>Database:</b>                    | USA EDM 5000 Multi Users DB            |
| <b>Reference Design:</b>  | Plan #3                       | <b>Offset TVD Reference:</b>        | Offset Datum                           |

| Offset Design S12-T10N-R58W - Razor #12F-0107A - 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 |                             |  |
| 0.0   | 0.0                   | 0.0                   | 0.0                   | 0.0              | 0.0           | 69.23                 | 74.9                                | 197.5        | 211.2                  |                         |                        |                   |                             |  |
| 100.0   | 100.0                 | 100.0                 | 100.0                 | 0.1              | 0.1           | 69.23                 | 74.9                                | 197.5        | 211.2                  | 211.0                   | 0.19                   | 1,129.247         |                             |  |
| 200.0   | 200.0                 | 200.0                 | 200.0                 | 0.3              | 0.3           | 69.23                 | 74.9                                | 197.5        | 211.2                  | 210.6                   | 0.64                   | 331.798           |                             |  |
| 300.0   | 300.0                 | 300.0                 | 300.0                 | 0.5              | 0.5           | 69.23                 | 74.9                                | 197.5        | 211.2                  | 210.1                   | 1.09                   | 194.469           |                             |  |
| 400.0   | 400.0                 | 400.0                 | 400.0                 | 0.8              | 0.8           | 69.23                 | 74.9                                | 197.5        | 211.2                  | 209.7                   | 1.54                   | 137.541           |                             |  |
| 500.0   | 500.0                 | 500.0                 | 500.0                 | 1.0              | 1.0           | 69.23                 | 74.9                                | 197.5        | 211.2                  | 209.2                   | 1.99                   | 106.396           |                             |  |
| 600.0   | 600.0                 | 600.0                 | 600.0                 | 1.2              | 1.2           | 69.23                 | 74.9                                | 197.5        | 211.2                  | 208.8                   | 2.43                   | 86.751            |                             |  |
| 700.0   | 700.0                 | 700.0                 | 700.0                 | 1.4              | 1.4           | 69.23                 | 74.9                                | 197.5        | 211.2                  | 208.3                   | 2.88                   | 73.230            |                             |  |
| 800.0   | 800.0                 | 800.0                 | 800.0                 | 1.7              | 1.7           | 69.23                 | 74.9                                | 197.5        | 211.2                  | 207.9                   | 3.33                   | 63.356            |                             |  |
| 900.0   | 900.0                 | 900.0                 | 900.0                 | 1.9              | 1.9           | 69.23                 | 74.9                                | 197.5        | 211.2                  | 207.4                   | 3.78                   | 55.828            |                             |  |
| 1,000.0   | 1,000.0               | 1,000.0               | 1,000.0               | 2.1              | 2.1           | 69.23                 | 74.9                                | 197.5        | 211.2                  | 207.0                   | 4.23                   | 49.899            | CC, ES                      |  |
| 1,100.0   | 1,100.0               | 1,100.0               | 1,100.0               | 2.3              | 2.3           | -155.01               | 74.9                                | 197.5        | 212.8                  | 208.1                   | 4.66                   | 45.693            |                             |  |
| 1,200.0   | 1,199.8               | 1,199.8               | 1,199.8               | 2.5              | 2.6           | -155.56               | 74.9                                | 197.5        | 217.5                  | 212.5                   | 5.06                   | 42.994            |                             |  |
| 1,300.0   | 1,299.6               | 1,294.1               | 1,294.1               | 2.7              | 2.8           | -156.52               | 76.3                                | 198.2        | 225.1                  | 219.7                   | 5.46                   | 41.231            |                             |  |
| 1,400.0   | 1,399.4               | 1,387.8               | 1,387.7               | 2.9              | 3.0           | -157.91               | 80.4                                | 200.1        | 235.3                  | 229.4                   | 5.87                   | 40.100            |                             |  |
| 1,500.0   | 1,499.1               | 1,486.1               | 1,485.7               | 3.1              | 3.2           | -159.55               | 86.6                                | 203.1        | 247.1                  | 240.8                   | 6.29                   | 39.293            |                             |  |
| 1,600.0   | 1,598.9               | 1,585.1               | 1,584.5               | 3.4              | 3.4           | -161.06               | 92.9                                | 206.0        | 259.1                  | 252.4                   | 6.71                   | 38.590            |                             |  |
| 1,700.0   | 1,698.6               | 1,684.2               | 1,683.3               | 3.6              | 3.7           | -162.43               | 99.1                                | 209.0        | 271.3                  | 264.2                   | 7.15                   | 37.971            |                             |  |
| 1,800.0   | 1,798.4               | 1,783.2               | 1,782.1               | 3.8              | 3.9           | -163.69               | 105.3                               | 212.0        | 283.6                  | 276.1                   | 7.58                   | 37.423            |                             |  |
| 1,900.0   | 1,898.1               | 1,882.3               | 1,881.0               | 4.1              | 4.1           | -164.84               | 111.6                               | 214.9        | 296.1                  | 288.1                   | 8.02                   | 36.937            |                             |  |
| 2,000.0   | 1,997.9               | 1,981.3               | 1,979.8               | 4.3              | 4.4           | -165.89               | 117.8                               | 217.9        | 308.7                  | 300.2                   | 8.46                   | 36.502            |                             |  |
| 2,100.0   | 2,097.6               | 2,080.4               | 2,078.6               | 4.5              | 4.6           | -166.87               | 124.1                               | 220.8        | 321.3                  | 312.4                   | 8.90                   | 36.115            |                             |  |
| 2,200.0   | 2,197.4               | 2,179.4               | 2,177.4               | 4.8              | 4.9           | -167.77               | 130.3                               | 223.8        | 334.1                  | 324.7                   | 9.34                   | 35.767            |                             |  |
| 2,300.0   | 2,297.2               | 2,278.5               | 2,276.2               | 5.0              | 5.1           | -168.60               | 136.5                               | 226.8        | 346.9                  | 337.1                   | 9.78                   | 35.454            |                             |  |
| 2,400.0   | 2,396.9               | 2,377.5               | 2,375.0               | 5.3              | 5.3           | -169.37               | 142.8                               | 229.7        | 359.8                  | 349.6                   | 10.23                  | 35.171            |                             |  |
| 2,500.0   | 2,496.7               | 2,476.6               | 2,473.8               | 5.5              | 5.6           | -170.09               | 149.0                               | 232.7        | 372.8                  | 362.1                   | 10.68                  | 34.913            |                             |  |
| 2,600.0   | 2,596.4               | 2,575.7               | 2,572.6               | 5.8              | 5.8           | -170.77               | 155.3                               | 235.7        | 385.8                  | 374.6                   | 11.12                  | 34.679            |                             |  |
| 2,700.0   | 2,696.2               | 2,674.7               | 2,671.4               | 6.0              | 6.1           | -171.39               | 161.5                               | 238.6        | 398.8                  | 387.2                   | 11.57                  | 34.465            |                             |  |
| 2,800.0   | 2,795.9               | 2,773.8               | 2,770.3               | 6.3              | 6.3           | -171.98               | 167.8                               | 241.6        | 411.9                  | 399.9                   | 12.02                  | 34.269            |                             |  |
| 2,900.0   | 2,895.7               | 2,872.8               | 2,869.1               | 6.5              | 6.6           | -172.54               | 174.0                               | 244.6        | 425.0                  | 412.6                   | 12.47                  | 34.089            |                             |  |
| 3,000.0   | 2,995.5               | 2,971.9               | 2,967.9               | 6.8              | 6.8           | -173.05               | 180.2                               | 247.5        | 438.2                  | 425.3                   | 12.92                  | 33.922            |                             |  |
| 3,100.0   | 3,095.2               | 3,070.9               | 3,066.7               | 7.1              | 7.1           | -173.54               | 186.5                               | 250.5        | 451.4                  | 438.1                   | 13.37                  | 33.769            |                             |  |
| 3,200.0   | 3,195.0               | 3,170.0               | 3,165.5               | 7.3              | 7.3           | -174.00               | 192.7                               | 253.4        | 464.7                  | 450.9                   | 13.82                  | 33.626            |                             |  |
| 3,300.0   | 3,294.7               | 3,269.0               | 3,264.3               | 7.6              | 7.6           | -174.44               | 199.0                               | 256.4        | 477.9                  | 463.7                   | 14.27                  | 33.494            |                             |  |
| 3,400.0   | 3,394.5               | 3,368.1               | 3,363.1               | 7.8              | 7.8           | -174.85               | 205.2                               | 259.4        | 491.2                  | 476.5                   | 14.72                  | 33.370            |                             |  |
| 3,500.0   | 3,494.2               | 3,467.1               | 3,461.9               | 8.1              | 8.1           | -175.24               | 211.4                               | 262.3        | 504.5                  | 489.4                   | 15.17                  | 33.255            |                             |  |
| 3,600.0   | 3,594.0               | 3,566.2               | 3,560.7               | 8.3              | 8.3           | -175.61               | 217.7                               | 265.3        | 517.9                  | 502.3                   | 15.62                  | 33.148            |                             |  |
| 3,700.0   | 3,693.7               | 3,665.2               | 3,659.6               | 8.6              | 8.6           | -175.96               | 223.9                               | 268.3        | 531.2                  | 515.2                   | 16.08                  | 33.047            |                             |  |
| 3,800.0   | 3,793.5               | 3,764.3               | 3,758.4               | 8.9              | 8.8           | -176.30               | 230.2                               | 271.2        | 544.6                  | 528.1                   | 16.53                  | 32.952            |                             |  |
| 3,900.0   | 3,893.3               | 3,863.3               | 3,857.2               | 9.1              | 9.1           | -176.62               | 236.4                               | 274.2        | 558.0                  | 541.0                   | 16.98                  | 32.863            |                             |  |
| 4,000.0   | 3,993.0               | 3,962.4               | 3,956.0               | 9.4              | 9.3           | -176.92               | 242.7                               | 277.2        | 571.4                  | 554.0                   | 17.43                  | 32.779            |                             |  |
| 4,100.0   | 4,092.8               | 4,061.4               | 4,054.8               | 9.6              | 9.6           | -177.21               | 248.9                               | 280.1        | 584.8                  | 567.0                   | 17.89                  | 32.700            |                             |  |
| 4,200.0   | 4,192.5               | 4,160.5               | 4,153.6               | 9.9              | 9.8           | -177.49               | 255.1                               | 283.1        | 598.3                  | 579.9                   | 18.34                  | 32.625            |                             |  |
| 4,300.0   | 4,292.3               | 4,259.5               | 4,252.4               | 10.2             | 10.1          | -177.75               | 261.4                               | 286.0        | 611.7                  | 592.9                   | 18.79                  | 32.554            |                             |  |
| 4,400.0   | 4,392.0               | 4,358.6               | 4,351.2               | 10.4             | 10.3          | -178.00               | 267.6                               | 289.0        | 625.2                  | 606.0                   | 19.24                  | 32.487            |                             |  |
| 4,500.0   | 4,491.8               | 4,457.6               | 4,450.0               | 10.7             | 10.6          | -178.25               | 273.9                               | 292.0        | 638.7                  | 619.0                   | 19.70                  | 32.424            |                             |  |
| 4,600.0   | 4,591.6               | 4,556.7               | 4,548.9               | 11.0             | 10.8          | -178.48               | 280.1                               | 294.9        | 652.2                  | 632.0                   | 20.15                  | 32.363            |                             |  |
| 4,700.0   | 4,691.3               | 4,655.8               | 4,647.7               | 11.2             | 11.1          | -178.70               | 286.3                               | 297.9        | 665.7                  | 645.1                   | 20.61                  | 32.306            |                             |  |
| 4,800.0   | 4,791.1               | 4,754.8               | 4,746.5               | 11.5             | 11.3          | -178.92               | 292.6                               | 300.9        | 679.2                  | 658.1                   | 21.06                  | 32.251            |                             |  |
| 4,900.0   | 4,890.8               | 4,853.9               | 4,845.3               | 11.7             | 11.6          | -179.12               | 298.8                               | 303.8        | 692.7                  | 671.2                   | 21.51                  | 32.198            |                             |  |
| 5,000.0   | 4,990.6               | 4,952.9               | 4,944.1               | 12.0             | 11.8          | -179.32               | 305.1                               | 306.8        | 706.2                  | 684.2                   | 21.97                  | 32.149            |                             |  |
| 5,100.0   | 5,090.3               | 5,052.0               | 5,042.9               | 12.3             | 12.1          | -179.51               | 311.3                               | 309.8        | 719.7                  | 697.3                   | 22.42                  | 32.101            |                             |  |

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

# Cathedral Energy Services

## Anticollision Report

|                           |                               |                                     |  |
|---------------------------|-------------------------------|-------------------------------------|--|
| <b>Company:</b>           | Whiting Petroleum Corporation | <b>Local Co-ordinate Reference:</b> | Well Razor Federal #12F-1301A          |
| <b>Project:</b>           | Weld County, CO               | <b>TVD Reference:</b>               | WELL @ 4953.6usft (Original Well Elev) |
| <b>Reference Site:</b>    | S12-T10N-R58W                 | <b>MD Reference:</b>                | WELL @ 4953.6usft (Original Well Elev) |
| <b>Site Error:</b>        | 0.0usft                       | <b>North Reference:</b>             | True                                   |
| <b>Reference Well:</b>    | Razor Federal #12F-1301A      | <b>Survey Calculation Method:</b>   | Minimum Curvature                      |
| <b>Well Error:</b>        | 0.0usft                       | <b>Output errors are at</b>         | 2.00 sigma                             |
| <b>Reference Wellbore</b> | HZ                            | <b>Database:</b>                    | USA EDM 5000 Multi Users DB            |
| <b>Reference Design:</b>  | Plan #3                       | <b>Offset TVD Reference:</b>        | Offset Datum                           |

| Offset Design S12-T10N-R58W - Razor #12F-0107A - HZ - Plan #2 |                       |                       |                       |                  |               |                       |                                     |              |                        |                         |                        | Offset Site Error: | 0.0 usft |
|---|-----------------------|-----------------------|-----------------------|------------------|---------------|-----------------------|-------------------------------------|--------------|------------------------|-------------------------|------------------------|--------------------|----------|
| Survey Program: O-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   | 5,190.1               | 5,151.0               | 5,141.7               | 12.5             | 12.3          | -179.69               | 317.6                               | 312.7        | 733.3                  | 710.4                   | 22.88                  | 32.055             |          |
| 5,300.0   | 5,289.9               | 5,250.1               | 5,240.5               | 12.8             | 12.6          | -179.87               | 323.8                               | 315.7        | 746.8                  | 723.5                   | 23.33                  | 32.012 SF          |          |
| 5,400.0   | 5,389.2               | 5,341.2               | 5,331.4               | 13.1             | 12.8          | 179.97                | 329.6                               | 318.4        | 764.2                  | 740.8                   | 23.44                  | 32.607             |          |
| 5,500.0   | 5,485.0               | 5,379.1               | 5,369.1               | 13.5             | 12.9          | 179.85                | 333.5                               | 320.3        | 802.8                  | 780.2                   | 22.60                  | 35.530             |          |
| 5,600.0   | 5,573.6               | 5,400.0               | 5,389.7               | 14.2             | 13.0          | 179.73                | 336.8                               | 321.8        | 863.6                  | 842.7                   | 20.97                  | 41.192             |          |
| 5,700.0   | 5,651.8               | 5,434.1               | 5,422.9               | 15.0             | 13.1          | 179.38                | 343.7                               | 325.1        | 941.4                  | 922.7                   | 18.70                  | 50.352             |          |
| 5,800.0   | 5,716.7               | 5,450.0               | 5,438.2               | 16.1             | 13.2          | 178.87                | 347.5                               | 327.0        | 1,031.3                | 1,015.5                 | 15.86                  | 65.038             |          |
| 5,900.0   | 5,766.0               | 5,450.0               | 5,438.2               | 17.3             | 13.2          | 177.27                | 347.5                               | 327.0        | 1,128.5                | 1,115.8                 | 12.75                  | 88.508             |          |
| 6,000.0   | 5,797.8               | 5,450.0               | 5,438.2               | 18.8             | 13.2          | 4.54                  | 347.5                               | 327.0        | 1,228.3                | 1,218.2                 | 10.17                  | 120.764            |          |
| 6,100.0   | 5,811.0               | 5,450.0               | 5,438.2               | 20.4             | 13.2          | 1.18                  | 347.5                               | 327.0        | 1,326.9                | 1,318.8                 | 8.09                   | 164.104            |          |
| 6,200.0   | 5,811.3               | 5,450.0               | 5,438.2               | 21.9             | 13.2          | -7.62                 | 347.5                               | 327.0        | 1,423.2                | 1,413.8                 | 9.41                   | 151.304            |          |
| 6,300.0   | 5,811.3               | 5,450.0               | 5,438.2               | 23.4             | 13.2          | -18.43                | 347.5                               | 327.0        | 1,519.8                | 1,505.5                 | 14.28                  | 106.417            |          |
| 6,400.0   | 5,811.3               | 5,450.0               | 5,438.2               | 25.0             | 13.2          | -28.62                | 347.5                               | 327.0        | 1,616.3                | 1,595.9                 | 20.39                  | 79.259             |          |
| 6,500.0   | 5,811.3               | 5,426.6               | 5,415.6               | 26.6             | 13.1          | -36.08                | 342.0                               | 324.3        | 1,712.0                | 1,686.7                 | 25.28                  | 67.732             |          |
| 6,600.0   | 5,811.3               | 5,421.0               | 5,410.2               | 28.2             | 13.1          | -43.19                | 340.8                               | 323.7        | 1,807.5                | 1,777.5                 | 30.01                  | 60.227             |          |
| 6,700.0   | 5,811.3               | 5,400.0               | 5,389.7               | 29.8             | 13.0          | -48.03                | 336.8                               | 321.8        | 1,902.8                | 1,869.3                 | 33.44                  | 56.906             |          |
| 6,800.0   | 5,811.3               | 5,400.0               | 5,389.7               | 31.4             | 13.0          | -53.25                | 336.8                               | 321.8        | 1,996.7                | 1,959.8                 | 36.97                  | 54.008             |          |
| 6,900.0   | 5,811.3               | 5,400.0               | 5,389.7               | 33.0             | 13.0          | -57.60                | 336.8                               | 321.8        | 2,089.8                | 2,049.9                 | 39.91                  | 52.363             |          |
| 7,000.0   | 5,811.3               | 5,400.0               | 5,389.7               | 34.6             | 13.0          | -61.21                | 336.8                               | 321.8        | 2,182.0                | 2,139.6                 | 42.35                  | 51.522             |          |
| 7,100.0   | 5,811.3               | 5,400.0               | 5,389.7               | 36.2             | 13.0          | -64.23                | 336.8                               | 321.8        | 2,273.0                | 2,228.6                 | 44.37                  | 51.225             |          |
| 7,200.0   | 5,811.3               | 5,400.0               | 5,389.7               | 37.7             | 13.0          | -66.77                | 336.8                               | 321.8        | 2,362.8                | 2,316.8                 | 46.04                  | 51.318             |          |
| 7,300.0   | 5,811.3               | 5,400.0               | 5,389.7               | 39.2             | 13.0          | -68.92                | 336.8                               | 321.8        | 2,451.3                | 2,403.9                 | 47.41                  | 51.704             |          |
| 7,400.0   | 5,811.3               | 5,400.0               | 5,389.7               | 40.7             | 13.0          | -70.75                | 336.8                               | 321.8        | 2,538.4                | 2,489.9                 | 48.51                  | 52.323             |          |
| 7,500.0   | 5,811.3               | 5,400.0               | 5,389.7               | 42.1             | 13.0          | -72.33                | 336.8                               | 321.8        | 2,624.0                | 2,574.6                 | 49.39                  | 53.133             |          |
| 7,600.0   | 5,811.3               | 5,400.0               | 5,389.7               | 43.6             | 13.0          | -73.53                | 336.8                               | 321.8        | 2,708.1                | 2,657.9                 | 50.16                  | 53.989             |          |
| 7,700.0   | 5,811.3               | 5,400.0               | 5,389.7               | 45.0             | 13.0          | -73.53                | 336.8                               | 321.8        | 2,792.2                | 2,740.6                 | 51.63                  | 54.080             |          |
| 7,800.0   | 5,811.3               | 5,400.0               | 5,389.7               | 46.4             | 13.0          | -73.53                | 336.8                               | 321.8        | 2,877.3                | 2,824.2                 | 53.13                  | 54.158             |          |
| 7,900.0   | 5,811.2               | 5,378.0               | 5,368.0               | 47.9             | 12.9          | -72.71                | 333.4                               | 320.2        | 2,962.8                | 2,908.5                 | 54.35                  | 54.509             |          |
| 8,000.0   | 5,811.2               | 5,376.0               | 5,366.0               | 49.4             | 12.9          | -72.64                | 333.1                               | 320.1        | 3,049.6                | 2,993.8                 | 55.86                  | 54.591             |          |
| 8,100.0   | 5,811.2               | 5,374.2               | 5,364.2               | 50.9             | 12.9          | -72.57                | 332.9                               | 320.0        | 3,137.2                | 3,079.8                 | 57.39                  | 54.663             |          |
| 8,200.0   | 5,811.2               | 5,372.4               | 5,362.4               | 52.5             | 12.9          | -72.50                | 332.6                               | 319.9        | 3,225.5                | 3,166.6                 | 58.94                  | 54.729             |          |
| 8,300.0   | 5,811.2               | 5,350.0               | 5,340.2               | 54.0             | 12.9          | -71.68                | 330.3                               | 318.8        | 3,314.9                | 3,254.8                 | 60.19                  | 55.077             |          |
| 8,400.0   | 5,811.2               | 5,350.0               | 5,340.2               | 55.6             | 12.9          | -71.68                | 330.3                               | 318.8        | 3,404.4                | 3,342.7                 | 61.78                  | 55.107             |          |
| 8,500.0   | 5,811.2               | 5,350.0               | 5,340.2               | 57.2             | 12.9          | -71.68                | 330.3                               | 318.8        | 3,494.5                | 3,431.1                 | 63.38                  | 55.134             |          |
| 8,600.0   | 5,811.2               | 5,350.0               | 5,340.2               | 58.9             | 12.9          | -71.68                | 330.3                               | 318.8        | 3,585.1                | 3,520.1                 | 65.00                  | 55.158             |          |
| 8,700.0   | 5,811.2               | 5,350.0               | 5,340.2               | 60.5             | 12.9          | -71.68                | 330.3                               | 318.8        | 3,676.2                | 3,609.5                 | 66.62                  | 55.181             |          |
| 8,800.0   | 5,811.2               | 5,350.0               | 5,340.2               | 62.2             | 12.9          | -71.68                | 330.3                               | 318.8        | 3,767.7                | 3,699.4                 | 68.25                  | 55.202             |          |
| 8,900.0   | 5,811.2               | 5,350.0               | 5,340.2               | 63.9             | 12.9          | -71.68                | 330.3                               | 318.8        | 3,859.6                | 3,789.7                 | 69.89                  | 55.222             |          |
| 9,000.0   | 5,811.2               | 5,350.0               | 5,340.2               | 65.6             | 12.9          | -71.68                | 330.3                               | 318.8        | 3,952.0                | 3,880.4                 | 71.54                  | 55.240             |          |
| 9,100.0   | 5,811.2               | 5,350.0               | 5,340.2               | 67.3             | 12.9          | -71.68                | 330.3                               | 318.8        | 4,044.7                | 3,971.5                 | 73.20                  | 55.258             |          |
| 9,200.0   | 5,811.2               | 5,350.0               | 5,340.2               | 69.0             | 12.9          | -71.68                | 330.3                               | 318.8        | 4,137.7                | 4,062.9                 | 74.86                  | 55.275             |          |
| 9,300.0   | 5,811.2               | 5,350.0               | 5,340.2               | 70.7             | 12.9          | -71.68                | 330.3                               | 318.8        | 4,231.1                | 4,154.5                 | 76.57                  | 55.258             |          |
| 9,400.0   | 5,811.2               | 5,350.0               | 5,340.2               | 72.5             | 12.9          | -71.68                | 330.3                               | 318.8        | 4,324.7                | 4,246.4                 | 78.32                  | 55.220             |          |
| 9,500.0   | 5,811.2               | 5,350.0               | 5,340.2               | 74.2             | 12.9          | -71.68                | 330.3                               | 318.8        | 4,418.7                | 4,338.6                 | 80.07                  | 55.184             |          |
| 9,600.0   | 5,811.2               | 5,350.0               | 5,340.2               | 76.0             | 12.9          | -71.68                | 330.3                               | 318.8        | 4,512.9                | 4,431.0                 | 81.83                  | 55.150             |          |
| 9,700.0   | 5,811.2               | 5,350.0               | 5,340.2               | 77.7             | 12.9          | -71.68                | 330.3                               | 318.8        | 4,607.3                | 4,523.7                 | 83.59                  | 55.117             |          |
| 9,800.0   | 5,811.2               | 5,350.0               | 5,340.2               | 79.5             | 12.9          | -71.68                | 330.3                               | 318.8        | 4,702.0                | 4,616.6                 | 85.36                  | 55.086             |          |
| 9,900.0   | 5,811.2               | 5,350.0               | 5,340.2               | 81.3             | 12.9          | -71.68                | 330.3                               | 318.8        | 4,796.9                | 4,709.7                 | 87.13                  | 55.056             |          |
| 10,000.0  | 5,811.2               | 5,350.0               | 5,340.2               | 83.1             | 12.9          | -71.68                | 330.3                               | 318.8        | 4,892.0                | 4,803.1                 | 88.90                  | 55.028             |          |
| 10,100.0  | 5,811.2               | 5,350.0               | 5,340.2               | 84.9             | 12.9          | -71.68                | 330.3                               | 318.8        | 4,987.2                | 4,896.6                 | 90.67                  | 55.002             |          |
| 10,200.0  | 5,811.1               | 5,350.0               | 5,340.2               | 86.7             | 12.9          | -71.68                | 330.3                               | 318.8        | 5,082.7                | 4,990.3                 | 92.45                  | 54.976             |          |
| 10,300.0  | 5,811.1               | 5,350.0               | 5,340.2               | 88.5             | 12.9          | -71.68                | 330.3                               | 318.8        | 5,178.3                | 5,084.1                 | 94.23                  | 54.952             |          |

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



# Cathedral Energy Services

## Anticollision Report

|                           |                               |                                     |  |
|---------------------------|-------------------------------|-------------------------------------|--|
| <b>Company:</b>           | Whiting Petroleum Corporation | <b>Local Co-ordinate Reference:</b> | Well Razor Federal #12F-1301A          |
| <b>Project:</b>           | Weld County, CO               | <b>TVD Reference:</b>               | WELL @ 4953.6usft (Original Well Elev) |
| <b>Reference Site:</b>    | S12-T10N-R58W                 | <b>MD Reference:</b>                | WELL @ 4953.6usft (Original Well Elev) |
| <b>Site Error:</b>        | 0.0usft                       | <b>North Reference:</b>             | True                                   |
| <b>Reference Well:</b>    | Razor Federal #12F-1301A      | <b>Survey Calculation Method:</b>   | Minimum Curvature                      |
| <b>Well Error:</b>        | 0.0usft                       | <b>Output errors are at</b>         | 2.00 sigma                             |
| <b>Reference Wellbore</b> | HZ                            | <b>Database:</b>                    | USA EDM 5000 Multi Users DB            |
| <b>Reference Design:</b>  | Plan #3                       | <b>Offset TVD Reference:</b>        | Offset Datum                           |

| Offset Design S12-T10N-R58W - Razor #12F-0107A - 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 |
| 10,400.0  | 5,811.1               | 5,350.0               | 5,340.2               | 90.3             | 12.9          | -71.68                | 330.3                               | 318.8        | 5,274.1                | 5,178.1                 | 96.02                  | 54.929   |                   |
| 10,500.0  | 5,811.1               | 5,350.0               | 5,340.2               | 92.1             | 12.9          | -71.68                | 330.3                               | 318.8        | 5,370.1                | 5,272.3                 | 97.80                  | 54.907   |                   |
| 10,600.0  | 5,811.1               | 5,350.0               | 5,340.2               | 93.9             | 12.9          | -71.68                | 330.3                               | 318.8        | 5,466.2                | 5,366.6                 | 99.59                  | 54.886   |                   |
| 10,700.0  | 5,811.1               | 5,350.0               | 5,340.2               | 95.7             | 12.9          | -71.68                | 330.3                               | 318.8        | 5,562.4                | 5,461.0                 | 101.38                 | 54.866   |                   |
| 10,800.0  | 5,811.1               | 5,350.0               | 5,340.2               | 97.5             | 12.9          | -71.68                | 330.3                               | 318.8        | 5,658.8                | 5,555.6                 | 103.17                 | 54.847   |                   |
| 10,900.0  | 5,811.1               | 5,350.0               | 5,340.2               | 99.4             | 12.9          | -71.68                | 330.3                               | 318.8        | 5,755.3                | 5,650.3                 | 104.97                 | 54.829   |                   |
| 11,000.0  | 5,811.1               | 5,343.1               | 5,333.3               | 101.2            | 12.8          | -71.43                | 329.7                               | 318.5        | 5,851.8                | 5,745.2                 | 106.61                 | 54.890   |                   |
| 11,100.0  | 5,811.1               | 5,342.4               | 5,332.7               | 103.0            | 12.8          | -71.41                | 329.7                               | 318.5        | 5,948.5                | 5,840.1                 | 108.39                 | 54.880   |                   |
| 11,200.0  | 5,811.1               | 5,336.0               | 5,326.2               | 104.9            | 12.8          | -71.17                | 329.2                               | 318.3        | 6,045.4                | 5,935.3                 | 110.04                 | 54.938   |                   |
| 11,300.0  | 5,811.1               | 5,336.0               | 5,326.2               | 106.7            | 12.8          | -71.17                | 329.2                               | 318.3        | 6,142.3                | 6,030.5                 | 111.84                 | 54.922   |                   |
| 11,400.0  | 5,811.1               | 5,336.0               | 5,326.2               | 108.6            | 12.8          | -71.17                | 329.2                               | 318.3        | 6,239.3                | 6,125.7                 | 113.63                 | 54.907   |                   |
| 11,500.0  | 5,811.1               | 5,336.0               | 5,326.2               | 110.4            | 12.8          | -71.17                | 329.2                               | 318.3        | 6,336.4                | 6,221.0                 | 115.43                 | 54.893   |                   |
| 11,600.0  | 5,811.1               | 5,336.0               | 5,326.2               | 112.3            | 12.8          | -71.17                | 329.2                               | 318.3        | 6,433.6                | 6,316.4                 | 117.23                 | 54.879   |                   |
| 11,700.0  | 5,811.1               | 5,336.0               | 5,326.2               | 114.1            | 12.8          | -71.17                | 329.2                               | 318.3        | 6,530.9                | 6,411.8                 | 119.03                 | 54.866   |                   |
| 11,800.0  | 5,811.1               | 5,336.0               | 5,326.2               | 116.0            | 12.8          | -71.17                | 329.2                               | 318.3        | 6,628.2                | 6,507.4                 | 120.84                 | 54.853   |                   |
| 11,900.0  | 5,811.1               | 5,336.0               | 5,326.2               | 117.8            | 12.8          | -71.17                | 329.2                               | 318.3        | 6,725.7                | 6,603.0                 | 122.64                 | 54.841   |                   |
| 12,000.0  | 5,811.1               | 5,336.0               | 5,326.2               | 119.7            | 12.8          | -71.17                | 329.2                               | 318.3        | 6,823.2                | 6,698.7                 | 124.44                 | 54.830   |                   |
| 12,100.0  | 5,811.1               | 5,336.0               | 5,326.2               | 121.6            | 12.8          | -71.17                | 329.2                               | 318.3        | 6,920.7                | 6,794.5                 | 126.25                 | 54.818   |                   |
| 12,200.0  | 5,811.1               | 5,336.0               | 5,326.2               | 123.4            | 12.8          | -71.17                | 329.2                               | 318.3        | 7,018.4                | 6,890.3                 | 128.05                 | 54.808   |                   |
| 12,300.0  | 5,811.1               | 5,336.0               | 5,326.2               | 125.3            | 12.8          | -71.17                | 329.2                               | 318.3        | 7,116.1                | 6,986.2                 | 129.86                 | 54.798   |                   |
| 12,400.0  | 5,811.1               | 5,332.5               | 5,322.7               | 127.2            | 12.8          | -71.04                | 329.0                               | 318.1        | 7,213.9                | 7,082.3                 | 131.57                 | 54.827   |                   |
| 12,500.0  | 5,811.0               | 5,326.2               | 5,316.4               | 129.0            | 12.8          | -70.81                | 328.6                               | 318.0        | 7,311.7                | 7,178.5                 | 133.21                 | 54.889   |                   |
| 12,600.0  | 5,811.0               | 5,319.9               | 5,310.2               | 130.9            | 12.8          | -70.59                | 328.2                               | 317.8        | 7,409.6                | 7,274.7                 | 134.84                 | 54.951   |                   |
| 12,700.0  | 5,811.0               | 5,313.6               | 5,303.9               | 132.8            | 12.8          | -70.36                | 327.8                               | 317.6        | 7,507.5                | 7,371.1                 | 136.46                 | 55.015   |                   |
| 12,800.0  | 5,811.0               | 5,307.3               | 5,297.6               | 134.6            | 12.7          | -70.13                | 327.4                               | 317.4        | 7,605.5                | 7,467.4                 | 138.08                 | 55.079   |                   |
| 12,900.0  | 5,811.0               | 5,300.9               | 5,291.3               | 136.5            | 12.7          | -69.91                | 327.0                               | 317.2        | 7,703.5                | 7,563.8                 | 139.70                 | 55.143   |                   |
| 13,000.0  | 5,811.0               | 5,294.6               | 5,285.0               | 138.4            | 12.7          | -69.68                | 326.6                               | 317.0        | 7,801.6                | 7,660.3                 | 141.31                 | 55.209   |                   |
| 13,100.0  | 5,811.0               | 5,288.3               | 5,278.7               | 140.3            | 12.7          | -69.45                | 326.2                               | 316.8        | 7,899.7                | 7,756.8                 | 142.92                 | 55.275   |                   |
| 13,200.0  | 5,811.0               | 5,282.0               | 5,272.4               | 142.1            | 12.7          | -69.23                | 325.8                               | 316.6        | 7,997.9                | 7,853.4                 | 144.52                 | 55.342   |                   |
| 13,300.0  | 5,811.0               | 5,275.7               | 5,266.1               | 144.0            | 12.7          | -69.01                | 325.4                               | 316.4        | 8,096.1                | 7,950.0                 | 146.11                 | 55.410   |                   |
| 13,400.0  | 5,811.0               | 5,269.4               | 5,259.8               | 145.9            | 12.6          | -68.78                | 325.0                               | 316.3        | 8,194.3                | 8,046.6                 | 147.70                 | 55.479   |                   |
| 13,500.0  | 5,811.0               | 5,263.1               | 5,253.5               | 147.8            | 12.6          | -68.56                | 324.6                               | 316.1        | 8,292.6                | 8,143.3                 | 149.29                 | 55.548   |                   |
| 13,600.0  | 5,811.0               | 5,256.8               | 5,247.3               | 149.7            | 12.6          | -68.34                | 324.2                               | 315.9        | 8,390.9                | 8,240.0                 | 150.87                 | 55.618   |                   |
| 13,700.0  | 5,811.0               | 5,250.5               | 5,241.0               | 151.6            | 12.6          | -68.12                | 323.8                               | 315.7        | 8,489.2                | 8,336.8                 | 152.44                 | 55.689   |                   |
| 13,800.0  | 5,811.0               | 5,244.2               | 5,234.7               | 153.4            | 12.6          | -67.90                | 323.4                               | 315.5        | 8,587.6                | 8,433.6                 | 154.01                 | 55.761   |                   |
| 13,900.0  | 5,811.0               | 5,237.9               | 5,228.4               | 155.3            | 12.6          | -67.68                | 323.0                               | 315.3        | 8,686.0                | 8,530.4                 | 155.57                 | 55.833   |                   |
| 13,919.8  | 5,811.0               | 5,236.6               | 5,227.1               | 155.7            | 12.6          | -67.63                | 323.0                               | 315.3        | 8,705.5                | 8,549.7                 | 155.88                 | 55.847   |                   |



# Cathedral Energy Services

## Anticollision Report

|                           |                               |                                     |  |
|---------------------------|-------------------------------|-------------------------------------|--|
| <b>Company:</b>           | Whiting Petroleum Corporation | <b>Local Co-ordinate Reference:</b> | Well Razor Federal #12F-1301A          |
| <b>Project:</b>           | Weld County, CO               | <b>TVD Reference:</b>               | WELL @ 4953.6usft (Original Well Elev) |
| <b>Reference Site:</b>    | S12-T10N-R58W                 | <b>MD Reference:</b>                | WELL @ 4953.6usft (Original Well Elev) |
| <b>Site Error:</b>        | 0.0usft                       | <b>North Reference:</b>             | True                                   |
| <b>Reference Well:</b>    | Razor Federal #12F-1301A      | <b>Survey Calculation Method:</b>   | Minimum Curvature                      |
| <b>Well Error:</b>        | 0.0usft                       | <b>Output errors are at</b>         | 2.00 sigma                             |
| <b>Reference Wellbore</b> | HZ                            | <b>Database:</b>                    | USA EDM 5000 Multi Users DB            |
| <b>Reference Design:</b>  | Plan #3                       | <b>Offset TVD Reference:</b>        | Offset Datum                           |

| Offset Design S12-T10N-R58W - Razor #12F-0108B - HZ - Plan #2 |                       |                       |                       |                  |               |                       |                                     |              |                        |                         |                        |                   | Offset Site Error: 0.0 usft |  |
|---|-----------------------|-----------------------|-----------------------|------------------|---------------|-----------------------|-------------------------------------|--------------|------------------------|-------------------------|------------------------|-------------------|-----------------------------|--|
| Survey Program: O-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 |                             |  |
| 0.0   | 0.0                   | 0.0                   | 0.0                   | 0.0              | 0.0           | 72.01                 | 74.8                                | 230.5        | 242.4                  |                         |                        |                   |                             |  |
| 100.0   | 100.0                 | 100.0                 | 100.0                 | 0.1              | 0.1           | 72.01                 | 74.8                                | 230.5        | 242.4                  | 242.2                   | 0.19                   | 1,295.732         |                             |  |
| 200.0   | 200.0                 | 200.0                 | 200.0                 | 0.3              | 0.3           | 72.01                 | 74.8                                | 230.5        | 242.4                  | 241.7                   | 0.64                   | 380.716           |                             |  |
| 300.0   | 300.0                 | 300.0                 | 300.0                 | 0.5              | 0.5           | 72.01                 | 74.8                                | 230.5        | 242.4                  | 241.3                   | 1.09                   | 223.140           |                             |  |
| 400.0   | 400.0                 | 400.0                 | 400.0                 | 0.8              | 0.8           | 72.01                 | 74.8                                | 230.5        | 242.4                  | 240.8                   | 1.54                   | 157.819           |                             |  |
| 500.0   | 500.0                 | 500.0                 | 500.0                 | 1.0              | 1.0           | 72.01                 | 74.8                                | 230.5        | 242.4                  | 240.4                   | 1.99                   | 122.082           |                             |  |
| 600.0   | 600.0                 | 600.0                 | 600.0                 | 1.2              | 1.2           | 72.01                 | 74.8                                | 230.5        | 242.4                  | 239.9                   | 2.43                   | 99.541            |                             |  |
| 700.0   | 700.0                 | 700.0                 | 700.0                 | 1.4              | 1.4           | 72.01                 | 74.8                                | 230.5        | 242.4                  | 239.5                   | 2.88                   | 84.027            |                             |  |
| 766.7   | 766.7                 | 766.7                 | 766.7                 | 1.6              | 1.6           | 72.01                 | 74.8                                | 230.5        | 242.4                  | 239.2                   | 3.18                   | 76.118 CC         |                             |  |
| 800.0   | 800.0                 | 800.0                 | 800.0                 | 1.7              | 1.7           | 72.01                 | 74.8                                | 230.5        | 242.4                  | 239.0                   | 3.33                   | 72.697 ES         |                             |  |
| 900.0   | 900.0                 | 893.5                 | 893.5                 | 1.9              | 1.9           | 71.81                 | 76.1                                | 231.4        | 243.7                  | 239.9                   | 3.77                   | 64.689            |                             |  |
| 1,000.0   | 1,000.0               | 986.8                 | 986.6                 | 2.1              | 2.1           | 71.20                 | 79.7                                | 234.2        | 247.7                  | 243.5                   | 4.20                   | 58.947            |                             |  |
| 1,100.0   | 1,100.0               | 1,085.4               | 1,085.1               | 2.3              | 2.3           | -153.83               | 85.2                                | 238.3        | 255.1                  | 250.5                   | 4.62                   | 55.196            |                             |  |
| 1,200.0   | 1,199.8               | 1,184.7               | 1,184.1               | 2.5              | 2.5           | -155.06               | 90.7                                | 242.5        | 265.7                  | 260.7                   | 5.02                   | 52.878            |                             |  |
| 1,300.0   | 1,299.6               | 1,283.7               | 1,282.9               | 2.7              | 2.8           | -156.42               | 96.2                                | 246.7        | 278.0                  | 272.6                   | 5.44                   | 51.150            |                             |  |
| 1,400.0   | 1,399.4               | 1,382.7               | 1,381.7               | 2.9              | 3.0           | -157.66               | 101.7                               | 250.8        | 290.5                  | 284.6                   | 5.85                   | 49.621            |                             |  |
| 1,500.0   | 1,499.1               | 1,481.8               | 1,480.4               | 3.1              | 3.3           | -158.80               | 107.2                               | 255.0        | 303.1                  | 296.8                   | 6.28                   | 48.270            |                             |  |
| 1,600.0   | 1,598.9               | 1,580.8               | 1,579.2               | 3.4              | 3.5           | -159.85               | 112.7                               | 259.2        | 315.8                  | 309.0                   | 6.71                   | 47.073            |                             |  |
| 1,700.0   | 1,698.6               | 1,679.8               | 1,678.0               | 3.6              | 3.7           | -160.82               | 118.2                               | 263.3        | 328.5                  | 321.4                   | 7.14                   | 46.008            |                             |  |
| 1,800.0   | 1,798.4               | 1,778.9               | 1,776.8               | 3.8              | 4.0           | -161.72               | 123.7                               | 267.5        | 341.4                  | 333.9                   | 7.58                   | 45.061            |                             |  |
| 1,900.0   | 1,898.1               | 1,877.9               | 1,875.6               | 4.1              | 4.2           | -162.55               | 129.2                               | 271.7        | 354.4                  | 346.4                   | 8.02                   | 44.213            |                             |  |
| 2,000.0   | 1,997.9               | 1,976.9               | 1,974.4               | 4.3              | 4.5           | -163.32               | 134.7                               | 275.9        | 367.4                  | 359.0                   | 8.46                   | 43.451            |                             |  |
| 2,100.0   | 2,097.6               | 2,076.0               | 2,073.2               | 4.5              | 4.7           | -164.04               | 140.3                               | 280.0        | 380.5                  | 371.6                   | 8.90                   | 42.764            |                             |  |
| 2,200.0   | 2,197.4               | 2,175.0               | 2,172.0               | 4.8              | 5.0           | -164.72               | 145.8                               | 284.2        | 393.6                  | 384.3                   | 9.34                   | 42.141            |                             |  |
| 2,300.0   | 2,297.2               | 2,274.0               | 2,270.8               | 5.0              | 5.2           | -165.34               | 151.3                               | 288.4        | 406.8                  | 397.0                   | 9.79                   | 41.575            |                             |  |
| 2,400.0   | 2,396.9               | 2,373.0               | 2,369.5               | 5.3              | 5.5           | -165.93               | 156.8                               | 292.5        | 420.1                  | 409.8                   | 10.23                  | 41.059            |                             |  |
| 2,500.0   | 2,496.7               | 2,472.1               | 2,468.3               | 5.5              | 5.7           | -166.49               | 162.3                               | 296.7        | 433.3                  | 422.7                   | 10.68                  | 40.587            |                             |  |
| 2,600.0   | 2,596.4               | 2,571.1               | 2,567.1               | 5.8              | 6.0           | -167.01               | 167.8                               | 300.9        | 446.7                  | 435.5                   | 11.12                  | 40.153            |                             |  |
| 2,700.0   | 2,696.2               | 2,670.1               | 2,665.9               | 6.0              | 6.2           | -167.50               | 173.3                               | 305.0        | 460.0                  | 448.4                   | 11.57                  | 39.753            |                             |  |
| 2,800.0   | 2,795.9               | 2,769.2               | 2,764.7               | 6.3              | 6.5           | -167.96               | 178.8                               | 309.2        | 473.4                  | 461.4                   | 12.02                  | 39.384            |                             |  |
| 2,900.0   | 2,895.7               | 2,868.2               | 2,863.5               | 6.5              | 6.7           | -168.40               | 184.3                               | 313.4        | 486.8                  | 474.3                   | 12.47                  | 39.043            |                             |  |
| 3,000.0   | 2,995.5               | 2,967.2               | 2,962.3               | 6.8              | 7.0           | -168.81               | 189.8                               | 317.5        | 500.2                  | 487.3                   | 12.92                  | 38.725            |                             |  |
| 3,100.0   | 3,095.2               | 3,066.3               | 3,061.1               | 7.1              | 7.2           | -169.20               | 195.3                               | 321.7        | 513.7                  | 500.3                   | 13.37                  | 38.430            |                             |  |
| 3,200.0   | 3,195.0               | 3,165.3               | 3,159.9               | 7.3              | 7.5           | -169.57               | 200.8                               | 325.9        | 527.2                  | 513.4                   | 13.82                  | 38.155            |                             |  |
| 3,300.0   | 3,294.7               | 3,264.3               | 3,258.6               | 7.6              | 7.7           | -169.93               | 206.3                               | 330.1        | 540.7                  | 526.4                   | 14.27                  | 37.897            |                             |  |
| 3,400.0   | 3,394.5               | 3,363.4               | 3,357.4               | 7.8              | 8.0           | -170.26               | 211.9                               | 334.2        | 554.2                  | 539.5                   | 14.72                  | 37.656            |                             |  |
| 3,500.0   | 3,494.2               | 3,462.4               | 3,456.2               | 8.1              | 8.2           | -170.58               | 217.4                               | 338.4        | 567.7                  | 552.6                   | 15.17                  | 37.430            |                             |  |
| 3,600.0   | 3,594.0               | 3,561.4               | 3,555.0               | 8.3              | 8.5           | -170.89               | 222.9                               | 342.6        | 581.3                  | 565.7                   | 15.62                  | 37.217            |                             |  |
| 3,700.0   | 3,693.7               | 3,660.4               | 3,653.8               | 8.6              | 8.8           | -171.18               | 228.4                               | 346.7        | 594.9                  | 578.8                   | 16.07                  | 37.017            |                             |  |
| 3,800.0   | 3,793.5               | 3,759.5               | 3,752.6               | 8.9              | 9.0           | -171.46               | 233.9                               | 350.9        | 608.5                  | 591.9                   | 16.52                  | 36.827            |                             |  |
| 3,900.0   | 3,893.3               | 3,858.5               | 3,851.4               | 9.1              | 9.3           | -171.73               | 239.4                               | 355.1        | 622.1                  | 605.1                   | 16.97                  | 36.649            |                             |  |
| 4,000.0   | 3,993.0               | 3,957.5               | 3,950.2               | 9.4              | 9.5           | -171.98               | 244.9                               | 359.2        | 635.7                  | 618.2                   | 17.43                  | 36.480            |                             |  |
| 4,100.0   | 4,092.8               | 4,056.6               | 4,049.0               | 9.6              | 9.8           | -172.22               | 250.4                               | 363.4        | 649.3                  | 631.4                   | 17.88                  | 36.320            |                             |  |
| 4,200.0   | 4,192.5               | 4,155.6               | 4,147.7               | 9.9              | 10.0          | -172.46               | 255.9                               | 367.6        | 662.9                  | 644.6                   | 18.33                  | 36.168            |                             |  |
| 4,300.0   | 4,292.3               | 4,254.6               | 4,246.5               | 10.2             | 10.3          | -172.68               | 261.4                               | 371.8        | 676.6                  | 657.8                   | 18.78                  | 36.023            |                             |  |
| 4,400.0   | 4,392.0               | 4,353.7               | 4,345.3               | 10.4             | 10.5          | -172.90               | 266.9                               | 375.9        | 690.2                  | 671.0                   | 19.23                  | 35.886            |                             |  |
| 4,500.0   | 4,491.8               | 4,452.7               | 4,444.1               | 10.7             | 10.8          | -173.11               | 272.4                               | 380.1        | 703.9                  | 684.2                   | 19.69                  | 35.755            |                             |  |
| 4,600.0   | 4,591.6               | 4,551.7               | 4,542.9               | 11.0             | 11.0          | -173.31               | 277.9                               | 384.3        | 717.6                  | 697.4                   | 20.14                  | 35.630            |                             |  |
| 4,700.0   | 4,691.3               | 4,650.7               | 4,641.7               | 11.2             | 11.3          | -173.50               | 283.4                               | 388.4        | 731.3                  | 710.7                   | 20.59                  | 35.511            |                             |  |
| 4,800.0   | 4,791.1               | 4,749.8               | 4,740.5               | 11.5             | 11.5          | -173.68               | 289.0                               | 392.6        | 744.9                  | 723.9                   | 21.05                  | 35.397            |                             |  |
| 4,900.0   | 4,890.8               | 4,848.8               | 4,839.3               | 11.7             | 11.8          | -173.86               | 294.5                               | 396.8        | 758.6                  | 737.1                   | 21.50                  | 35.289            |                             |  |
| 5,000.0   | 4,990.6               | 4,947.8               | 4,938.1               | 12.0             | 12.0          | -174.03               | 300.0                               | 400.9        | 772.3                  | 750.4                   | 21.95                  | 35.184            |                             |  |

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

# Cathedral Energy Services

## Anticollision Report

|                           |                               |                                     |  |
|---------------------------|-------------------------------|-------------------------------------|--|
| <b>Company:</b>           | Whiting Petroleum Corporation | <b>Local Co-ordinate Reference:</b> | Well Razor Federal #12F-1301A          |
| <b>Project:</b>           | Weld County, CO               | <b>TVD Reference:</b>               | WELL @ 4953.6usft (Original Well Elev) |
| <b>Reference Site:</b>    | S12-T10N-R58W                 | <b>MD Reference:</b>                | WELL @ 4953.6usft (Original Well Elev) |
| <b>Site Error:</b>        | 0.0usft                       | <b>North Reference:</b>             | True                                   |
| <b>Reference Well:</b>    | Razor Federal #12F-1301A      | <b>Survey Calculation Method:</b>   | Minimum Curvature                      |
| <b>Well Error:</b>        | 0.0usft                       | <b>Output errors are at</b>         | 2.00 sigma                             |
| <b>Reference Wellbore</b> | HZ                            | <b>Database:</b>                    | USA EDM 5000 Multi Users DB            |
| <b>Reference Design:</b>  | Plan #3                       | <b>Offset TVD Reference:</b>        | Offset Datum                           |

| Offset Design S12-T10N-R58W - Razor #12F-0108B - 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   | 5,090.3               | 5,046.9               | 5,036.8               | 12.3             | 12.3          | -174.20               | 305.5                               | 405.1        | 786.1                  | 763.6                   | 22.40                  | 35.085             |          |
| 5,200.0   | 5,190.1               | 5,145.9               | 5,135.6               | 12.5             | 12.6          | -174.36               | 311.0                               | 409.3        | 799.8                  | 776.9                   | 22.86                  | 34.989             |          |
| 5,300.0   | 5,289.9               | 5,244.9               | 5,234.4               | 12.8             | 12.8          | -174.52               | 316.5                               | 413.5        | 813.5                  | 790.2                   | 23.31                  | 34.897 SF          |          |
| 5,400.0   | 5,389.2               | 5,343.3               | 5,332.5               | 13.1             | 13.1          | -174.56               | 322.0                               | 417.6        | 831.0                  | 807.5                   | 23.43                  | 35.468             |          |
| 5,500.0   | 5,485.0               | 5,436.9               | 5,425.9               | 13.5             | 13.3          | -174.45               | 327.2                               | 421.5        | 865.5                  | 842.8                   | 22.70                  | 38.130             |          |
| 5,600.0   | 5,573.6               | 5,468.8               | 5,457.7               | 14.2             | 13.4          | -173.88               | 329.7                               | 423.4        | 919.8                  | 898.6                   | 21.12                  | 43.554             |          |
| 5,700.0   | 5,651.8               | 5,500.0               | 5,488.5               | 15.0             | 13.5          | -172.81               | 333.6                               | 426.4        | 992.7                  | 973.7                   | 18.93                  | 52.430             |          |
| 5,800.0   | 5,716.7               | 5,500.0               | 5,488.5               | 16.1             | 13.5          | -169.90               | 333.6                               | 426.4        | 1,079.2                | 1,062.7                 | 16.48                  | 65.479             |          |
| 5,900.0   | 5,766.0               | 5,519.3               | 5,507.3               | 17.3             | 13.6          | -162.17               | 336.8                               | 428.8        | 1,174.2                | 1,158.6                 | 15.61                  | 75.213             |          |
| 6,000.0   | 5,797.8               | 5,522.2               | 5,510.2               | 18.8             | 13.6          | -89.88                | 337.3                               | 429.2        | 1,273.3                | 1,240.0                 | 33.37                  | 38.158             |          |
| 6,100.0   | 5,811.0               | 5,519.5               | 5,507.6               | 20.4             | 13.6          | -16.17                | 336.8                               | 428.8        | 1,372.6                | 1,360.4                 | 12.19                  | 112.591            |          |
| 6,200.0   | 5,811.3               | 5,500.0               | 5,488.5               | 21.9             | 13.5          | -22.47                | 333.6                               | 426.4        | 1,470.3                | 1,454.6                 | 15.76                  | 93.323             |          |
| 6,300.0   | 5,811.3               | 5,500.0               | 5,488.5               | 23.4             | 13.5          | -33.13                | 333.6                               | 426.4        | 1,567.4                | 1,545.3                 | 22.05                  | 71.074             |          |
| 6,400.0   | 5,811.3               | 5,500.0               | 5,488.5               | 25.0             | 13.5          | -42.18                | 333.6                               | 426.4        | 1,664.1                | 1,636.5                 | 27.63                  | 60.226             |          |
| 6,500.0   | 5,811.3               | 5,500.0               | 5,488.5               | 26.6             | 13.5          | -49.56                | 333.6                               | 426.4        | 1,760.3                | 1,728.1                 | 32.26                  | 54.572             |          |
| 6,600.0   | 5,811.3               | 5,500.0               | 5,488.5               | 28.2             | 13.5          | -55.47                | 333.6                               | 426.4        | 1,855.9                | 1,819.9                 | 36.02                  | 51.519             |          |
| 6,700.0   | 5,811.3               | 5,500.0               | 5,488.5               | 29.8             | 13.5          | -60.20                | 333.6                               | 426.4        | 1,950.6                | 1,911.5                 | 39.10                  | 49.888             |          |
| 6,800.0   | 5,811.3               | 5,500.0               | 5,488.5               | 31.4             | 13.5          | -63.99                | 333.6                               | 426.4        | 2,044.4                | 2,002.8                 | 41.64                  | 49.097             |          |
| 6,900.0   | 5,811.3               | 5,500.0               | 5,488.5               | 33.0             | 13.5          | -67.07                | 333.6                               | 426.4        | 2,137.2                | 2,093.4                 | 43.76                  | 48.839             |          |
| 7,000.0   | 5,811.3               | 5,500.0               | 5,488.5               | 34.6             | 13.5          | -69.60                | 333.6                               | 426.4        | 2,228.7                | 2,183.2                 | 45.54                  | 48.943             |          |
| 7,100.0   | 5,811.3               | 5,479.1               | 5,467.9               | 36.2             | 13.4          | -70.58                | 330.8                               | 424.3        | 2,318.5                | 2,271.9                 | 46.66                  | 49.686             |          |
| 7,200.0   | 5,811.3               | 5,476.7               | 5,465.5               | 37.7             | 13.4          | -72.30                | 330.5                               | 424.1        | 2,407.4                | 2,359.5                 | 47.92                  | 50.240             |          |
| 7,300.0   | 5,811.3               | 5,474.5               | 5,463.3               | 39.2             | 13.4          | -73.78                | 330.3                               | 423.9        | 2,494.8                | 2,445.8                 | 48.95                  | 50.961             |          |
| 7,400.0   | 5,811.3               | 5,472.5               | 5,461.3               | 40.7             | 13.4          | -75.04                | 330.1                               | 423.7        | 2,580.6                | 2,530.8                 | 49.79                  | 51.826             |          |
| 7,500.0   | 5,811.3               | 5,450.0               | 5,439.0               | 42.1             | 13.3          | -75.35                | 328.0                               | 422.2        | 2,665.4                | 2,615.2                 | 50.22                  | 53.077             |          |
| 7,600.0   | 5,811.3               | 5,450.0               | 5,439.0               | 43.6             | 13.3          | -76.29                | 328.0                               | 422.2        | 2,747.9                | 2,697.1                 | 50.87                  | 54.015             |          |
| 7,700.0   | 5,811.3               | 5,450.0               | 5,439.0               | 45.0             | 13.3          | -76.29                | 328.0                               | 422.2        | 2,830.6                | 2,778.2                 | 52.36                  | 54.059             |          |
| 7,800.0   | 5,811.3               | 5,450.0               | 5,439.0               | 46.4             | 13.3          | -76.29                | 328.0                               | 422.2        | 2,914.3                | 2,860.4                 | 53.87                  | 54.095             |          |
| 7,900.0   | 5,811.2               | 5,450.0               | 5,439.0               | 47.9             | 13.3          | -76.29                | 328.0                               | 422.2        | 2,999.0                | 2,943.6                 | 55.41                  | 54.123             |          |
| 8,000.0   | 5,811.2               | 5,450.0               | 5,439.0               | 49.4             | 13.3          | -76.29                | 328.0                               | 422.2        | 3,084.6                | 3,027.6                 | 56.97                  | 54.146             |          |
| 8,100.0   | 5,811.2               | 5,450.0               | 5,439.0               | 50.9             | 13.3          | -76.29                | 328.0                               | 422.2        | 3,171.0                | 3,112.5                 | 58.54                  | 54.165             |          |
| 8,200.0   | 5,811.2               | 5,450.0               | 5,439.0               | 52.5             | 13.3          | -76.29                | 328.0                               | 422.2        | 3,258.3                | 3,198.1                 | 60.14                  | 54.181             |          |
| 8,300.0   | 5,811.2               | 5,450.0               | 5,439.0               | 54.0             | 13.3          | -76.29                | 328.0                               | 422.2        | 3,346.2                | 3,284.5                 | 61.74                  | 54.195             |          |
| 8,400.0   | 5,811.2               | 5,450.0               | 5,439.0               | 55.6             | 13.3          | -76.29                | 328.0                               | 422.2        | 3,434.8                | 3,371.5                 | 63.37                  | 54.206             |          |
| 8,500.0   | 5,811.2               | 5,450.0               | 5,439.0               | 57.2             | 13.3          | -76.29                | 328.0                               | 422.2        | 3,524.1                | 3,459.1                 | 65.00                  | 54.217             |          |
| 8,600.0   | 5,811.2               | 5,450.0               | 5,439.0               | 58.9             | 13.3          | -76.29                | 328.0                               | 422.2        | 3,613.8                | 3,547.2                 | 66.64                  | 54.226             |          |
| 8,700.0   | 5,811.2               | 5,450.0               | 5,439.0               | 60.5             | 13.3          | -76.29                | 328.0                               | 422.2        | 3,704.2                | 3,635.9                 | 68.30                  | 54.235             |          |
| 8,800.0   | 5,811.2               | 5,450.0               | 5,439.0               | 62.2             | 13.3          | -76.29                | 328.0                               | 422.2        | 3,794.9                | 3,725.0                 | 69.96                  | 54.243             |          |
| 8,900.0   | 5,811.2               | 5,450.0               | 5,439.0               | 63.9             | 13.3          | -76.29                | 328.0                               | 422.2        | 3,886.2                | 3,814.6                 | 71.63                  | 54.252             |          |
| 9,000.0   | 5,811.2               | 5,450.0               | 5,439.0               | 65.6             | 13.3          | -76.29                | 328.0                               | 422.2        | 3,977.9                | 3,904.5                 | 73.31                  | 54.259             |          |
| 9,100.0   | 5,811.2               | 5,450.0               | 5,439.0               | 67.3             | 13.3          | -76.29                | 328.0                               | 422.2        | 4,069.9                | 3,994.9                 | 75.00                  | 54.267             |          |
| 9,200.0   | 5,811.2               | 5,450.0               | 5,439.0               | 69.0             | 13.3          | -76.29                | 328.0                               | 422.2        | 4,162.3                | 4,085.7                 | 76.69                  | 54.275             |          |
| 9,300.0   | 5,811.2               | 5,450.0               | 5,439.0               | 70.7             | 13.3          | -76.29                | 328.0                               | 422.2        | 4,255.1                | 4,176.7                 | 78.42                  | 54.280             |          |
| 9,400.0   | 5,811.2               | 5,450.0               | 5,439.0               | 72.5             | 13.3          | -76.29                | 328.0                               | 422.2        | 4,348.2                | 4,268.0                 | 80.20                  | 54.215             |          |
| 9,500.0   | 5,811.2               | 5,450.0               | 5,439.0               | 74.2             | 13.3          | -76.29                | 328.0                               | 422.2        | 4,441.6                | 4,359.6                 | 81.99                  | 54.172             |          |
| 9,600.0   | 5,811.2               | 5,450.0               | 5,439.0               | 76.0             | 13.3          | -76.29                | 328.0                               | 422.2        | 4,535.3                | 4,451.5                 | 83.78                  | 54.132             |          |
| 9,700.0   | 5,811.2               | 5,450.0               | 5,439.0               | 77.7             | 13.3          | -76.29                | 328.0                               | 422.2        | 4,629.2                | 4,543.6                 | 85.58                  | 54.094             |          |
| 9,800.0   | 5,811.2               | 5,450.0               | 5,439.0               | 79.5             | 13.3          | -76.29                | 328.0                               | 422.2        | 4,723.4                | 4,636.0                 | 87.38                  | 54.058             |          |
| 9,900.0   | 5,811.2               | 5,450.0               | 5,439.0               | 81.3             | 13.3          | -76.29                | 328.0                               | 422.2        | 4,817.8                | 4,728.6                 | 89.18                  | 54.023             |          |
| 10,000.0  | 5,811.2               | 5,444.1               | 5,433.1               | 83.1             | 13.3          | -76.08                | 327.6                               | 421.9        | 4,912.4                | 4,821.5                 | 90.90                  | 54.042             |          |
| 10,100.0  | 5,811.2               | 5,443.4               | 5,432.4               | 84.9             | 13.3          | -76.06                | 327.6                               | 421.8        | 5,007.2                | 4,914.5                 | 92.70                  | 54.017             |          |
| 10,200.0  | 5,811.1               | 5,438.0               | 5,427.0               | 86.7             | 13.3          | -75.86                | 327.2                               | 421.6        | 5,102.3                | 5,007.9                 | 94.43                  | 54.035             |          |

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

# Cathedral Energy Services

## Anticollision Report

|                           |                               |                                     |  |
|---------------------------|-------------------------------|-------------------------------------|--|
| <b>Company:</b>           | Whiting Petroleum Corporation | <b>Local Co-ordinate Reference:</b> | Well Razor Federal #12F-1301A          |
| <b>Project:</b>           | Weld County, CO               | <b>TVD Reference:</b>               | WELL @ 4953.6usft (Original Well Elev) |
| <b>Reference Site:</b>    | S12-T10N-R58W                 | <b>MD Reference:</b>                | WELL @ 4953.6usft (Original Well Elev) |
| <b>Site Error:</b>        | 0.0usft                       | <b>North Reference:</b>             | True                                   |
| <b>Reference Well:</b>    | Razor Federal #12F-1301A      | <b>Survey Calculation Method:</b>   | Minimum Curvature                      |
| <b>Well Error:</b>        | 0.0usft                       | <b>Output errors are at</b>         | 2.00 sigma                             |
| <b>Reference Wellbore</b> | HZ                            | <b>Database:</b>                    | USA EDM 5000 Multi Users DB            |
| <b>Reference Design:</b>  | Plan #3                       | <b>Offset TVD Reference:</b>        | Offset Datum                           |

| Offset Design S12-T10N-R58W - Razor #12F-0108B - 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 |                             |         |
| 10,300.0  | 5,811.1               | 5,438.0               | 5,427.0               | 88.5             | 13.3          | -75.86                | 327.2                               | 421.6        | 5,197.5                | 5,101.3                 | 96.24                  | 54.007            |                             |         |
| 10,400.0  | 5,811.1               | 5,438.0               | 5,427.0               | 90.3             | 13.3          | -75.86                | 327.2                               | 421.6        | 5,292.9                | 5,194.9                 | 98.05                  | 53.980            |                             |         |
| 10,500.0  | 5,811.1               | 5,438.0               | 5,427.0               | 92.1             | 13.3          | -75.86                | 327.2                               | 421.6        | 5,388.5                | 5,288.6                 | 99.87                  | 53.954            |                             |         |
| 10,600.0  | 5,811.1               | 5,438.0               | 5,427.0               | 93.9             | 13.3          | -75.86                | 327.2                               | 421.6        | 5,484.2                | 5,382.5                 | 101.69                 | 53.930            |                             |         |
| 10,700.0  | 5,811.1               | 5,438.0               | 5,427.0               | 95.7             | 13.3          | -75.86                | 327.2                               | 421.6        | 5,580.1                | 5,476.5                 | 103.51                 | 53.907            |                             |         |
| 10,800.0  | 5,811.1               | 5,438.0               | 5,427.0               | 97.5             | 13.3          | -75.86                | 327.2                               | 421.6        | 5,676.1                | 5,570.7                 | 105.34                 | 53.885            |                             |         |
| 10,900.0  | 5,811.1               | 5,438.0               | 5,427.0               | 99.4             | 13.3          | -75.86                | 327.2                               | 421.6        | 5,772.2                | 5,665.0                 | 107.16                 | 53.864            |                             |         |
| 11,000.0  | 5,811.1               | 5,438.0               | 5,427.0               | 101.2            | 13.3          | -75.86                | 327.2                               | 421.6        | 5,868.5                | 5,759.5                 | 108.99                 | 53.844            |                             |         |
| 11,100.0  | 5,811.1               | 5,436.9               | 5,426.0               | 103.0            | 13.3          | -75.83                | 327.2                               | 421.5        | 5,964.9                | 5,854.1                 | 110.80                 | 53.834            |                             |         |
| 11,200.0  | 5,811.1               | 5,431.4               | 5,420.4               | 104.9            | 13.3          | -75.63                | 326.9                               | 421.3        | 6,061.4                | 5,948.9                 | 112.53                 | 53.863            |                             |         |
| 11,300.0  | 5,811.1               | 5,425.8               | 5,414.9               | 106.7            | 13.3          | -75.43                | 326.6                               | 421.1        | 6,158.0                | 6,043.8                 | 114.26                 | 53.894            |                             |         |
| 11,400.0  | 5,811.1               | 5,420.2               | 5,409.3               | 108.6            | 13.3          | -75.23                | 326.2                               | 420.8        | 6,254.7                | 6,138.7                 | 115.99                 | 53.926            |                             |         |
| 11,500.0  | 5,811.1               | 5,414.7               | 5,403.7               | 110.4            | 13.2          | -75.04                | 325.9                               | 420.6        | 6,351.5                | 6,233.8                 | 117.71                 | 53.958            |                             |         |
| 11,600.0  | 5,811.1               | 5,409.1               | 5,398.2               | 112.3            | 13.2          | -74.84                | 325.6                               | 420.4        | 6,448.5                | 6,329.0                 | 119.43                 | 53.992            |                             |         |
| 11,700.0  | 5,811.1               | 5,403.5               | 5,392.6               | 114.1            | 13.2          | -74.64                | 325.3                               | 420.1        | 6,545.5                | 6,424.3                 | 121.15                 | 54.027            |                             |         |
| 11,800.0  | 5,811.1               | 5,398.0               | 5,387.1               | 116.0            | 13.2          | -74.45                | 325.0                               | 419.9        | 6,642.5                | 6,519.7                 | 122.87                 | 54.062            |                             |         |
| 11,900.0  | 5,811.1               | 5,392.4               | 5,381.5               | 117.8            | 13.2          | -74.25                | 324.7                               | 419.7        | 6,739.7                | 6,615.1                 | 124.58                 | 54.099            |                             |         |
| 12,000.0  | 5,811.1               | 5,386.8               | 5,376.0               | 119.7            | 13.2          | -74.05                | 324.4                               | 419.4        | 6,836.9                | 6,710.6                 | 126.29                 | 54.136            |                             |         |
| 12,100.0  | 5,811.1               | 5,381.3               | 5,370.4               | 121.6            | 13.2          | -73.86                | 324.1                               | 419.2        | 6,934.2                | 6,806.2                 | 128.00                 | 54.174            |                             |         |
| 12,200.0  | 5,811.1               | 5,375.7               | 5,364.9               | 123.4            | 13.1          | -73.66                | 323.8                               | 419.0        | 7,031.6                | 6,901.9                 | 129.70                 | 54.213            |                             |         |
| 12,300.0  | 5,811.1               | 5,370.1               | 5,359.3               | 125.3            | 13.1          | -73.47                | 323.5                               | 418.7        | 7,129.1                | 6,997.7                 | 131.40                 | 54.253            |                             |         |
| 12,400.0  | 5,811.1               | 5,364.6               | 5,353.8               | 127.2            | 13.1          | -73.28                | 323.1                               | 418.5        | 7,226.6                | 7,093.5                 | 133.10                 | 54.294            |                             |         |
| 12,500.0  | 5,811.0               | 5,359.0               | 5,348.2               | 129.0            | 13.1          | -73.08                | 322.8                               | 418.3        | 7,324.2                | 7,189.4                 | 134.80                 | 54.335            |                             |         |
| 12,600.0  | 5,811.0               | 5,353.4               | 5,342.7               | 130.9            | 13.1          | -72.89                | 322.5                               | 418.0        | 7,421.8                | 7,285.3                 | 136.49                 | 54.377            |                             |         |
| 12,700.0  | 5,811.0               | 5,347.9               | 5,337.1               | 132.8            | 13.1          | -72.70                | 322.2                               | 417.8        | 7,519.5                | 7,381.3                 | 138.18                 | 54.420            |                             |         |
| 12,800.0  | 5,811.0               | 5,342.3               | 5,331.6               | 134.6            | 13.1          | -72.50                | 321.9                               | 417.6        | 7,617.3                | 7,477.4                 | 139.86                 | 54.464            |                             |         |
| 12,900.0  | 5,811.0               | 5,336.7               | 5,326.0               | 136.5            | 13.0          | -72.31                | 321.6                               | 417.3        | 7,715.1                | 7,573.5                 | 141.54                 | 54.508            |                             |         |
| 13,000.0  | 5,811.0               | 5,331.2               | 5,320.5               | 138.4            | 13.0          | -72.12                | 321.3                               | 417.1        | 7,812.9                | 7,669.7                 | 143.22                 | 54.553            |                             |         |
| 13,100.0  | 5,811.0               | 5,325.6               | 5,314.9               | 140.3            | 13.0          | -71.93                | 321.0                               | 416.9        | 7,910.8                | 7,766.0                 | 144.89                 | 54.599            |                             |         |
| 13,200.0  | 5,811.0               | 5,320.1               | 5,309.4               | 142.1            | 13.0          | -71.74                | 320.7                               | 416.6        | 8,008.8                | 7,862.2                 | 146.56                 | 54.646            |                             |         |
| 13,300.0  | 5,811.0               | 5,314.5               | 5,303.8               | 144.0            | 13.0          | -71.54                | 320.4                               | 416.4        | 8,106.8                | 7,958.6                 | 148.22                 | 54.693            |                             |         |
| 13,400.0  | 5,811.0               | 5,308.9               | 5,298.3               | 145.9            | 13.0          | -71.35                | 320.1                               | 416.1        | 8,204.8                | 8,055.0                 | 149.89                 | 54.741            |                             |         |
| 13,500.0  | 5,811.0               | 5,303.4               | 5,292.7               | 147.8            | 13.0          | -71.16                | 319.7                               | 415.9        | 8,302.9                | 8,151.4                 | 151.54                 | 54.789            |                             |         |
| 13,600.0  | 5,811.0               | 5,297.8               | 5,287.2               | 149.7            | 12.9          | -70.97                | 319.4                               | 415.7        | 8,401.1                | 8,247.9                 | 153.20                 | 54.838            |                             |         |
| 13,700.0  | 5,811.0               | 5,292.2               | 5,281.6               | 151.6            | 12.9          | -70.78                | 319.1                               | 415.4        | 8,499.2                | 8,344.4                 | 154.85                 | 54.888            |                             |         |
| 13,800.0  | 5,811.0               | 5,286.7               | 5,276.1               | 153.4            | 12.9          | -70.59                | 318.8                               | 415.2        | 8,597.5                | 8,441.0                 | 156.49                 | 54.938            |                             |         |
| 13,900.0  | 5,811.0               | 5,281.1               | 5,270.5               | 155.3            | 12.9          | -70.41                | 318.5                               | 415.0        | 8,695.7                | 8,537.6                 | 158.13                 | 54.989            |                             |         |
| 13,919.8  | 5,811.0               | 5,280.0               | 5,269.4               | 155.7            | 12.9          | -70.37                | 318.4                               | 414.9        | 8,715.2                | 8,556.7                 | 158.46                 | 54.999            |                             |         |

# Cathedral Energy Services

## Anticollision Report

|                           |                               |                                     |  |
|---------------------------|-------------------------------|-------------------------------------|--|
| <b>Company:</b>           | Whiting Petroleum Corporation | <b>Local Co-ordinate Reference:</b> | Well Razor Federal #12F-1301A          |
| <b>Project:</b>           | Weld County, CO               | <b>TVD Reference:</b>               | WELL @ 4953.6usft (Original Well Elev) |
| <b>Reference Site:</b>    | S12-T10N-R58W                 | <b>MD Reference:</b>                | WELL @ 4953.6usft (Original Well Elev) |
| <b>Site Error:</b>        | 0.0usft                       | <b>North Reference:</b>             | True                                   |
| <b>Reference Well:</b>    | Razor Federal #12F-1301A      | <b>Survey Calculation Method:</b>   | Minimum Curvature                      |
| <b>Well Error:</b>        | 0.0usft                       | <b>Output errors are at</b>         | 2.00 sigma                             |
| <b>Reference Wellbore</b> | HZ                            | <b>Database:</b>                    | USA EDM 5000 Multi Users DB            |
| <b>Reference Design:</b>  | Plan #3                       | <b>Offset TVD Reference:</b>        | Offset Datum                           |

| Offset Design S12-T10N-R58W - Razor Federal #12F-1302B - HZ - Plan #2 |                       |                       |                       |                  |               |                       |                                     |              |                        |                         |                  |              | Offset Site Error: | 0.0 usft |
|---|-----------------------|-----------------------|-----------------------|------------------|---------------|-----------------------|-------------------------------------|--------------|------------------------|-------------------------|------------------|--------------|--------------------|----------|
| Survey Program: O-ISCWSA 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           | 90.01                 | 0.0                                 | 33.0         | 33.0                   |                         |                  |              |                    |          |
| 100.0   | 100.0                 | 100.0                 | 100.0                 | 0.1              | 0.1           | 90.01                 | 0.0                                 | 33.0         | 33.0                   | 32.9                    | 0.19             | 176.666      |                    |          |
| 200.0   | 200.0                 | 200.0                 | 200.0                 | 0.3              | 0.3           | 90.01                 | 0.0                                 | 33.0         | 33.0                   | 32.4                    | 0.64             | 51.909       |                    |          |
| 300.0   | 300.0                 | 300.0                 | 300.0                 | 0.5              | 0.5           | 90.01                 | 0.0                                 | 33.0         | 33.0                   | 32.0                    | 1.09             | 30.424       |                    |          |
| 400.0   | 400.0                 | 400.0                 | 400.0                 | 0.8              | 0.8           | 90.01                 | 0.0                                 | 33.0         | 33.0                   | 31.5                    | 1.54             | 21.518       |                    |          |
| 500.0   | 500.0                 | 500.0                 | 500.0                 | 1.0              | 1.0           | 90.01                 | 0.0                                 | 33.0         | 33.0                   | 31.1                    | 1.99             | 16.645       |                    |          |
| 600.0   | 600.0                 | 600.0                 | 600.0                 | 1.2              | 1.2           | 90.01                 | 0.0                                 | 33.0         | 33.0                   | 30.6                    | 2.43             | 13.572       |                    |          |
| 700.0   | 700.0                 | 700.0                 | 700.0                 | 1.4              | 1.4           | 90.01                 | 0.0                                 | 33.0         | 33.0                   | 30.2                    | 2.88             | 11.457       |                    |          |
| 800.0   | 800.0                 | 800.0                 | 800.0                 | 1.7              | 1.7           | 90.01                 | 0.0                                 | 33.0         | 33.0                   | 29.7                    | 3.33             | 9.912        |                    |          |
| 900.0   | 900.0                 | 900.0                 | 900.0                 | 1.9              | 1.9           | 90.01                 | 0.0                                 | 33.0         | 33.0                   | 29.3                    | 3.78             | 8.734        |                    |          |
| 1,000.0   | 1,000.0               | 1,000.0               | 1,000.0               | 2.1              | 2.1           | 90.01                 | 0.0                                 | 33.0         | 33.0                   | 28.8                    | 4.23             | 7.806 CC, ES |                    |          |
| 1,100.0   | 1,100.0               | 1,100.0               | 1,100.0               | 2.3              | 2.3           | -136.13               | 0.0                                 | 33.0         | 34.3                   | 29.6                    | 4.66             | 7.361        |                    |          |
| 1,200.0   | 1,199.8               | 1,199.8               | 1,199.8               | 2.5              | 2.6           | -141.52               | 0.0                                 | 33.0         | 38.2                   | 33.2                    | 5.06             | 7.553        |                    |          |
| 1,300.0   | 1,299.6               | 1,300.7               | 1,300.7               | 2.7              | 2.8           | -145.66               | -1.5                                | 32.0         | 42.6                   | 37.2                    | 5.45             | 7.820        |                    |          |
| 1,400.0   | 1,399.4               | 1,401.8               | 1,401.6               | 2.9              | 3.0           | -146.06               | -5.8                                | 29.0         | 44.6                   | 38.7                    | 5.83             | 7.646        |                    |          |
| 1,500.0   | 1,499.1               | 1,501.8               | 1,501.4               | 3.1              | 3.1           | -144.96               | -11.5                               | 25.0         | 45.2                   | 39.0                    | 6.22             | 7.276        |                    |          |
| 1,600.0   | 1,598.9               | 1,601.8               | 1,601.1               | 3.4              | 3.3           | -143.90               | -17.3                               | 21.0         | 46.0                   | 39.3                    | 6.63             | 6.937        |                    |          |
| 1,700.0   | 1,698.6               | 1,701.8               | 1,700.9               | 3.6              | 3.6           | -142.87               | -23.0                               | 17.0         | 46.7                   | 39.6                    | 7.04             | 6.628        |                    |          |
| 1,800.0   | 1,798.4               | 1,801.8               | 1,800.6               | 3.8              | 3.8           | -141.87               | -28.7                               | 13.0         | 47.4                   | 40.0                    | 7.47             | 6.347        |                    |          |
| 1,900.0   | 1,898.1               | 1,901.8               | 1,900.4               | 4.1              | 4.0           | -140.90               | -34.4                               | 9.0          | 48.2                   | 40.3                    | 7.91             | 6.090        |                    |          |
| 2,000.0   | 1,997.9               | 2,001.8               | 2,000.1               | 4.3              | 4.2           | -139.96               | -40.1                               | 5.0          | 49.0                   | 40.6                    | 8.36             | 5.857        |                    |          |
| 2,100.0   | 2,097.6               | 2,101.8               | 2,099.9               | 4.5              | 4.4           | -139.05               | -45.8                               | 1.0          | 49.7                   | 40.9                    | 8.81             | 5.644        |                    |          |
| 2,200.0   | 2,197.4               | 2,201.7               | 2,199.6               | 4.8              | 4.7           | -138.17               | -51.6                               | -3.0         | 50.5                   | 41.3                    | 9.28             | 5.449        |                    |          |
| 2,300.0   | 2,297.2               | 2,301.7               | 2,299.4               | 5.0              | 4.9           | -137.32               | -57.3                               | -7.0         | 51.4                   | 41.6                    | 9.74             | 5.271        |                    |          |
| 2,400.0   | 2,396.9               | 2,401.7               | 2,399.1               | 5.3              | 5.2           | -136.49               | -63.0                               | -11.0        | 52.2                   | 42.0                    | 10.21            | 5.108        |                    |          |
| 2,500.0   | 2,496.7               | 2,501.7               | 2,498.9               | 5.5              | 5.4           | -135.69               | -68.7                               | -15.0        | 53.0                   | 42.3                    | 10.69            | 4.957        |                    |          |
| 2,600.0   | 2,596.4               | 2,601.7               | 2,598.6               | 5.8              | 5.7           | -134.92               | -74.4                               | -19.0        | 53.8                   | 42.7                    | 11.17            | 4.819        |                    |          |
| 2,700.0   | 2,696.2               | 2,701.7               | 2,698.4               | 6.0              | 5.9           | -134.16               | -80.2                               | -23.0        | 54.7                   | 43.0                    | 11.66            | 4.692        |                    |          |
| 2,800.0   | 2,795.9               | 2,801.7               | 2,798.1               | 6.3              | 6.1           | -133.43               | -85.9                               | -27.0        | 55.5                   | 43.4                    | 12.14            | 4.574        |                    |          |
| 2,900.0   | 2,895.7               | 2,901.7               | 2,897.9               | 6.5              | 6.4           | -132.73               | -91.6                               | -31.0        | 56.4                   | 43.8                    | 12.64            | 4.465        |                    |          |
| 3,000.0   | 2,995.5               | 3,001.7               | 2,997.6               | 6.8              | 6.6           | -132.04               | -97.3                               | -35.0        | 57.3                   | 44.2                    | 13.13            | 4.363        |                    |          |
| 3,100.0   | 3,095.2               | 3,101.7               | 3,097.4               | 7.1              | 6.9           | -131.38               | -103.0                              | -39.0        | 58.2                   | 44.5                    | 13.63            | 4.269        |                    |          |
| 3,200.0   | 3,195.0               | 3,201.7               | 3,197.1               | 7.3              | 7.1           | -130.73               | -108.7                              | -43.0        | 59.1                   | 44.9                    | 14.13            | 4.181        |                    |          |
| 3,300.0   | 3,294.7               | 3,301.7               | 3,296.9               | 7.6              | 7.4           | -130.11               | -114.5                              | -46.9        | 60.0                   | 45.3                    | 14.63            | 4.099        |                    |          |
| 3,400.0   | 3,394.5               | 3,401.7               | 3,396.6               | 7.8              | 7.7           | -129.50               | -120.2                              | -50.9        | 60.9                   | 45.7                    | 15.13            | 4.023        |                    |          |
| 3,500.0   | 3,494.2               | 3,501.7               | 3,496.4               | 8.1              | 7.9           | -128.91               | -125.9                              | -54.9        | 61.8                   | 46.1                    | 15.64            | 3.951        |                    |          |
| 3,600.0   | 3,594.0               | 3,601.7               | 3,596.1               | 8.3              | 8.2           | -128.34               | -131.6                              | -58.9        | 62.7                   | 46.6                    | 16.14            | 3.884        |                    |          |
| 3,700.0   | 3,693.7               | 3,701.7               | 3,695.9               | 8.6              | 8.4           | -127.79               | -137.3                              | -62.9        | 63.6                   | 47.0                    | 16.65            | 3.821        |                    |          |
| 3,800.0   | 3,793.5               | 3,801.7               | 3,795.6               | 8.9              | 8.7           | -127.25               | -143.0                              | -66.9        | 64.5                   | 47.4                    | 17.16            | 3.761        |                    |          |
| 3,900.0   | 3,893.3               | 3,901.6               | 3,895.4               | 9.1              | 8.9           | -126.72               | -148.8                              | -70.9        | 65.5                   | 47.8                    | 17.67            | 3.705        |                    |          |
| 4,000.0   | 3,993.0               | 4,001.6               | 3,995.1               | 9.4              | 9.2           | -126.22               | -154.5                              | -74.9        | 66.4                   | 48.2                    | 18.19            | 3.652        |                    |          |
| 4,100.0   | 4,092.8               | 4,101.6               | 4,094.9               | 9.6              | 9.5           | -125.72               | -160.2                              | -78.9        | 67.4                   | 48.7                    | 18.70            | 3.603        |                    |          |
| 4,200.0   | 4,192.5               | 4,201.6               | 4,194.6               | 9.9              | 9.7           | -125.24               | -165.9                              | -82.9        | 68.3                   | 49.1                    | 19.21            | 3.556        |                    |          |
| 4,300.0   | 4,292.3               | 4,301.6               | 4,294.4               | 10.2             | 10.0          | -124.77               | -171.6                              | -86.9        | 69.3                   | 49.5                    | 19.73            | 3.511        |                    |          |
| 4,400.0   | 4,392.0               | 4,401.6               | 4,394.1               | 10.4             | 10.2          | -124.32               | -177.3                              | -90.9        | 70.2                   | 50.0                    | 20.25            | 3.469        |                    |          |
| 4,500.0   | 4,491.8               | 4,501.6               | 4,493.9               | 10.7             | 10.5          | -123.87               | -183.1                              | -94.9        | 71.2                   | 50.4                    | 20.76            | 3.429        |                    |          |
| 4,600.0   | 4,591.6               | 4,601.6               | 4,593.6               | 11.0             | 10.7          | -123.44               | -188.8                              | -98.9        | 72.2                   | 50.9                    | 21.28            | 3.391        |                    |          |
| 4,700.0   | 4,691.3               | 4,701.6               | 4,693.4               | 11.2             | 11.0          | -123.02               | -194.5                              | -102.9       | 73.1                   | 51.3                    | 21.80            | 3.355        |                    |          |
| 4,800.0   | 4,791.1               | 4,801.6               | 4,793.1               | 11.5             | 11.3          | -122.62               | -200.2                              | -106.9       | 74.1                   | 51.8                    | 22.32            | 3.320        |                    |          |
| 4,900.0   | 4,890.8               | 4,901.6               | 4,892.9               | 11.7             | 11.5          | -122.22               | -205.9                              | -110.9       | 75.1                   | 52.2                    | 22.84            | 3.287        |                    |          |
| 5,000.0   | 4,990.6               | 5,001.6               | 4,992.6               | 12.0             | 11.8          | -121.83               | -211.6                              | -114.9       | 76.1                   | 52.7                    | 23.36            | 3.256        |                    |          |
| 5,100.0   | 5,090.3               | 5,101.6               | 5,092.4               | 12.3             | 12.0          | -121.45               | -217.4                              | -118.9       | 77.1                   | 53.2                    | 23.89            | 3.226        |                    |          |

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

# Cathedral Energy Services

## Anticollision Report

|                           |                               |                                     |  |
|---------------------------|-------------------------------|-------------------------------------|--|
| <b>Company:</b>           | Whiting Petroleum Corporation | <b>Local Co-ordinate Reference:</b> | Well Razor Federal #12F-1301A          |
| <b>Project:</b>           | Weld County, CO               | <b>TVD Reference:</b>               | WELL @ 4953.6usft (Original Well Elev) |
| <b>Reference Site:</b>    | S12-T10N-R58W                 | <b>MD Reference:</b>                | WELL @ 4953.6usft (Original Well Elev) |
| <b>Site Error:</b>        | 0.0usft                       | <b>North Reference:</b>             | True                                   |
| <b>Reference Well:</b>    | Razor Federal #12F-1301A      | <b>Survey Calculation Method:</b>   | Minimum Curvature                      |
| <b>Well Error:</b>        | 0.0usft                       | <b>Output errors are at</b>         | 2.00 sigma                             |
| <b>Reference Wellbore</b> | HZ                            | <b>Database:</b>                    | USA EDM 5000 Multi Users DB            |
| <b>Reference Design:</b>  | Plan #3                       | <b>Offset TVD Reference:</b>        | Offset Datum                           |

| Offset Design S12-T10N-R58W - Razor Federal #12F-1302B - 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   | 5,190.1               | 5,201.6               | 5,192.1               | 12.5             | 12.3          | -121.08               | -223.1                              | -122.9       | 78.1                   | 53.6                    | 24.41                  | 3.198             |                             |  |
| 5,300.0   | 5,289.9               | 5,301.6               | 5,291.9               | 12.8             | 12.6          | -120.73               | -228.8                              | -126.9       | 79.0                   | 54.1                    | 24.93                  | 3.170             |                             |  |
| 5,400.0   | 5,389.2               | 5,401.4               | 5,391.5               | 13.1             | 12.8          | -122.42               | -234.5                              | -130.9       | 82.0                   | 56.7                    | 25.36                  | 3.235             |                             |  |
| 5,500.0   | 5,485.0               | 5,505.5               | 5,494.9               | 13.5             | 13.1          | -130.38               | -244.0                              | -137.5       | 94.0                   | 68.7                    | 25.32                  | 3.714             |                             |  |
| 5,600.0   | 5,573.6               | 5,616.3               | 5,600.3               | 14.2             | 13.7          | -135.22               | -271.3                              | -156.6       | 109.6                  | 84.5                    | 25.10                  | 4.366             |                             |  |
| 5,700.0   | 5,651.8               | 5,731.1               | 5,699.6               | 15.0             | 14.4          | -136.76               | -318.2                              | -189.3       | 126.1                  | 101.1                   | 24.98                  | 5.049             |                             |  |
| 5,800.0   | 5,716.7               | 5,849.5               | 5,786.3               | 16.1             | 15.5          | -135.86               | -383.9                              | -235.3       | 142.4                  | 116.9                   | 25.43                  | 5.598             |                             |  |
| 5,900.0   | 5,766.0               | 5,970.5               | 5,854.0               | 17.3             | 16.8          | -133.16               | -465.9                              | -292.6       | 157.6                  | 130.6                   | 26.98                  | 5.841             |                             |  |
| 6,000.0   | 5,797.8               | 6,093.2               | 5,897.2               | 18.8             | 18.5          | -129.12               | -559.7                              | -358.1       | 171.5                  | 141.6                   | 29.88                  | 5.738             |                             |  |
| 6,100.0   | 5,811.0               | 6,216.1               | 5,912.5               | 20.4             | 20.4          | -124.12               | -659.4                              | -427.8       | 183.8                  | 149.8                   | 34.01                  | 5.404             |                             |  |
| 6,200.0   | 5,811.3               | 6,308.0               | 5,912.5               | 21.9             | 21.7          | -121.18               | -735.9                              | -478.8       | 197.4                  | 159.7                   | 37.73                  | 5.233             |                             |  |
| 6,300.0   | 5,811.3               | 6,400.0               | 5,912.5               | 23.4             | 23.0          | -118.89               | -814.8                              | -526.1       | 211.3                  | 170.1                   | 41.21                  | 5.127             |                             |  |
| 6,400.0   | 5,811.3               | 6,488.0               | 5,912.5               | 25.0             | 24.3          | -117.01               | -892.4                              | -567.7       | 225.0                  | 180.4                   | 44.57                  | 5.047             |                             |  |
| 6,500.0   | 5,811.3               | 6,577.2               | 5,912.5               | 26.6             | 25.7          | -115.37               | -972.8                              | -606.2       | 238.3                  | 190.5                   | 47.86                  | 4.980             |                             |  |
| 6,600.0   | 5,811.3               | 6,665.8               | 5,912.5               | 28.2             | 27.0          | -113.96               | -1,054.4                            | -640.7       | 251.4                  | 200.3                   | 51.04                  | 4.925             |                             |  |
| 6,700.0   | 5,811.3               | 6,753.9               | 5,912.5               | 29.8             | 28.4          | -112.73               | -1,137.1                            | -671.2       | 264.0                  | 209.9                   | 54.08                  | 4.881             |                             |  |
| 6,800.0   | 5,811.3               | 6,841.6               | 5,912.5               | 31.4             | 29.8          | -111.67               | -1,220.6                            | -697.7       | 276.1                  | 219.1                   | 56.97                  | 4.846             |                             |  |
| 6,900.0   | 5,811.3               | 6,928.8               | 5,912.5               | 33.0             | 31.1          | -110.74               | -1,304.9                            | -720.2       | 287.7                  | 228.0                   | 59.70                  | 4.819             |                             |  |
| 7,000.0   | 5,811.3               | 7,015.6               | 5,912.5               | 34.6             | 32.4          | -109.93               | -1,389.7                            | -738.8       | 298.7                  | 236.4                   | 62.27                  | 4.797             |                             |  |
| 7,100.0   | 5,811.3               | 7,100.0               | 5,912.5               | 36.2             | 33.7          | -109.23               | -1,472.8                            | -753.2       | 309.1                  | 244.5                   | 64.61                  | 4.785             |                             |  |
| 7,200.0   | 5,811.3               | 7,188.1               | 5,912.5               | 37.7             | 35.1          | -108.59               | -1,560.2                            | -764.3       | 318.9                  | 252.1                   | 66.85                  | 4.771             |                             |  |
| 7,300.0   | 5,811.3               | 7,273.8               | 5,912.5               | 39.2             | 36.4          | -108.04               | -1,645.7                            | -771.2       | 328.0                  | 259.2                   | 68.86                  | 4.764             |                             |  |
| 7,400.0   | 5,811.3               | 7,359.3               | 5,912.5               | 40.7             | 37.7          | -107.57               | -1,731.0                            | -774.2       | 336.5                  | 265.8                   | 70.67                  | 4.761             |                             |  |
| 7,500.0   | 5,811.3               | 7,454.7               | 5,912.5               | 42.1             | 39.1          | -107.17               | -1,826.5                            | -774.4       | 343.1                  | 270.7                   | 72.46                  | 4.735             |                             |  |
| 7,600.0   | 5,811.3               | 7,554.7               | 5,912.5               | 43.6             | 40.6          | -107.06               | -1,926.4                            | -774.4       | 345.1                  | 270.8                   | 74.27                  | 4.646             |                             |  |
| 7,700.0   | 5,811.3               | 7,654.7               | 5,912.5               | 45.0             | 42.2          | -107.06               | -2,026.4                            | -774.4       | 345.1                  | 267.6                   | 77.44                  | 4.456             |                             |  |
| 7,800.0   | 5,811.3               | 7,754.7               | 5,912.5               | 46.4             | 43.8          | -107.06               | -2,126.4                            | -774.4       | 345.0                  | 264.4                   | 80.65                  | 4.279             |                             |  |
| 7,900.0   | 5,811.2               | 7,854.7               | 5,912.5               | 47.9             | 45.4          | -107.05               | -2,226.4                            | -774.4       | 345.0                  | 261.1                   | 83.90                  | 4.113             |                             |  |
| 8,000.0   | 5,811.2               | 7,954.7               | 5,912.4               | 49.4             | 47.0          | -107.05               | -2,326.4                            | -774.4       | 345.0                  | 257.9                   | 87.18                  | 3.958             |                             |  |
| 8,100.0   | 5,811.2               | 8,054.7               | 5,912.4               | 50.9             | 48.7          | -107.05               | -2,426.4                            | -774.4       | 345.0                  | 254.5                   | 90.50                  | 3.813             |                             |  |
| 8,200.0   | 5,811.2               | 8,154.7               | 5,912.4               | 52.5             | 50.3          | -107.05               | -2,526.4                            | -774.4       | 345.0                  | 251.2                   | 93.85                  | 3.676             |                             |  |
| 8,300.0   | 5,811.2               | 8,254.7               | 5,912.4               | 54.0             | 52.0          | -107.05               | -2,626.4                            | -774.4       | 345.0                  | 247.8                   | 97.22                  | 3.549             |                             |  |
| 8,400.0   | 5,811.2               | 8,354.7               | 5,912.4               | 55.6             | 53.7          | -107.05               | -2,726.4                            | -774.4       | 345.0                  | 244.4                   | 100.62                 | 3.429             |                             |  |
| 8,500.0   | 5,811.2               | 8,454.7               | 5,912.4               | 57.2             | 55.5          | -107.05               | -2,826.4                            | -774.4       | 345.0                  | 241.0                   | 104.04                 | 3.316             |                             |  |
| 8,600.0   | 5,811.2               | 8,554.7               | 5,912.4               | 58.9             | 57.2          | -107.05               | -2,926.4                            | -774.4       | 345.0                  | 237.6                   | 107.47                 | 3.210             |                             |  |
| 8,700.0   | 5,811.2               | 8,654.7               | 5,912.4               | 60.5             | 58.9          | -107.05               | -3,026.4                            | -774.3       | 345.0                  | 234.1                   | 110.92                 | 3.110             |                             |  |
| 8,800.0   | 5,811.2               | 8,754.7               | 5,912.4               | 62.2             | 60.7          | -107.05               | -3,126.4                            | -774.3       | 345.0                  | 230.6                   | 114.39                 | 3.016             |                             |  |
| 8,900.0   | 5,811.2               | 8,854.7               | 5,912.4               | 63.9             | 62.5          | -107.05               | -3,226.4                            | -774.3       | 345.0                  | 227.1                   | 117.87                 | 2.927             |                             |  |
| 9,000.0   | 5,811.2               | 8,954.7               | 5,912.4               | 65.6             | 64.2          | -107.05               | -3,326.4                            | -774.3       | 345.0                  | 223.7                   | 121.37                 | 2.843             |                             |  |
| 9,100.0   | 5,811.2               | 9,054.7               | 5,912.4               | 67.3             | 66.0          | -107.05               | -3,426.4                            | -774.3       | 345.0                  | 220.1                   | 124.88                 | 2.763             |                             |  |
| 9,200.0   | 5,811.2               | 9,154.7               | 5,912.4               | 69.0             | 67.8          | -107.05               | -3,526.4                            | -774.3       | 345.0                  | 216.6                   | 128.39                 | 2.687             |                             |  |
| 9,300.0   | 5,811.2               | 9,254.7               | 5,912.4               | 70.7             | 69.6          | -107.05               | -3,626.4                            | -774.3       | 345.0                  | 213.1                   | 131.92                 | 2.615             |                             |  |
| 9,400.0   | 5,811.2               | 9,354.7               | 5,912.3               | 72.5             | 71.4          | -107.05               | -3,726.4                            | -774.3       | 345.0                  | 209.6                   | 135.46                 | 2.547             |                             |  |
| 9,500.0   | 5,811.2               | 9,454.7               | 5,912.3               | 74.2             | 73.2          | -107.05               | -3,826.4                            | -774.3       | 345.0                  | 206.0                   | 139.01                 | 2.482             |                             |  |
| 9,600.0   | 5,811.2               | 9,554.7               | 5,912.3               | 76.0             | 75.0          | -107.05               | -3,926.4                            | -774.3       | 345.0                  | 202.4                   | 142.56                 | 2.420             |                             |  |
| 9,700.0   | 5,811.2               | 9,654.7               | 5,912.3               | 77.7             | 76.9          | -107.05               | -4,026.4                            | -774.3       | 345.0                  | 198.9                   | 146.12                 | 2.361             |                             |  |
| 9,800.0   | 5,811.2               | 9,754.7               | 5,912.3               | 79.5             | 78.7          | -107.05               | -4,126.4                            | -774.3       | 345.0                  | 195.3                   | 149.69                 | 2.305             |                             |  |
| 9,900.0   | 5,811.2               | 9,854.7               | 5,912.3               | 81.3             | 80.5          | -107.05               | -4,226.4                            | -774.3       | 345.0                  | 191.7                   | 153.26                 | 2.251             |                             |  |
| 10,000.0  | 5,811.2               | 9,954.7               | 5,912.3               | 83.1             | 82.3          | -107.05               | -4,326.4                            | -774.3       | 345.0                  | 188.2                   | 156.84                 | 2.200             |                             |  |
| 10,100.0  | 5,811.2               | 10,054.7              | 5,912.3               | 84.9             | 84.2          | -107.05               | -4,426.4                            | -774.3       | 345.0                  | 184.6                   | 160.42                 | 2.150             |                             |  |
| 10,200.0  | 5,811.1               | 10,154.7              | 5,912.3               | 86.7             | 86.0          | -107.04               | -4,526.4                            | -774.3       | 345.0                  | 181.0                   | 164.02                 | 2.103             |                             |  |
| 10,300.0  | 5,811.1               | 10,254.7              | 5,912.3               | 88.5             | 87.9          | -107.04               | -4,626.4                            | -774.3       | 345.0                  | 177.4                   | 167.61                 | 2.058             |                             |  |

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

# Cathedral Energy Services

## Anticollision Report

|                           |                               |                                     |  |
|---------------------------|-------------------------------|-------------------------------------|--|
| <b>Company:</b>           | Whiting Petroleum Corporation | <b>Local Co-ordinate Reference:</b> | Well Razor Federal #12F-1301A          |
| <b>Project:</b>           | Weld County, CO               | <b>TVD Reference:</b>               | WELL @ 4953.6usft (Original Well Elev) |
| <b>Reference Site:</b>    | S12-T10N-R58W                 | <b>MD Reference:</b>                | WELL @ 4953.6usft (Original Well Elev) |
| <b>Site Error:</b>        | 0.0usft                       | <b>North Reference:</b>             | True                                   |
| <b>Reference Well:</b>    | Razor Federal #12F-1301A      | <b>Survey Calculation Method:</b>   | Minimum Curvature                      |
| <b>Well Error:</b>        | 0.0usft                       | <b>Output errors are at</b>         | 2.00 sigma                             |
| <b>Reference Wellbore</b> | HZ                            | <b>Database:</b>                    | USA EDM 5000 Multi Users DB            |
| <b>Reference Design:</b>  | Plan #3                       | <b>Offset TVD Reference:</b>        | Offset Datum                           |

| Offset Design S12-T10N-R58W - Razor Federal #12F-1302B - 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 |
| 10,400.0  | 5,811.1               | 10,354.7              | 5,912.3               | 90.3             | 89.7          | -107.04               | -4,726.4                            | -774.3       | 345.0                  | 173.8                   | 171.21                 | 2.015                       |                   |
| 10,500.0  | 5,811.1               | 10,454.7              | 5,912.3               | 92.1             | 91.6          | -107.04               | -4,826.4                            | -774.3       | 345.0                  | 170.2                   | 174.81                 | 1.973                       |                   |
| 10,600.0  | 5,811.1               | 10,554.7              | 5,912.3               | 93.9             | 93.4          | -107.04               | -4,926.4                            | -774.3       | 345.0                  | 166.6                   | 178.42                 | 1.934                       |                   |
| 10,700.0  | 5,811.1               | 10,654.7              | 5,912.2               | 95.7             | 95.3          | -107.04               | -5,026.4                            | -774.3       | 345.0                  | 162.9                   | 182.03                 | 1.895                       |                   |
| 10,800.0  | 5,811.1               | 10,754.7              | 5,912.2               | 97.5             | 97.2          | -107.04               | -5,126.4                            | -774.2       | 345.0                  | 159.3                   | 185.65                 | 1.858                       |                   |
| 10,900.0  | 5,811.1               | 10,854.7              | 5,912.2               | 99.4             | 99.0          | -107.04               | -5,226.4                            | -774.2       | 345.0                  | 155.7                   | 189.26                 | 1.823                       |                   |
| 11,000.0  | 5,811.1               | 10,954.7              | 5,912.2               | 101.2            | 100.9         | -107.04               | -5,326.4                            | -774.2       | 345.0                  | 152.1                   | 192.89                 | 1.788                       |                   |
| 11,100.0  | 5,811.1               | 11,054.7              | 5,912.2               | 103.0            | 102.7         | -107.04               | -5,426.4                            | -774.2       | 345.0                  | 148.5                   | 196.51                 | 1.755                       |                   |
| 11,200.0  | 5,811.1               | 11,154.7              | 5,912.2               | 104.9            | 104.6         | -107.04               | -5,526.4                            | -774.2       | 345.0                  | 144.8                   | 200.14                 | 1.724                       |                   |
| 11,300.0  | 5,811.1               | 11,254.7              | 5,912.2               | 106.7            | 106.5         | -107.04               | -5,626.4                            | -774.2       | 345.0                  | 141.2                   | 203.77                 | 1.693                       |                   |
| 11,400.0  | 5,811.1               | 11,354.7              | 5,912.2               | 108.6            | 108.4         | -107.04               | -5,726.4                            | -774.2       | 345.0                  | 137.6                   | 207.40                 | 1.663                       |                   |
| 11,500.0  | 5,811.1               | 11,454.7              | 5,912.2               | 110.4            | 110.2         | -107.04               | -5,826.4                            | -774.2       | 345.0                  | 133.9                   | 211.03                 | 1.635                       |                   |
| 11,600.0  | 5,811.1               | 11,554.7              | 5,912.2               | 112.3            | 112.1         | -107.04               | -5,926.4                            | -774.2       | 345.0                  | 130.3                   | 214.67                 | 1.607                       |                   |
| 11,700.0  | 5,811.1               | 11,654.7              | 5,912.2               | 114.1            | 114.0         | -107.04               | -6,026.4                            | -774.2       | 345.0                  | 126.6                   | 218.31                 | 1.580                       |                   |
| 11,800.0  | 5,811.1               | 11,754.7              | 5,912.2               | 116.0            | 115.9         | -107.04               | -6,126.4                            | -774.2       | 345.0                  | 123.0                   | 221.95                 | 1.554                       |                   |
| 11,900.0  | 5,811.1               | 11,854.7              | 5,912.2               | 117.8            | 117.7         | -107.04               | -6,226.4                            | -774.2       | 344.9                  | 119.4                   | 225.59                 | 1.529                       |                   |
| 12,000.0  | 5,811.1               | 11,954.7              | 5,912.1               | 119.7            | 119.6         | -107.04               | -6,326.4                            | -774.2       | 344.9                  | 115.7                   | 229.24                 | 1.505                       |                   |
| 12,100.0  | 5,811.1               | 12,054.7              | 5,912.1               | 121.6            | 121.5         | -107.04               | -6,426.4                            | -774.2       | 344.9                  | 112.1                   | 232.88                 | 1.481 Level 3               |                   |
| 12,200.0  | 5,811.1               | 12,154.7              | 5,912.1               | 123.4            | 123.4         | -107.04               | -6,526.4                            | -774.2       | 344.9                  | 108.4                   | 236.53                 | 1.458 Level 3               |                   |
| 12,300.0  | 5,811.1               | 12,254.7              | 5,912.1               | 125.3            | 125.3         | -107.04               | -6,626.4                            | -774.2       | 344.9                  | 104.8                   | 240.18                 | 1.436 Level 3               |                   |
| 12,400.0  | 5,811.1               | 12,354.7              | 5,912.1               | 127.2            | 127.2         | -107.04               | -6,726.4                            | -774.2       | 344.9                  | 101.1                   | 243.83                 | 1.415 Level 3               |                   |
| 12,500.0  | 5,811.0               | 12,454.7              | 5,912.1               | 129.0            | 129.1         | -107.03               | -6,826.4                            | -774.2       | 344.9                  | 97.4                    | 247.48                 | 1.394 Level 3               |                   |
| 12,600.0  | 5,811.0               | 12,554.7              | 5,912.1               | 130.9            | 130.9         | -107.03               | -6,926.4                            | -774.2       | 344.9                  | 93.8                    | 251.14                 | 1.373 Level 3               |                   |
| 12,700.0  | 5,811.0               | 12,654.7              | 5,912.1               | 132.8            | 132.8         | -107.03               | -7,026.4                            | -774.2       | 344.9                  | 90.1                    | 254.79                 | 1.354 Level 3               |                   |
| 12,800.0  | 5,811.0               | 12,754.7              | 5,912.1               | 134.6            | 134.7         | -107.03               | -7,126.4                            | -774.1       | 344.9                  | 86.5                    | 258.45                 | 1.335 Level 3               |                   |
| 12,900.0  | 5,811.0               | 12,854.7              | 5,912.1               | 136.5            | 136.6         | -107.03               | -7,226.4                            | -774.1       | 344.9                  | 82.8                    | 262.11                 | 1.316 Level 3               |                   |
| 13,000.0  | 5,811.0               | 12,954.7              | 5,912.1               | 138.4            | 138.5         | -107.03               | -7,326.4                            | -774.1       | 344.9                  | 79.2                    | 265.77                 | 1.298 Level 3               |                   |
| 13,100.0  | 5,811.0               | 13,054.7              | 5,912.1               | 140.3            | 140.4         | -107.03               | -7,426.4                            | -774.1       | 344.9                  | 75.5                    | 269.43                 | 1.280 Level 3               |                   |
| 13,200.0  | 5,811.0               | 13,154.7              | 5,912.1               | 142.1            | 142.3         | -107.03               | -7,526.4                            | -774.1       | 344.9                  | 71.8                    | 273.09                 | 1.263 Level 3               |                   |
| 13,300.0  | 5,811.0               | 13,254.7              | 5,912.0               | 144.0            | 144.2         | -107.03               | -7,626.4                            | -774.1       | 344.9                  | 68.2                    | 276.75                 | 1.246 Level 2               |                   |
| 13,400.0  | 5,811.0               | 13,354.7              | 5,912.0               | 145.9            | 146.1         | -107.03               | -7,726.4                            | -774.1       | 344.9                  | 64.5                    | 280.41                 | 1.230 Level 2               |                   |
| 13,500.0  | 5,811.0               | 13,454.7              | 5,912.0               | 147.8            | 148.0         | -107.03               | -7,826.4                            | -774.1       | 344.9                  | 60.8                    | 284.08                 | 1.214 Level 2               |                   |
| 13,600.0  | 5,811.0               | 13,554.7              | 5,912.0               | 149.7            | 149.9         | -107.03               | -7,926.4                            | -774.1       | 344.9                  | 57.2                    | 287.74                 | 1.199 Level 2               |                   |
| 13,700.0  | 5,811.0               | 13,654.7              | 5,912.0               | 151.6            | 151.8         | -107.03               | -8,026.4                            | -774.1       | 344.9                  | 53.5                    | 291.41                 | 1.184 Level 2               |                   |
| 13,800.0  | 5,811.0               | 13,754.7              | 5,912.0               | 153.4            | 153.7         | -107.03               | -8,126.4                            | -774.1       | 344.9                  | 49.8                    | 295.08                 | 1.169 Level 2               |                   |
| 13,900.0  | 5,811.0               | 13,854.7              | 5,912.0               | 155.3            | 155.4         | -107.03               | -8,226.4                            | -774.1       | 344.9                  | 46.3                    | 298.56                 | 1.155 Level 2               |                   |
| 13,917.5  | 5,811.0               | 13,872.2              | 5,912.0               | 155.7            | 155.7         | -107.03               | -8,244.0                            | -774.1       | 344.9                  | 45.8                    | 299.14                 | 1.153 Level 2               |                   |
| 13,919.8  | 5,811.0               | 13,872.5              | 5,912.0               | 155.7            | 155.7         | -107.03               | -8,244.3                            | -774.1       | 344.9                  | 45.7                    | 299.19                 | 1.153 Level 2, SF           |                   |

# Cathedral Energy Services

## Anticollision Report

|                           |                               |                                     |  |
|---------------------------|-------------------------------|-------------------------------------|--|
| <b>Company:</b>           | Whiting Petroleum Corporation | <b>Local Co-ordinate Reference:</b> | Well Razor Federal #12F-1301A          |
| <b>Project:</b>           | Weld County, CO               | <b>TVD Reference:</b>               | WELL @ 4953.6usft (Original Well Elev) |
| <b>Reference Site:</b>    | S12-T10N-R58W                 | <b>MD Reference:</b>                | WELL @ 4953.6usft (Original Well Elev) |
| <b>Site Error:</b>        | 0.0usft                       | <b>North Reference:</b>             | True                                   |
| <b>Reference Well:</b>    | Razor Federal #12F-1301A      | <b>Survey Calculation Method:</b>   | Minimum Curvature                      |
| <b>Well Error:</b>        | 0.0usft                       | <b>Output errors are at</b>         | 2.00 sigma                             |
| <b>Reference Wellbore</b> | HZ                            | <b>Database:</b>                    | USA EDM 5000 Multi Users DB            |
| <b>Reference Design:</b>  | Plan #3                       | <b>Offset TVD Reference:</b>        | Offset Datum                           |

| Offset Design S12-T10N-R58W - Razor Federal #12F-1303A - 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                                 | 66.1         | 66.1                   |                         |                        |                   |                             |         |
| 100.0   | 100.0                 | 100.0                 | 100.0                 | 0.1              | 0.1           | 90.00                 | 0.0                                 | 66.1         | 66.1                   | 65.9                    | 0.19                   | 353.354           |                             |         |
| 200.0   | 200.0                 | 200.0                 | 200.0                 | 0.3              | 0.3           | 90.00                 | 0.0                                 | 66.1         | 66.1                   | 65.5                    | 0.64                   | 103.819           |                             |         |
| 300.0   | 300.0                 | 300.0                 | 300.0                 | 0.5              | 0.5           | 90.00                 | 0.0                                 | 66.1         | 66.1                   | 65.0                    | 1.09                   | 60.848            |                             |         |
| 400.0   | 400.0                 | 400.0                 | 400.0                 | 0.8              | 0.8           | 90.00                 | 0.0                                 | 66.1         | 66.1                   | 64.6                    | 1.54                   | 43.036            |                             |         |
| 500.0   | 500.0                 | 500.0                 | 500.0                 | 1.0              | 1.0           | 90.00                 | 0.0                                 | 66.1         | 66.1                   | 64.1                    | 1.99                   | 33.291            |                             |         |
| 600.0   | 600.0                 | 600.9                 | 600.9                 | 1.2              | 1.2           | 91.42                 | -1.6                                | 65.4         | 65.4                   | 63.0                    | 2.41                   | 27.121            |                             |         |
| 700.0   | 700.0                 | 701.5                 | 701.4                 | 1.4              | 1.4           | 95.85                 | -6.5                                | 63.2         | 63.6                   | 60.7                    | 2.83                   | 22.482            |                             |         |
| 800.0   | 800.0                 | 801.3                 | 800.9                 | 1.7              | 1.6           | 102.00                | -12.8                               | 60.4         | 61.8                   | 58.5                    | 3.25                   | 18.982            |                             |         |
| 900.0   | 900.0                 | 901.1                 | 900.4                 | 1.9              | 1.8           | 108.44                | -19.2                               | 57.6         | 60.7                   | 57.0                    | 3.69                   | 16.449            |                             |         |
| 982.9   | 982.9                 | 983.8                 | 982.9                 | 2.1              | 2.0           | 113.90                | -24.5                               | 55.2         | 60.4                   | 56.4                    | 4.06                   | 14.872 CC         |                             |         |
| 1,000.0   | 1,000.0               | 1,000.8               | 999.9                 | 2.1              | 2.1           | 115.03                | -25.6                               | 54.8         | 60.4                   | 56.3                    | 4.14                   | 14.597 ES         |                             |         |
| 1,100.0   | 1,100.0               | 1,100.7               | 1,099.5               | 2.3              | 2.3           | -104.04               | -31.9                               | 51.9         | 61.4                   | 56.8                    | 4.61                   | 13.320            |                             |         |
| 1,200.0   | 1,199.8               | 1,200.6               | 1,199.2               | 2.5              | 2.5           | -102.32               | -38.3                               | 49.1         | 63.4                   | 58.4                    | 5.04                   | 12.591            |                             |         |
| 1,300.0   | 1,299.6               | 1,300.6               | 1,299.0               | 2.7              | 2.8           | -102.24               | -44.7                               | 46.3         | 65.9                   | 60.4                    | 5.48                   | 12.013            |                             |         |
| 1,400.0   | 1,399.4               | 1,400.6               | 1,398.7               | 2.9              | 3.0           | -102.16               | -51.1                               | 43.5         | 68.3                   | 62.4                    | 5.94                   | 11.496            |                             |         |
| 1,500.0   | 1,499.1               | 1,500.5               | 1,498.4               | 3.1              | 3.3           | -102.09               | -57.4                               | 40.6         | 70.7                   | 64.3                    | 6.41                   | 11.035            |                             |         |
| 1,600.0   | 1,598.9               | 1,600.5               | 1,598.1               | 3.4              | 3.5           | -102.02               | -63.8                               | 37.8         | 73.2                   | 66.3                    | 6.89                   | 10.624            |                             |         |
| 1,700.0   | 1,698.6               | 1,700.5               | 1,697.9               | 3.6              | 3.8           | -101.96               | -70.2                               | 35.0         | 75.6                   | 68.2                    | 7.37                   | 10.257            |                             |         |
| 1,800.0   | 1,798.4               | 1,800.4               | 1,797.6               | 3.8              | 4.1           | -101.90               | -76.6                               | 32.2         | 78.1                   | 70.2                    | 7.86                   | 9.928             |                             |         |
| 1,900.0   | 1,898.1               | 1,900.4               | 1,897.3               | 4.1              | 4.3           | -101.84               | -82.9                               | 29.3         | 80.5                   | 72.1                    | 8.36                   | 9.632             |                             |         |
| 2,000.0   | 1,997.9               | 2,000.4               | 1,997.1               | 4.3              | 4.6           | -101.79               | -89.3                               | 26.5         | 82.9                   | 74.1                    | 8.86                   | 9.365             |                             |         |
| 2,100.0   | 2,097.6               | 2,100.4               | 2,096.8               | 4.5              | 4.8           | -101.74               | -95.7                               | 23.7         | 85.4                   | 76.0                    | 9.36                   | 9.124             |                             |         |
| 2,200.0   | 2,197.4               | 2,200.3               | 2,196.5               | 4.8              | 5.1           | -101.69               | -102.1                              | 20.9         | 87.8                   | 78.0                    | 9.86                   | 8.905             |                             |         |
| 2,300.0   | 2,297.2               | 2,300.3               | 2,296.2               | 5.0              | 5.4           | -101.65               | -108.4                              | 18.0         | 90.3                   | 79.9                    | 10.37                  | 8.705             |                             |         |
| 2,400.0   | 2,396.9               | 2,400.3               | 2,396.0               | 5.3              | 5.6           | -101.61               | -114.8                              | 15.2         | 92.7                   | 81.8                    | 10.88                  | 8.522             |                             |         |
| 2,500.0   | 2,496.7               | 2,500.2               | 2,495.7               | 5.5              | 5.9           | -101.57               | -121.2                              | 12.4         | 95.1                   | 83.7                    | 11.39                  | 8.354             |                             |         |
| 2,600.0   | 2,596.4               | 2,600.2               | 2,595.4               | 5.8              | 6.1           | -101.53               | -127.6                              | 9.6          | 97.6                   | 85.7                    | 11.90                  | 8.200             |                             |         |
| 2,700.0   | 2,696.2               | 2,700.2               | 2,695.1               | 6.0              | 6.4           | -101.49               | -133.9                              | 6.7          | 100.0                  | 87.6                    | 12.41                  | 8.057             |                             |         |
| 2,800.0   | 2,795.9               | 2,800.1               | 2,794.9               | 6.3              | 6.7           | -101.46               | -140.3                              | 3.9          | 102.5                  | 89.5                    | 12.93                  | 7.925             |                             |         |
| 2,900.0   | 2,895.7               | 2,900.1               | 2,894.6               | 6.5              | 6.9           | -101.43               | -146.7                              | 1.1          | 104.9                  | 91.5                    | 13.44                  | 7.803             |                             |         |
| 3,000.0   | 2,995.5               | 3,000.1               | 2,994.3               | 6.8              | 7.2           | -101.39               | -153.1                              | -1.7         | 107.3                  | 93.4                    | 13.96                  | 7.689             |                             |         |
| 3,100.0   | 3,095.2               | 3,100.1               | 3,094.0               | 7.1              | 7.5           | -101.36               | -159.4                              | -4.6         | 109.8                  | 95.3                    | 14.48                  | 7.583             |                             |         |
| 3,200.0   | 3,195.0               | 3,200.0               | 3,193.8               | 7.3              | 7.7           | -101.34               | -165.8                              | -7.4         | 112.2                  | 97.2                    | 15.00                  | 7.484             |                             |         |
| 3,300.0   | 3,294.7               | 3,300.0               | 3,293.5               | 7.6              | 8.0           | -101.31               | -172.2                              | -10.2        | 114.7                  | 99.1                    | 15.51                  | 7.391             |                             |         |
| 3,400.0   | 3,394.5               | 3,400.0               | 3,393.2               | 7.8              | 8.2           | -101.28               | -178.6                              | -13.0        | 117.1                  | 101.1                   | 16.03                  | 7.304             |                             |         |
| 3,500.0   | 3,494.2               | 3,499.9               | 3,493.0               | 8.1              | 8.5           | -101.26               | -184.9                              | -15.9        | 119.5                  | 103.0                   | 16.55                  | 7.222             |                             |         |
| 3,600.0   | 3,594.0               | 3,599.9               | 3,592.7               | 8.3              | 8.8           | -101.23               | -191.3                              | -18.7        | 122.0                  | 104.9                   | 17.07                  | 7.145             |                             |         |
| 3,700.0   | 3,693.7               | 3,699.9               | 3,692.4               | 8.6              | 9.0           | -101.21               | -197.7                              | -21.5        | 124.4                  | 106.8                   | 17.59                  | 7.072             |                             |         |
| 3,800.0   | 3,793.5               | 3,799.8               | 3,792.1               | 8.9              | 9.3           | -101.19               | -204.1                              | -24.3        | 126.9                  | 108.8                   | 18.12                  | 7.003             |                             |         |
| 3,900.0   | 3,893.3               | 3,899.8               | 3,891.9               | 9.1              | 9.6           | -101.17               | -210.4                              | -27.2        | 129.3                  | 110.7                   | 18.64                  | 6.938             |                             |         |
| 4,000.0   | 3,993.0               | 3,999.8               | 3,991.6               | 9.4              | 9.8           | -101.15               | -216.8                              | -30.0        | 131.8                  | 112.6                   | 19.16                  | 6.877             |                             |         |
| 4,100.0   | 4,092.8               | 4,099.8               | 4,091.3               | 9.6              | 10.1          | -101.13               | -223.2                              | -32.8        | 134.2                  | 114.5                   | 19.68                  | 6.818             |                             |         |
| 4,200.0   | 4,192.5               | 4,199.7               | 4,191.0               | 9.9              | 10.4          | -101.11               | -229.6                              | -35.6        | 136.6                  | 116.4                   | 20.20                  | 6.763             |                             |         |
| 4,300.0   | 4,292.3               | 4,299.7               | 4,290.8               | 10.2             | 10.6          | -101.09               | -236.0                              | -38.5        | 139.1                  | 118.3                   | 20.73                  | 6.710             |                             |         |
| 4,400.0   | 4,392.0               | 4,399.7               | 4,390.5               | 10.4             | 10.9          | -101.07               | -242.3                              | -41.3        | 141.5                  | 120.3                   | 21.25                  | 6.660             |                             |         |
| 4,500.0   | 4,491.8               | 4,499.6               | 4,490.2               | 10.7             | 11.1          | -101.05               | -248.7                              | -44.1        | 144.0                  | 122.2                   | 21.77                  | 6.612             |                             |         |
| 4,600.0   | 4,591.6               | 4,599.6               | 4,589.9               | 11.0             | 11.4          | -101.04               | -255.1                              | -46.9        | 146.4                  | 124.1                   | 22.30                  | 6.566             |                             |         |
| 4,700.0   | 4,691.3               | 4,699.6               | 4,689.7               | 11.2             | 11.7          | -101.02               | -261.5                              | -49.8        | 148.8                  | 126.0                   | 22.82                  | 6.522             |                             |         |
| 4,800.0   | 4,791.1               | 4,799.5               | 4,789.4               | 11.5             | 11.9          | -101.01               | -267.8                              | -52.6        | 151.3                  | 127.9                   | 23.34                  | 6.481             |                             |         |
| 4,900.0   | 4,890.8               | 4,899.5               | 4,889.1               | 11.7             | 12.2          | -100.99               | -274.2                              | -55.4        | 153.7                  | 129.9                   | 23.87                  | 6.441             |                             |         |
| 5,000.0   | 4,990.6               | 4,999.5               | 4,988.9               | 12.0             | 12.5          | -100.98               | -280.6                              | -58.2        | 156.2                  | 131.8                   | 24.39                  | 6.402             |                             |         |

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



# Cathedral Energy Services

## Anticollision Report

|                           |                               |                                     |  |
|---------------------------|-------------------------------|-------------------------------------|--|
| <b>Company:</b>           | Whiting Petroleum Corporation | <b>Local Co-ordinate Reference:</b> | Well Razor Federal #12F-1301A          |
| <b>Project:</b>           | Weld County, CO               | <b>TVD Reference:</b>               | WELL @ 4953.6usft (Original Well Elev) |
| <b>Reference Site:</b>    | S12-T10N-R58W                 | <b>MD Reference:</b>                | WELL @ 4953.6usft (Original Well Elev) |
| <b>Site Error:</b>        | 0.0usft                       | <b>North Reference:</b>             | True                                   |
| <b>Reference Well:</b>    | Razor Federal #12F-1301A      | <b>Survey Calculation Method:</b>   | Minimum Curvature                      |
| <b>Well Error:</b>        | 0.0usft                       | <b>Output errors are at</b>         | 2.00 sigma                             |
| <b>Reference Wellbore</b> | HZ                            | <b>Database:</b>                    | USA EDM 5000 Multi Users DB            |
| <b>Reference Design:</b>  | Plan #3                       | <b>Offset TVD Reference:</b>        | Offset Datum                           |

| Offset Design S12-T10N-R58W - Razor Federal #12F-1303A - 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 |                             |         |
| 5,100.0   | 5,090.3               | 5,099.5               | 5,088.6               | 12.3             | 12.7          | -100.96               | -287.0                              | -61.1        | 158.6                  | 133.7                   | 24.92                  | 6.366             |                             |         |
| 5,200.0   | 5,190.1               | 5,199.4               | 5,188.3               | 12.5             | 13.0          | -100.95               | -293.3                              | -63.9        | 161.0                  | 135.6                   | 25.44                  | 6.330             |                             |         |
| 5,300.0   | 5,289.9               | 5,299.4               | 5,288.0               | 12.8             | 13.3          | -100.93               | -299.7                              | -66.7        | 163.5                  | 137.5                   | 25.97                  | 6.296             |                             |         |
| 5,400.0   | 5,389.2               | 5,396.4               | 5,384.4               | 13.1             | 13.5          | -100.73               | -308.9                              | -70.8        | 167.2                  | 140.7                   | 26.53                  | 6.301             |                             |         |
| 5,500.0   | 5,485.0               | 5,491.1               | 5,475.6               | 13.5             | 14.0          | -100.07               | -332.2                              | -81.1        | 176.8                  | 149.5                   | 27.36                  | 6.462             |                             |         |
| 5,600.0   | 5,573.6               | 5,585.1               | 5,559.9               | 14.2             | 14.6          | -99.02                | -369.8                              | -97.9        | 192.5                  | 163.9                   | 28.51                  | 6.751             |                             |         |
| 5,700.0   | 5,651.8               | 5,678.1               | 5,634.8               | 15.0             | 15.3          | -97.62                | -420.0                              | -120.2       | 213.5                  | 183.5                   | 30.04                  | 7.108             |                             |         |
| 5,800.0   | 5,716.7               | 5,770.2               | 5,698.1               | 16.1             | 16.2          | -95.92                | -481.0                              | -147.3       | 239.2                  | 207.1                   | 32.01                  | 7.471             |                             |         |
| 5,900.0   | 5,766.0               | 5,861.7               | 5,748.4               | 17.3             | 17.3          | -94.00                | -550.7                              | -178.3       | 268.5                  | 234.1                   | 34.39                  | 7.808             |                             |         |
| 6,000.0   | 5,797.8               | 5,953.1               | 5,784.6               | 18.8             | 18.5          | -91.93                | -627.2                              | -212.4       | 300.6                  | 263.5                   | 37.12                  | 8.098             |                             |         |
| 6,100.0   | 5,811.0               | 6,045.1               | 5,805.7               | 20.4             | 19.8          | -89.80                | -708.8                              | -248.7       | 334.3                  | 294.2                   | 40.11                  | 8.333             |                             |         |
| 6,200.0   | 5,811.3               | 6,136.0               | 5,811.1               | 21.9             | 21.2          | -89.96                | -791.7                              | -285.5       | 367.0                  | 323.7                   | 43.26                  | 8.483             |                             |         |
| 6,300.0   | 5,811.3               | 6,215.3               | 5,811.1               | 23.4             | 22.3          | -89.97                | -865.1                              | -315.6       | 397.6                  | 351.4                   | 46.14                  | 8.617             |                             |         |
| 6,400.0   | 5,811.3               | 6,300.0               | 5,811.1               | 25.0             | 23.5          | -89.97                | -944.7                              | -344.4       | 427.2                  | 378.1                   | 49.04                  | 8.712             |                             |         |
| 6,500.0   | 5,811.3               | 6,371.7               | 5,811.1               | 26.6             | 24.5          | -89.97                | -1,013.1                            | -366.0       | 455.6                  | 403.8                   | 51.78                  | 8.799             |                             |         |
| 6,600.0   | 5,811.3               | 6,448.9               | 5,811.1               | 28.2             | 25.6          | -89.97                | -1,087.6                            | -386.3       | 482.9                  | 428.3                   | 54.54                  | 8.854             |                             |         |
| 6,700.0   | 5,811.3               | 6,525.6               | 5,811.1               | 29.8             | 26.8          | -89.97                | -1,162.3                            | -403.5       | 509.0                  | 451.8                   | 57.23                  | 8.895             |                             |         |
| 6,800.0   | 5,811.3               | 6,600.0               | 5,811.1               | 31.4             | 27.9          | -89.98                | -1,235.4                            | -417.3       | 534.0                  | 474.2                   | 59.79                  | 8.931             |                             |         |
| 6,900.0   | 5,811.3               | 6,677.2               | 5,811.1               | 33.0             | 29.0          | -89.98                | -1,311.8                            | -428.7       | 557.7                  | 495.4                   | 62.29                  | 8.954             |                             |         |
| 7,000.0   | 5,811.3               | 6,752.3               | 5,811.1               | 34.6             | 30.2          | -89.98                | -1,386.4                            | -436.7       | 580.2                  | 515.5                   | 64.63                  | 8.977             |                             |         |
| 7,100.0   | 5,811.3               | 6,826.9               | 5,811.1               | 36.2             | 31.3          | -89.98                | -1,460.9                            | -441.8       | 601.4                  | 534.5                   | 66.82                  | 8.999             |                             |         |
| 7,200.0   | 5,811.3               | 6,900.0               | 5,811.1               | 37.7             | 32.4          | -89.98                | -1,533.9                            | -443.9       | 621.2                  | 552.4                   | 68.84                  | 9.024             |                             |         |
| 7,300.0   | 5,811.3               | 6,993.6               | 5,811.1               | 39.2             | 33.9          | -89.98                | -1,627.5                            | -444.0       | 638.7                  | 567.6                   | 71.07                  | 8.987             |                             |         |
| 7,400.0   | 5,811.3               | 7,092.8               | 5,811.1               | 40.7             | 35.5          | -89.98                | -1,726.7                            | -444.0       | 651.1                  | 577.8                   | 73.27                  | 8.886             |                             |         |
| 7,500.0   | 5,811.3               | 7,192.5               | 5,811.1               | 42.1             | 37.2          | -89.98                | -1,826.4                            | -444.0       | 658.3                  | 583.0                   | 75.31                  | 8.741             |                             |         |
| 7,600.0   | 5,811.3               | 7,292.5               | 5,811.1               | 43.6             | 38.9          | -89.98                | -1,926.4                            | -444.0       | 660.3                  | 582.9                   | 77.37                  | 8.535             |                             |         |
| 7,700.0   | 5,811.3               | 7,392.5               | 5,811.1               | 45.0             | 40.6          | -89.98                | -2,026.4                            | -444.0       | 660.3                  | 579.6                   | 80.72                  | 8.180             |                             |         |
| 7,800.0   | 5,811.3               | 7,492.5               | 5,811.1               | 46.4             | 42.3          | -89.98                | -2,126.4                            | -444.0       | 660.3                  | 576.2                   | 84.12                  | 7.849             |                             |         |
| 7,900.0   | 5,811.2               | 7,592.5               | 5,811.1               | 47.9             | 44.0          | -89.98                | -2,226.4                            | -444.0       | 660.3                  | 572.7                   | 87.56                  | 7.541             |                             |         |
| 8,000.0   | 5,811.2               | 7,692.5               | 5,811.1               | 49.4             | 45.8          | -89.98                | -2,326.4                            | -443.9       | 660.3                  | 569.3                   | 91.03                  | 7.254             |                             |         |
| 8,100.0   | 5,811.2               | 7,792.5               | 5,811.1               | 50.9             | 47.5          | -89.98                | -2,426.4                            | -443.9       | 660.3                  | 565.8                   | 94.53                  | 6.985             |                             |         |
| 8,200.0   | 5,811.2               | 7,892.5               | 5,811.1               | 52.5             | 49.3          | -89.98                | -2,526.4                            | -443.9       | 660.3                  | 562.3                   | 98.05                  | 6.734             |                             |         |
| 8,300.0   | 5,811.2               | 7,992.5               | 5,811.1               | 54.0             | 51.1          | -89.98                | -2,626.4                            | -443.9       | 660.3                  | 558.7                   | 101.60                 | 6.499             |                             |         |
| 8,400.0   | 5,811.2               | 8,092.5               | 5,811.1               | 55.6             | 52.9          | -89.99                | -2,726.4                            | -443.9       | 660.3                  | 555.1                   | 105.17                 | 6.278             |                             |         |
| 8,500.0   | 5,811.2               | 8,192.5               | 5,811.1               | 57.2             | 54.7          | -89.99                | -2,826.4                            | -443.9       | 660.3                  | 551.6                   | 108.76                 | 6.071             |                             |         |
| 8,600.0   | 5,811.2               | 8,292.5               | 5,811.1               | 58.9             | 56.5          | -89.99                | -2,926.4                            | -443.9       | 660.3                  | 547.9                   | 112.36                 | 5.877             |                             |         |
| 8,700.0   | 5,811.2               | 8,392.5               | 5,811.1               | 60.5             | 58.3          | -89.99                | -3,026.4                            | -443.9       | 660.3                  | 544.3                   | 115.98                 | 5.693             |                             |         |
| 8,800.0   | 5,811.2               | 8,492.5               | 5,811.1               | 62.2             | 60.2          | -89.99                | -3,126.4                            | -443.9       | 660.3                  | 540.7                   | 119.62                 | 5.520             |                             |         |
| 8,900.0   | 5,811.2               | 8,592.5               | 5,811.0               | 63.9             | 62.0          | -89.99                | -3,226.4                            | -443.9       | 660.3                  | 537.0                   | 123.27                 | 5.357             |                             |         |
| 9,000.0   | 5,811.2               | 8,692.5               | 5,811.0               | 65.6             | 63.8          | -89.99                | -3,326.4                            | -443.9       | 660.3                  | 533.4                   | 126.93                 | 5.202             |                             |         |
| 9,100.0   | 5,811.2               | 8,792.5               | 5,811.0               | 67.3             | 65.7          | -89.99                | -3,426.4                            | -443.9       | 660.3                  | 529.7                   | 130.60                 | 5.056             |                             |         |
| 9,200.0   | 5,811.2               | 8,892.5               | 5,811.0               | 69.0             | 67.5          | -89.99                | -3,526.4                            | -443.9       | 660.3                  | 526.0                   | 134.27                 | 4.918             |                             |         |
| 9,300.0   | 5,811.2               | 8,992.5               | 5,811.0               | 70.7             | 69.4          | -89.99                | -3,626.4                            | -443.9       | 660.3                  | 522.3                   | 137.96                 | 4.786             |                             |         |
| 9,400.0   | 5,811.2               | 9,092.5               | 5,811.0               | 72.5             | 71.2          | -89.99                | -3,726.4                            | -443.9       | 660.3                  | 518.7                   | 141.66                 | 4.661             |                             |         |
| 9,500.0   | 5,811.2               | 9,192.5               | 5,811.0               | 74.2             | 73.1          | -89.99                | -3,826.4                            | -443.8       | 660.3                  | 514.9                   | 145.37                 | 4.542             |                             |         |
| 9,600.0   | 5,811.2               | 9,292.5               | 5,811.0               | 76.0             | 74.9          | -89.99                | -3,926.4                            | -443.8       | 660.3                  | 511.2                   | 149.08                 | 4.429             |                             |         |
| 9,700.0   | 5,811.2               | 9,392.5               | 5,811.0               | 77.7             | 76.8          | -89.99                | -4,026.4                            | -443.8       | 660.3                  | 507.5                   | 152.80                 | 4.322             |                             |         |
| 9,800.0   | 5,811.2               | 9,492.5               | 5,811.0               | 79.5             | 78.7          | -89.99                | -4,126.4                            | -443.8       | 660.3                  | 503.8                   | 156.52                 | 4.219             |                             |         |
| 9,900.0   | 5,811.2               | 9,592.5               | 5,811.0               | 81.3             | 80.5          | -89.99                | -4,226.4                            | -443.8       | 660.3                  | 500.1                   | 160.25                 | 4.121             |                             |         |
| 10,000.0  | 5,811.2               | 9,692.5               | 5,811.0               | 83.1             | 82.4          | -89.99                | -4,326.4                            | -443.8       | 660.3                  | 496.3                   | 163.99                 | 4.027             |                             |         |
| 10,100.0  | 5,811.2               | 9,792.5               | 5,811.0               | 84.9             | 84.3          | -89.99                | -4,426.4                            | -443.8       | 660.3                  | 492.6                   | 167.73                 | 3.937             |                             |         |
| 10,200.0  | 5,811.1               | 9,892.5               | 5,811.0               | 86.7             | 86.2          | -89.99                | -4,526.4                            | -443.8       | 660.3                  | 488.8                   | 171.47                 | 3.851             |                             |         |

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



# Cathedral Energy Services

## Anticollision Report

|                           |                               |                                     |  |
|---------------------------|-------------------------------|-------------------------------------|--|
| <b>Company:</b>           | Whiting Petroleum Corporation | <b>Local Co-ordinate Reference:</b> | Well Razor Federal #12F-1301A          |
| <b>Project:</b>           | Weld County, CO               | <b>TVD Reference:</b>               | WELL @ 4953.6usft (Original Well Elev) |
| <b>Reference Site:</b>    | S12-T10N-R58W                 | <b>MD Reference:</b>                | WELL @ 4953.6usft (Original Well Elev) |
| <b>Site Error:</b>        | 0.0usft                       | <b>North Reference:</b>             | True                                   |
| <b>Reference Well:</b>    | Razor Federal #12F-1301A      | <b>Survey Calculation Method:</b>   | Minimum Curvature                      |
| <b>Well Error:</b>        | 0.0usft                       | <b>Output errors are at</b>         | 2.00 sigma                             |
| <b>Reference Wellbore</b> | HZ                            | <b>Database:</b>                    | USA EDM 5000 Multi Users DB            |
| <b>Reference Design:</b>  | Plan #3                       | <b>Offset TVD Reference:</b>        | Offset Datum                           |

| Offset Design S12-T10N-R58W - Razor Federal #12F-1303A - 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              |                                     |              |                        |                         |                        |                    |          |
| 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  |
| 10,300.0  | 5,811.1               | 9,992.5               | 5,811.0               | 88.5             | 88.0          | -89.99                | -4,626.4                            | -443.8       | 660.3                  | 485.1                   | 175.22                 | 3.768              |          |
| 10,400.0  | 5,811.1               | 10,092.5              | 5,811.0               | 90.3             | 89.9          | -89.99                | -4,726.4                            | -443.8       | 660.3                  | 481.3                   | 178.97                 | 3.689              |          |
| 10,500.0  | 5,811.1               | 10,192.5              | 5,811.0               | 92.1             | 91.8          | -89.99                | -4,826.4                            | -443.8       | 660.3                  | 477.6                   | 182.73                 | 3.614              |          |
| 10,600.0  | 5,811.1               | 10,292.5              | 5,811.0               | 93.9             | 93.7          | -89.99                | -4,926.4                            | -443.8       | 660.3                  | 473.8                   | 186.49                 | 3.541              |          |
| 10,700.0  | 5,811.1               | 10,392.5              | 5,811.0               | 95.7             | 95.6          | -89.99                | -5,026.4                            | -443.8       | 660.3                  | 470.1                   | 190.26                 | 3.471              |          |
| 10,800.0  | 5,811.1               | 10,492.5              | 5,811.0               | 97.5             | 97.5          | -89.99                | -5,126.4                            | -443.8       | 660.3                  | 466.3                   | 194.02                 | 3.403              |          |
| 10,900.0  | 5,811.1               | 10,592.5              | 5,811.0               | 99.4             | 99.4          | -89.99                | -5,226.4                            | -443.8       | 660.3                  | 462.5                   | 197.79                 | 3.338              |          |
| 11,000.0  | 5,811.1               | 10,692.5              | 5,811.0               | 101.2            | 101.2         | -89.99                | -5,326.4                            | -443.7       | 660.3                  | 458.7                   | 201.57                 | 3.276              |          |
| 11,100.0  | 5,811.1               | 10,792.5              | 5,811.0               | 103.0            | 103.1         | -89.99                | -5,426.4                            | -443.7       | 660.3                  | 455.0                   | 205.34                 | 3.216              |          |
| 11,200.0  | 5,811.1               | 10,892.5              | 5,811.0               | 104.9            | 105.0         | -89.99                | -5,526.4                            | -443.7       | 660.3                  | 451.2                   | 209.12                 | 3.158              |          |
| 11,300.0  | 5,811.1               | 10,992.5              | 5,811.0               | 106.7            | 106.9         | -89.99                | -5,626.4                            | -443.7       | 660.3                  | 447.4                   | 212.90                 | 3.102              |          |
| 11,400.0  | 5,811.1               | 11,092.5              | 5,811.0               | 108.6            | 108.8         | -89.99                | -5,726.4                            | -443.7       | 660.3                  | 443.6                   | 216.68                 | 3.047              |          |
| 11,500.0  | 5,811.1               | 11,192.5              | 5,811.0               | 110.4            | 110.7         | -89.99                | -5,826.4                            | -443.7       | 660.3                  | 439.8                   | 220.47                 | 2.995              |          |
| 11,600.0  | 5,811.1               | 11,292.5              | 5,811.0               | 112.3            | 112.6         | -89.99                | -5,926.4                            | -443.7       | 660.3                  | 436.1                   | 224.25                 | 2.945              |          |
| 11,700.0  | 5,811.1               | 11,392.5              | 5,811.0               | 114.1            | 114.5         | -89.99                | -6,026.4                            | -443.7       | 660.3                  | 432.3                   | 228.04                 | 2.896              |          |
| 11,800.0  | 5,811.1               | 11,492.5              | 5,811.0               | 116.0            | 116.4         | -89.99                | -6,126.4                            | -443.7       | 660.3                  | 428.5                   | 231.83                 | 2.848              |          |
| 11,900.0  | 5,811.1               | 11,592.5              | 5,811.0               | 117.8            | 118.3         | -89.99                | -6,226.4                            | -443.7       | 660.3                  | 424.7                   | 235.63                 | 2.802              |          |
| 12,000.0  | 5,811.1               | 11,692.5              | 5,811.0               | 119.7            | 120.2         | -89.99                | -6,326.4                            | -443.7       | 660.3                  | 420.9                   | 239.42                 | 2.758              |          |
| 12,100.0  | 5,811.1               | 11,792.5              | 5,811.0               | 121.6            | 122.1         | -90.00                | -6,426.4                            | -443.7       | 660.3                  | 417.1                   | 243.22                 | 2.715              |          |
| 12,200.0  | 5,811.1               | 11,892.5              | 5,811.0               | 123.4            | 124.0         | -90.00                | -6,526.4                            | -443.7       | 660.3                  | 413.3                   | 247.01                 | 2.673              |          |
| 12,300.0  | 5,811.1               | 11,992.5              | 5,811.0               | 125.3            | 125.9         | -90.00                | -6,626.4                            | -443.7       | 660.3                  | 409.5                   | 250.81                 | 2.633              |          |
| 12,400.0  | 5,811.1               | 12,092.5              | 5,811.0               | 127.2            | 127.8         | -90.00                | -6,726.4                            | -443.6       | 660.3                  | 405.7                   | 254.61                 | 2.593              |          |
| 12,500.0  | 5,811.0               | 12,192.5              | 5,811.0               | 129.0            | 129.7         | -90.00                | -6,826.4                            | -443.6       | 660.3                  | 401.9                   | 258.41                 | 2.555              |          |
| 12,600.0  | 5,811.0               | 12,292.5              | 5,811.0               | 130.9            | 131.6         | -90.00                | -6,926.4                            | -443.6       | 660.3                  | 398.1                   | 262.21                 | 2.518              |          |
| 12,700.0  | 5,811.0               | 12,392.5              | 5,811.0               | 132.8            | 133.5         | -90.00                | -7,026.4                            | -443.6       | 660.3                  | 394.3                   | 266.02                 | 2.482              |          |
| 12,800.0  | 5,811.0               | 12,492.5              | 5,811.0               | 134.6            | 135.4         | -90.00                | -7,126.4                            | -443.6       | 660.3                  | 390.5                   | 269.82                 | 2.447              |          |
| 12,900.0  | 5,811.0               | 12,592.5              | 5,811.0               | 136.5            | 137.3         | -90.00                | -7,226.4                            | -443.6       | 660.3                  | 386.7                   | 273.63                 | 2.413              |          |
| 13,000.0  | 5,811.0               | 12,692.5              | 5,811.0               | 138.4            | 139.2         | -90.00                | -7,326.4                            | -443.6       | 660.3                  | 382.9                   | 277.43                 | 2.380              |          |
| 13,100.0  | 5,811.0               | 12,792.5              | 5,811.0               | 140.3            | 141.1         | -90.00                | -7,426.4                            | -443.6       | 660.3                  | 379.1                   | 281.24                 | 2.348              |          |
| 13,200.0  | 5,811.0               | 12,892.5              | 5,811.0               | 142.1            | 143.0         | -90.00                | -7,526.4                            | -443.6       | 660.3                  | 375.3                   | 285.05                 | 2.317              |          |
| 13,300.0  | 5,811.0               | 12,992.5              | 5,811.0               | 144.0            | 144.9         | -90.00                | -7,626.4                            | -443.6       | 660.3                  | 371.5                   | 288.86                 | 2.286              |          |
| 13,400.0  | 5,811.0               | 13,092.5              | 5,811.0               | 145.9            | 146.8         | -90.00                | -7,726.4                            | -443.6       | 660.3                  | 367.7                   | 292.67                 | 2.256              |          |
| 13,500.0  | 5,811.0               | 13,192.5              | 5,811.0               | 147.8            | 148.7         | -90.00                | -7,826.4                            | -443.6       | 660.3                  | 363.8                   | 296.48                 | 2.227              |          |
| 13,600.0  | 5,811.0               | 13,292.5              | 5,811.0               | 149.7            | 150.7         | -90.00                | -7,926.4                            | -443.6       | 660.3                  | 360.0                   | 300.29                 | 2.199              |          |
| 13,700.0  | 5,811.0               | 13,392.5              | 5,811.0               | 151.6            | 152.6         | -90.00                | -8,026.4                            | -443.6       | 660.3                  | 356.2                   | 304.11                 | 2.171              |          |
| 13,800.0  | 5,811.0               | 13,492.5              | 5,811.0               | 153.4            | 154.5         | -90.00                | -8,126.4                            | -443.6       | 660.3                  | 352.4                   | 307.92                 | 2.144              |          |
| 13,900.0  | 5,811.0               | 13,592.5              | 5,811.0               | 155.3            | 156.4         | -90.00                | -8,226.4                            | -443.5       | 660.3                  | 348.6                   | 311.74                 | 2.118              |          |
| 13,906.5  | 5,811.0               | 13,599.0              | 5,811.0               | 155.4            | 156.5         | -90.00                | -8,232.9                            | -443.5       | 660.3                  | 348.4                   | 311.97                 | 2.117              |          |
| 13,919.8  | 5,811.0               | 13,609.3              | 5,811.0               | 155.7            | 156.7         | -90.00                | -8,243.3                            | -443.5       | 660.3                  | 347.9                   | 312.43                 | 2.114 SF           |          |

# Cathedral Energy Services

## Anticollision Report

|                           |                               |                                     |  |
|---------------------------|-------------------------------|-------------------------------------|--|
| <b>Company:</b>           | Whiting Petroleum Corporation | <b>Local Co-ordinate Reference:</b> | Well Razor Federal #12F-1301A          |
| <b>Project:</b>           | Weld County, CO               | <b>TVD Reference:</b>               | WELL @ 4953.6usft (Original Well Elev) |
| <b>Reference Site:</b>    | S12-T10N-R58W                 | <b>MD Reference:</b>                | WELL @ 4953.6usft (Original Well Elev) |
| <b>Site Error:</b>        | 0.0usft                       | <b>North Reference:</b>             | True                                   |
| <b>Reference Well:</b>    | Razor Federal #12F-1301A      | <b>Survey Calculation Method:</b>   | Minimum Curvature                      |
| <b>Well Error:</b>        | 0.0usft                       | <b>Output errors are at</b>         | 2.00 sigma                             |
| <b>Reference Wellbore</b> | HZ                            | <b>Database:</b>                    | USA EDM 5000 Multi Users DB            |
| <b>Reference Design:</b>  | Plan #3                       | <b>Offset TVD Reference:</b>        | Offset Datum                           |

| Offset Design S12-T10N-R58W - Razor Federal #12F-1304B - 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           | 90.01                 | 0.0                                 | 99.1         | 99.1                   |                         |                        |                   |                             |  |
| 100.0   | 100.0                 | 100.0                 | 100.0                 | 0.1              | 0.1           | 90.01                 | 0.0                                 | 99.1         | 99.1                   | 98.9                    | 0.19                   | 529.999           |                             |  |
| 200.0   | 200.0                 | 200.0                 | 200.0                 | 0.3              | 0.3           | 90.01                 | 0.0                                 | 99.1         | 99.1                   | 98.5                    | 0.64                   | 155.726           |                             |  |
| 300.0   | 300.0                 | 300.0                 | 300.0                 | 0.5              | 0.5           | 90.01                 | 0.0                                 | 99.1         | 99.1                   | 98.0                    | 1.09                   | 91.272            |                             |  |
| 400.0   | 400.0                 | 400.0                 | 400.0                 | 0.8              | 0.8           | 90.01                 | 0.0                                 | 99.1         | 99.1                   | 97.6                    | 1.54                   | 64.553            |                             |  |
| 500.0   | 500.0                 | 500.0                 | 500.0                 | 1.0              | 1.0           | 90.01                 | 0.0                                 | 99.1         | 99.1                   | 97.1                    | 1.99                   | 49.936            |                             |  |
| 600.0   | 600.0                 | 600.0                 | 600.0                 | 1.2              | 1.2           | 90.01                 | 0.0                                 | 99.1         | 99.1                   | 96.7                    | 2.43                   | 40.716            |                             |  |
| 700.0   | 700.0                 | 700.0                 | 700.0                 | 1.4              | 1.4           | 90.01                 | 0.0                                 | 99.1         | 99.1                   | 96.2                    | 2.88                   | 34.370            |                             |  |
| 800.0   | 800.0                 | 800.0                 | 800.0                 | 1.7              | 1.7           | 90.01                 | 0.0                                 | 99.1         | 99.1                   | 95.8                    | 3.33                   | 29.735            |                             |  |
| 900.0   | 900.0                 | 900.0                 | 900.0                 | 1.9              | 1.9           | 90.01                 | 0.0                                 | 99.1         | 99.1                   | 95.3                    | 3.78                   | 26.202            |                             |  |
| 1,000.0   | 1,000.0               | 1,000.0               | 1,000.0               | 2.1              | 2.1           | 90.01                 | 0.0                                 | 99.1         | 99.1                   | 94.9                    | 4.23                   | 23.419            | CC, ES                      |  |
| 1,100.0   | 1,100.0               | 1,100.0               | 1,100.0               | 2.3              | 2.3           | -134.75               | 0.0                                 | 99.1         | 100.4                  | 95.7                    | 4.66                   | 21.548            |                             |  |
| 1,200.0   | 1,199.8               | 1,200.7               | 1,200.7               | 2.5              | 2.5           | -135.82               | -1.7                                | 98.8         | 103.7                  | 98.6                    | 5.03                   | 20.593            |                             |  |
| 1,300.0   | 1,299.6               | 1,301.6               | 1,301.4               | 2.7              | 2.7           | -135.68               | -6.9                                | 97.6         | 107.4                  | 102.0                   | 5.40                   | 19.885            |                             |  |
| 1,400.0   | 1,399.4               | 1,401.5               | 1,401.1               | 2.9              | 2.9           | -134.70               | -13.8                               | 96.2         | 110.8                  | 105.0                   | 5.79                   | 19.130            |                             |  |
| 1,500.0   | 1,499.1               | 1,501.4               | 1,500.8               | 3.1              | 3.1           | -133.77               | -20.6                               | 94.7         | 114.1                  | 107.9                   | 6.20                   | 18.419            |                             |  |
| 1,600.0   | 1,598.9               | 1,601.3               | 1,600.4               | 3.4              | 3.3           | -132.90               | -27.4                               | 93.3         | 117.6                  | 110.9                   | 6.62                   | 17.758            |                             |  |
| 1,700.0   | 1,698.6               | 1,701.3               | 1,700.1               | 3.6              | 3.5           | -132.07               | -34.2                               | 91.8         | 121.0                  | 113.9                   | 7.06                   | 17.148            |                             |  |
| 1,800.0   | 1,798.4               | 1,801.2               | 1,799.8               | 3.8              | 3.7           | -131.29               | -41.0                               | 90.3         | 124.4                  | 116.9                   | 7.50                   | 16.589            |                             |  |
| 1,900.0   | 1,898.1               | 1,901.1               | 1,899.5               | 4.1              | 4.0           | -130.56               | -47.8                               | 88.9         | 127.9                  | 120.0                   | 7.96                   | 16.076            |                             |  |
| 2,000.0   | 1,997.9               | 2,001.0               | 1,999.2               | 4.3              | 4.2           | -129.86               | -54.7                               | 87.4         | 131.4                  | 123.0                   | 8.42                   | 15.607            |                             |  |
| 2,100.0   | 2,097.6               | 2,101.0               | 2,098.9               | 4.5              | 4.4           | -129.20               | -61.5                               | 86.0         | 135.0                  | 126.1                   | 8.89                   | 15.177            |                             |  |
| 2,200.0   | 2,197.4               | 2,200.9               | 2,198.5               | 4.8              | 4.7           | -128.57               | -68.3                               | 84.5         | 138.5                  | 129.1                   | 9.37                   | 14.783            |                             |  |
| 2,300.0   | 2,297.2               | 2,300.8               | 2,298.2               | 5.0              | 4.9           | -127.98               | -75.1                               | 83.0         | 142.0                  | 132.2                   | 9.85                   | 14.422            |                             |  |
| 2,400.0   | 2,396.9               | 2,400.7               | 2,397.9               | 5.3              | 5.2           | -127.41               | -81.9                               | 81.6         | 145.6                  | 135.3                   | 10.33                  | 14.090            |                             |  |
| 2,500.0   | 2,496.7               | 2,500.7               | 2,497.6               | 5.5              | 5.4           | -126.87               | -88.7                               | 80.1         | 149.2                  | 138.4                   | 10.82                  | 13.784            |                             |  |
| 2,600.0   | 2,596.4               | 2,600.6               | 2,597.3               | 5.8              | 5.7           | -126.35               | -95.5                               | 78.7         | 152.8                  | 141.5                   | 11.32                  | 13.502            |                             |  |
| 2,700.0   | 2,696.2               | 2,700.5               | 2,696.9               | 6.0              | 5.9           | -125.86               | -102.4                              | 77.2         | 156.4                  | 144.6                   | 11.81                  | 13.241            |                             |  |
| 2,800.0   | 2,795.9               | 2,800.4               | 2,796.6               | 6.3              | 6.2           | -125.40               | -109.2                              | 75.7         | 160.0                  | 147.7                   | 12.31                  | 13.000            |                             |  |
| 2,900.0   | 2,895.7               | 2,900.4               | 2,896.3               | 6.5              | 6.4           | -124.95               | -116.0                              | 74.3         | 163.6                  | 150.8                   | 12.81                  | 12.775            |                             |  |
| 3,000.0   | 2,995.5               | 3,000.3               | 2,996.0               | 6.8              | 6.7           | -124.52               | -122.8                              | 72.8         | 167.3                  | 154.0                   | 13.31                  | 12.567            |                             |  |
| 3,100.0   | 3,095.2               | 3,100.2               | 3,095.7               | 7.1              | 6.9           | -124.11               | -129.6                              | 71.3         | 170.9                  | 157.1                   | 13.81                  | 12.372            |                             |  |
| 3,200.0   | 3,195.0               | 3,200.2               | 3,195.4               | 7.3              | 7.2           | -123.72               | -136.4                              | 69.9         | 174.6                  | 160.2                   | 14.32                  | 12.190            |                             |  |
| 3,300.0   | 3,294.7               | 3,300.1               | 3,295.0               | 7.6              | 7.4           | -123.34               | -143.3                              | 68.4         | 178.2                  | 163.4                   | 14.83                  | 12.021            |                             |  |
| 3,400.0   | 3,394.5               | 3,400.0               | 3,394.7               | 7.8              | 7.7           | -122.98               | -150.1                              | 67.0         | 181.9                  | 166.6                   | 15.33                  | 11.861            |                             |  |
| 3,500.0   | 3,494.2               | 3,499.9               | 3,494.4               | 8.1              | 7.9           | -122.63               | -156.9                              | 65.5         | 185.6                  | 169.7                   | 15.84                  | 11.712            |                             |  |
| 3,600.0   | 3,594.0               | 3,599.9               | 3,594.1               | 8.3              | 8.2           | -122.30               | -163.7                              | 64.0         | 189.2                  | 172.9                   | 16.35                  | 11.572            |                             |  |
| 3,700.0   | 3,693.7               | 3,699.8               | 3,693.8               | 8.6              | 8.4           | -121.98               | -170.5                              | 62.6         | 192.9                  | 176.1                   | 16.87                  | 11.439            |                             |  |
| 3,800.0   | 3,793.5               | 3,799.7               | 3,793.5               | 8.9              | 8.7           | -121.67               | -177.3                              | 61.1         | 196.6                  | 179.3                   | 17.38                  | 11.315            |                             |  |
| 3,900.0   | 3,893.3               | 3,899.6               | 3,893.1               | 9.1              | 9.0           | -121.37               | -184.2                              | 59.7         | 200.3                  | 182.4                   | 17.89                  | 11.197            |                             |  |
| 4,000.0   | 3,993.0               | 3,999.6               | 3,992.8               | 9.4              | 9.2           | -121.08               | -191.0                              | 58.2         | 204.0                  | 185.6                   | 18.41                  | 11.086            |                             |  |
| 4,100.0   | 4,092.8               | 4,099.5               | 4,092.5               | 9.6              | 9.5           | -120.81               | -197.8                              | 56.7         | 207.7                  | 188.8                   | 18.92                  | 10.980            |                             |  |
| 4,200.0   | 4,192.5               | 4,199.4               | 4,192.2               | 9.9              | 9.7           | -120.54               | -204.6                              | 55.3         | 211.5                  | 192.0                   | 19.44                  | 10.880            |                             |  |
| 4,300.0   | 4,292.3               | 4,299.3               | 4,291.9               | 10.2             | 10.0          | -120.28               | -211.4                              | 53.8         | 215.2                  | 195.2                   | 19.95                  | 10.785            |                             |  |
| 4,400.0   | 4,392.0               | 4,399.3               | 4,391.6               | 10.4             | 10.3          | -120.03               | -218.2                              | 52.4         | 218.9                  | 198.4                   | 20.47                  | 10.695            |                             |  |
| 4,500.0   | 4,491.8               | 4,499.2               | 4,491.2               | 10.7             | 10.5          | -119.79               | -225.0                              | 50.9         | 222.6                  | 201.6                   | 20.98                  | 10.609            |                             |  |
| 4,600.0   | 4,591.6               | 4,599.1               | 4,590.9               | 11.0             | 10.8          | -119.56               | -231.9                              | 49.4         | 226.4                  | 204.9                   | 21.50                  | 10.527            |                             |  |
| 4,700.0   | 4,691.3               | 4,699.0               | 4,690.6               | 11.2             | 11.0          | -119.33               | -238.7                              | 48.0         | 230.1                  | 208.1                   | 22.02                  | 10.450            |                             |  |
| 4,800.0   | 4,791.1               | 4,799.0               | 4,790.3               | 11.5             | 11.3          | -119.12               | -245.5                              | 46.5         | 233.8                  | 211.3                   | 22.54                  | 10.375            |                             |  |
| 4,900.0   | 4,890.8               | 4,898.9               | 4,890.0               | 11.7             | 11.6          | -118.90               | -252.3                              | 45.0         | 237.6                  | 214.5                   | 23.06                  | 10.304            |                             |  |
| 5,000.0   | 4,990.6               | 4,998.8               | 4,989.7               | 12.0             | 11.8          | -118.70               | -259.1                              | 43.6         | 241.3                  | 217.7                   | 23.57                  | 10.236            |                             |  |
| 5,100.0   | 5,090.3               | 5,098.8               | 5,089.3               | 12.3             | 12.1          | -118.50               | -265.9                              | 42.1         | 245.1                  | 221.0                   | 24.09                  | 10.171            |                             |  |

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

# Cathedral Energy Services

## Anticollision Report

|                           |                               |                                     |  |
|---------------------------|-------------------------------|-------------------------------------|--|
| <b>Company:</b>           | Whiting Petroleum Corporation | <b>Local Co-ordinate Reference:</b> | Well Razor Federal #12F-1301A          |
| <b>Project:</b>           | Weld County, CO               | <b>TVD Reference:</b>               | WELL @ 4953.6usft (Original Well Elev) |
| <b>Reference Site:</b>    | S12-T10N-R58W                 | <b>MD Reference:</b>                | WELL @ 4953.6usft (Original Well Elev) |
| <b>Site Error:</b>        | 0.0usft                       | <b>North Reference:</b>             | True                                   |
| <b>Reference Well:</b>    | Razor Federal #12F-1301A      | <b>Survey Calculation Method:</b>   | Minimum Curvature                      |
| <b>Well Error:</b>        | 0.0usft                       | <b>Output errors are at</b>         | 2.00 sigma                             |
| <b>Reference Wellbore</b> | HZ                            | <b>Database:</b>                    | USA EDM 5000 Multi Users DB            |
| <b>Reference Design:</b>  | Plan #3                       | <b>Offset TVD Reference:</b>        | Offset Datum                           |

| Offset Design S12-T10N-R58W - Razor Federal #12F-1304B - 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   | 5,190.1               | 5,198.7               | 5,189.0               | 12.5             | 12.3          | -118.31               | -272.8                              | 40.7         | 248.8                  | 224.2                   | 24.61                  | 10.109            |                             |  |
| 5,300.0   | 5,289.9               | 5,298.6               | 5,288.7               | 12.8             | 12.6          | -118.12               | -279.6                              | 39.2         | 252.6                  | 227.4                   | 25.13                  | 10.049            |                             |  |
| 5,400.0   | 5,389.2               | 5,398.3               | 5,388.2               | 13.1             | 12.9          | -118.28               | -286.4                              | 37.7         | 258.1                  | 232.5                   | 25.61                  | 10.078            |                             |  |
| 5,500.0   | 5,485.0               | 5,495.6               | 5,484.9               | 13.5             | 13.1          | -119.98               | -296.1                              | 35.7         | 272.7                  | 246.7                   | 25.99                  | 10.489            |                             |  |
| 5,600.0   | 5,573.6               | 5,592.8               | 5,578.4               | 14.2             | 13.6          | -120.29               | -321.8                              | 30.2         | 297.3                  | 270.8                   | 26.49                  | 11.223            |                             |  |
| 5,700.0   | 5,651.8               | 5,690.1               | 5,665.3               | 15.0             | 14.2          | -118.97               | -364.0                              | 21.1         | 330.9                  | 303.5                   | 27.32                  | 12.110            |                             |  |
| 5,800.0   | 5,716.7               | 5,786.7               | 5,742.4               | 16.1             | 14.9          | -116.21               | -420.8                              | 8.9          | 372.0                  | 343.1                   | 28.81                  | 12.912            |                             |  |
| 5,900.0   | 5,766.0               | 5,882.7               | 5,807.0               | 17.3             | 15.8          | -112.28               | -490.1                              | -5.9         | 419.1                  | 388.1                   | 31.03                  | 13.509            |                             |  |
| 6,000.0   | 5,797.8               | 5,978.7               | 5,857.5               | 18.8             | 16.9          | -107.49               | -569.7                              | -23.0        | 470.8                  | 436.9                   | 33.92                  | 13.882            |                             |  |
| 6,100.0   | 5,811.0               | 6,076.0               | 5,892.6               | 20.4             | 18.2          | -102.16               | -658.3                              | -42.0        | 525.4                  | 488.1                   | 37.25                  | 14.102            |                             |  |
| 6,200.0   | 5,811.3               | 6,178.8               | 5,910.7               | 21.9             | 19.7          | -101.42               | -757.1                              | -63.2        | 578.6                  | 538.1                   | 40.43                  | 14.309            |                             |  |
| 6,300.0   | 5,811.3               | 6,261.5               | 5,912.3               | 23.4             | 20.8          | -100.47               | -838.0                              | -80.0        | 625.7                  | 582.2                   | 43.49                  | 14.388            |                             |  |
| 6,400.0   | 5,811.3               | 6,328.1               | 5,912.3               | 25.0             | 21.8          | -99.68                | -903.6                              | -91.4        | 671.0                  | 624.6                   | 46.34                  | 14.478            |                             |  |
| 6,500.0   | 5,811.3               | 6,400.0               | 5,912.3               | 26.6             | 22.7          | -98.97                | -974.8                              | -101.2       | 714.8                  | 665.6                   | 49.22                  | 14.523            |                             |  |
| 6,600.0   | 5,811.3               | 6,459.5               | 5,912.3               | 28.2             | 23.6          | -98.43                | -1,034.0                            | -107.2       | 757.0                  | 705.1                   | 51.91                  | 14.583            |                             |  |
| 6,700.0   | 5,811.3               | 6,524.5               | 5,912.3               | 29.8             | 24.5          | -97.93                | -1,098.9                            | -111.6       | 797.6                  | 743.0                   | 54.60                  | 14.607            |                             |  |
| 6,800.0   | 5,811.3               | 6,600.0               | 5,912.3               | 31.4             | 25.6          | -97.46                | -1,174.3                            | -114.0       | 836.7                  | 779.3                   | 57.37                  | 14.584            |                             |  |
| 6,900.0   | 5,811.3               | 6,666.8               | 5,912.3               | 33.0             | 26.6          | -97.09                | -1,241.1                            | -114.2       | 873.6                  | 813.6                   | 59.95                  | 14.571            |                             |  |
| 7,000.0   | 5,811.3               | 6,761.3               | 5,912.3               | 34.6             | 28.2          | -96.71                | -1,335.6                            | -114.2       | 906.1                  | 843.2                   | 62.91                  | 14.402            |                             |  |
| 7,100.0   | 5,811.3               | 6,857.3               | 5,912.3               | 36.2             | 29.8          | -96.41                | -1,431.7                            | -114.2       | 933.7                  | 867.9                   | 65.82                  | 14.187            |                             |  |
| 7,200.0   | 5,811.3               | 6,954.7               | 5,912.3               | 37.7             | 31.4          | -96.19                | -1,529.0                            | -114.2       | 956.3                  | 887.7                   | 68.62                  | 13.936            |                             |  |
| 7,300.0   | 5,811.3               | 7,053.1               | 5,912.3               | 39.2             | 33.1          | -96.02                | -1,627.5                            | -114.2       | 973.8                  | 902.5                   | 71.30                  | 13.657            |                             |  |
| 7,400.0   | 5,811.3               | 7,152.4               | 5,912.3               | 40.7             | 34.9          | -95.91                | -1,726.7                            | -114.2       | 986.1                  | 912.3                   | 73.84                  | 13.354            |                             |  |
| 7,500.0   | 5,811.3               | 7,252.1               | 5,912.3               | 42.1             | 36.6          | -95.84                | -1,826.4                            | -114.1       | 993.3                  | 917.1                   | 76.21                  | 13.033            |                             |  |
| 7,600.0   | 5,811.3               | 7,352.1               | 5,912.3               | 43.6             | 38.4          | -95.82                | -1,926.4                            | -114.1       | 995.3                  | 916.7                   | 78.56                  | 12.670            |                             |  |
| 7,700.0   | 5,811.3               | 7,452.1               | 5,912.3               | 45.0             | 40.2          | -95.82                | -2,026.4                            | -114.1       | 995.3                  | 913.3                   | 81.95                  | 12.145            |                             |  |
| 7,800.0   | 5,811.3               | 7,552.1               | 5,912.2               | 46.4             | 42.0          | -95.82                | -2,126.4                            | -114.1       | 995.3                  | 909.9                   | 85.38                  | 11.657            |                             |  |
| 7,900.0   | 5,811.2               | 7,652.1               | 5,912.2               | 47.9             | 43.8          | -95.82                | -2,226.4                            | -114.1       | 995.3                  | 906.4                   | 88.84                  | 11.203            |                             |  |
| 8,000.0   | 5,811.2               | 7,752.1               | 5,912.2               | 49.4             | 45.7          | -95.82                | -2,326.4                            | -114.1       | 995.3                  | 902.9                   | 92.33                  | 10.779            |                             |  |
| 8,100.0   | 5,811.2               | 7,852.1               | 5,912.2               | 50.9             | 47.5          | -95.82                | -2,426.4                            | -114.1       | 995.3                  | 899.4                   | 95.85                  | 10.384            |                             |  |
| 8,200.0   | 5,811.2               | 7,952.1               | 5,912.2               | 52.5             | 49.3          | -95.82                | -2,526.4                            | -114.1       | 995.3                  | 895.9                   | 99.39                  | 10.014            |                             |  |
| 8,300.0   | 5,811.2               | 8,052.1               | 5,912.2               | 54.0             | 51.2          | -95.82                | -2,626.4                            | -114.1       | 995.3                  | 892.3                   | 102.95                 | 9.667             |                             |  |
| 8,400.0   | 5,811.2               | 8,152.1               | 5,912.2               | 55.6             | 53.0          | -95.82                | -2,726.4                            | -114.1       | 995.3                  | 888.7                   | 106.53                 | 9.342             |                             |  |
| 8,500.0   | 5,811.2               | 8,252.1               | 5,912.2               | 57.2             | 54.9          | -95.82                | -2,826.4                            | -114.1       | 995.3                  | 885.1                   | 110.13                 | 9.037             |                             |  |
| 8,600.0   | 5,811.2               | 8,352.1               | 5,912.2               | 58.9             | 56.7          | -95.82                | -2,926.4                            | -114.1       | 995.3                  | 881.5                   | 113.74                 | 8.750             |                             |  |
| 8,700.0   | 5,811.2               | 8,452.1               | 5,912.2               | 60.5             | 58.6          | -95.82                | -3,026.4                            | -114.1       | 995.3                  | 877.9                   | 117.37                 | 8.480             |                             |  |
| 8,800.0   | 5,811.2               | 8,552.1               | 5,912.2               | 62.2             | 60.5          | -95.82                | -3,126.4                            | -114.1       | 995.3                  | 874.3                   | 121.01                 | 8.225             |                             |  |
| 8,900.0   | 5,811.2               | 8,652.1               | 5,912.2               | 63.9             | 62.4          | -95.82                | -3,226.4                            | -114.1       | 995.3                  | 870.6                   | 124.66                 | 7.984             |                             |  |
| 9,000.0   | 5,811.2               | 8,752.1               | 5,912.2               | 65.6             | 64.2          | -95.82                | -3,326.4                            | -114.1       | 995.3                  | 867.0                   | 128.32                 | 7.756             |                             |  |
| 9,100.0   | 5,811.2               | 8,852.1               | 5,912.2               | 67.3             | 66.1          | -95.82                | -3,426.4                            | -114.1       | 995.3                  | 863.3                   | 131.99                 | 7.541             |                             |  |
| 9,200.0   | 5,811.2               | 8,952.1               | 5,912.2               | 69.0             | 68.0          | -95.82                | -3,526.4                            | -114.0       | 995.3                  | 859.6                   | 135.67                 | 7.336             |                             |  |
| 9,300.0   | 5,811.2               | 9,052.1               | 5,912.2               | 70.7             | 69.9          | -95.82                | -3,626.4                            | -114.0       | 995.3                  | 855.9                   | 139.36                 | 7.142             |                             |  |
| 9,400.0   | 5,811.2               | 9,152.1               | 5,912.2               | 72.5             | 71.7          | -95.82                | -3,726.4                            | -114.0       | 995.3                  | 852.2                   | 143.05                 | 6.957             |                             |  |
| 9,500.0   | 5,811.2               | 9,252.1               | 5,912.2               | 74.2             | 73.6          | -95.82                | -3,826.4                            | -114.0       | 995.3                  | 848.5                   | 146.75                 | 6.782             |                             |  |
| 9,600.0   | 5,811.2               | 9,352.1               | 5,912.2               | 76.0             | 75.5          | -95.82                | -3,926.4                            | -114.0       | 995.3                  | 844.8                   | 150.46                 | 6.615             |                             |  |
| 9,700.0   | 5,811.2               | 9,452.1               | 5,912.2               | 77.7             | 77.4          | -95.82                | -4,026.4                            | -114.0       | 995.3                  | 841.1                   | 154.17                 | 6.455             |                             |  |
| 9,800.0   | 5,811.2               | 9,552.1               | 5,912.2               | 79.5             | 79.3          | -95.82                | -4,126.4                            | -114.0       | 995.3                  | 837.4                   | 157.89                 | 6.303             |                             |  |
| 9,900.0   | 5,811.2               | 9,652.1               | 5,912.2               | 81.3             | 81.2          | -95.82                | -4,226.4                            | -114.0       | 995.3                  | 833.6                   | 161.62                 | 6.158             |                             |  |
| 10,000.0  | 5,811.2               | 9,752.1               | 5,912.2               | 83.1             | 83.1          | -95.82                | -4,326.4                            | -114.0       | 995.3                  | 829.9                   | 165.35                 | 6.019             |                             |  |
| 10,100.0  | 5,811.2               | 9,852.1               | 5,912.2               | 84.9             | 85.0          | -95.82                | -4,426.4                            | -114.0       | 995.3                  | 826.2                   | 169.08                 | 5.886             |                             |  |
| 10,200.0  | 5,811.1               | 9,952.1               | 5,912.2               | 86.7             | 86.9          | -95.82                | -4,526.4                            | -114.0       | 995.3                  | 822.4                   | 172.82                 | 5.759             |                             |  |
| 10,300.0  | 5,811.1               | 10,052.1              | 5,912.1               | 88.5             | 88.8          | -95.82                | -4,626.4                            | -114.0       | 995.3                  | 818.7                   | 176.56                 | 5.637             |                             |  |

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

# Cathedral Energy Services

## Anticollision Report

|                           |                               |                                     |  |
|---------------------------|-------------------------------|-------------------------------------|--|
| <b>Company:</b>           | Whiting Petroleum Corporation | <b>Local Co-ordinate Reference:</b> | Well Razor Federal #12F-1301A          |
| <b>Project:</b>           | Weld County, CO               | <b>TVD Reference:</b>               | WELL @ 4953.6usft (Original Well Elev) |
| <b>Reference Site:</b>    | S12-T10N-R58W                 | <b>MD Reference:</b>                | WELL @ 4953.6usft (Original Well Elev) |
| <b>Site Error:</b>        | 0.0usft                       | <b>North Reference:</b>             | True                                   |
| <b>Reference Well:</b>    | Razor Federal #12F-1301A      | <b>Survey Calculation Method:</b>   | Minimum Curvature                      |
| <b>Well Error:</b>        | 0.0usft                       | <b>Output errors are at</b>         | 2.00 sigma                             |
| <b>Reference Wellbore</b> | HZ                            | <b>Database:</b>                    | USA EDM 5000 Multi Users DB            |
| <b>Reference Design:</b>  | Plan #3                       | <b>Offset TVD Reference:</b>        | Offset Datum                           |

| Offset Design S12-T10N-R58W - Razor Federal #12F-1304B - 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  |
| 10,400.0  | 5,811.1               | 10,152.1              | 5,912.1               | 90.3             | 90.7          | -95.82                | -4,726.4                            | -114.0       | 995.3                  | 815.0                   | 180.30                 | 5.520              |          |
| 10,500.0  | 5,811.1               | 10,252.1              | 5,912.1               | 92.1             | 92.6          | -95.82                | -4,826.4                            | -114.0       | 995.3                  | 811.2                   | 184.05                 | 5.407              |          |
| 10,600.0  | 5,811.1               | 10,352.1              | 5,912.1               | 93.9             | 94.5          | -95.82                | -4,926.4                            | -114.0       | 995.3                  | 807.5                   | 187.80                 | 5.299              |          |
| 10,700.0  | 5,811.1               | 10,452.1              | 5,912.1               | 95.7             | 96.4          | -95.82                | -5,026.4                            | -114.0       | 995.3                  | 803.7                   | 191.56                 | 5.196              |          |
| 10,800.0  | 5,811.1               | 10,552.1              | 5,912.1               | 97.5             | 98.3          | -95.82                | -5,126.4                            | -114.0       | 995.3                  | 799.9                   | 195.32                 | 5.096              |          |
| 10,900.0  | 5,811.1               | 10,652.1              | 5,912.1               | 99.4             | 100.2         | -95.82                | -5,226.4                            | -113.9       | 995.3                  | 796.2                   | 199.08                 | 4.999              |          |
| 11,000.0  | 5,811.1               | 10,752.1              | 5,912.1               | 101.2            | 102.1         | -95.82                | -5,326.4                            | -113.9       | 995.3                  | 792.4                   | 202.84                 | 4.907              |          |
| 11,100.0  | 5,811.1               | 10,852.1              | 5,912.1               | 103.0            | 104.0         | -95.82                | -5,426.4                            | -113.9       | 995.3                  | 788.7                   | 206.61                 | 4.817              |          |
| 11,200.0  | 5,811.1               | 10,952.1              | 5,912.1               | 104.9            | 105.9         | -95.82                | -5,526.4                            | -113.9       | 995.3                  | 784.9                   | 210.37                 | 4.731              |          |
| 11,300.0  | 5,811.1               | 11,052.1              | 5,912.1               | 106.7            | 107.8         | -95.82                | -5,626.4                            | -113.9       | 995.3                  | 781.1                   | 214.14                 | 4.648              |          |
| 11,400.0  | 5,811.1               | 11,152.1              | 5,912.1               | 108.6            | 109.7         | -95.82                | -5,726.4                            | -113.9       | 995.3                  | 777.3                   | 217.91                 | 4.567              |          |
| 11,500.0  | 5,811.1               | 11,252.1              | 5,912.1               | 110.4            | 111.6         | -95.82                | -5,826.4                            | -113.9       | 995.3                  | 773.6                   | 221.69                 | 4.489              |          |
| 11,600.0  | 5,811.1               | 11,352.1              | 5,912.1               | 112.3            | 113.5         | -95.82                | -5,926.4                            | -113.9       | 995.3                  | 769.8                   | 225.46                 | 4.414              |          |
| 11,700.0  | 5,811.1               | 11,452.1              | 5,912.1               | 114.1            | 115.4         | -95.82                | -6,026.4                            | -113.9       | 995.3                  | 766.0                   | 229.24                 | 4.342              |          |
| 11,800.0  | 5,811.1               | 11,552.1              | 5,912.1               | 116.0            | 117.3         | -95.82                | -6,126.4                            | -113.9       | 995.3                  | 762.2                   | 233.02                 | 4.271              |          |
| 11,900.0  | 5,811.1               | 11,652.1              | 5,912.1               | 117.8            | 119.2         | -95.82                | -6,226.4                            | -113.9       | 995.3                  | 758.5                   | 236.80                 | 4.203              |          |
| 12,000.0  | 5,811.1               | 11,752.1              | 5,912.1               | 119.7            | 121.1         | -95.82                | -6,326.4                            | -113.9       | 995.3                  | 754.7                   | 240.58                 | 4.137              |          |
| 12,100.0  | 5,811.1               | 11,852.1              | 5,912.1               | 121.6            | 123.1         | -95.82                | -6,426.4                            | -113.9       | 995.3                  | 750.9                   | 244.36                 | 4.073              |          |
| 12,200.0  | 5,811.1               | 11,952.1              | 5,912.1               | 123.4            | 125.0         | -95.82                | -6,526.4                            | -113.9       | 995.2                  | 747.1                   | 248.15                 | 4.011              |          |
| 12,300.0  | 5,811.1               | 12,052.1              | 5,912.1               | 125.3            | 126.9         | -95.82                | -6,626.4                            | -113.9       | 995.2                  | 743.3                   | 251.93                 | 3.950              |          |
| 12,400.0  | 5,811.1               | 12,152.1              | 5,912.1               | 127.2            | 128.8         | -95.82                | -6,726.4                            | -113.9       | 995.2                  | 739.5                   | 255.72                 | 3.892              |          |
| 12,500.0  | 5,811.0               | 12,252.1              | 5,912.1               | 129.0            | 130.7         | -95.82                | -6,826.4                            | -113.9       | 995.2                  | 735.7                   | 259.51                 | 3.835              |          |
| 12,600.0  | 5,811.0               | 12,352.1              | 5,912.1               | 130.9            | 132.6         | -95.82                | -6,926.4                            | -113.8       | 995.2                  | 732.0                   | 263.30                 | 3.780              |          |
| 12,700.0  | 5,811.0               | 12,452.1              | 5,912.0               | 132.8            | 134.5         | -95.82                | -7,026.4                            | -113.8       | 995.2                  | 728.2                   | 267.09                 | 3.726              |          |
| 12,800.0  | 5,811.0               | 12,552.1              | 5,912.0               | 134.6            | 136.4         | -95.82                | -7,126.4                            | -113.8       | 995.2                  | 724.4                   | 270.88                 | 3.674              |          |
| 12,900.0  | 5,811.0               | 12,652.1              | 5,912.0               | 136.5            | 138.3         | -95.82                | -7,226.4                            | -113.8       | 995.2                  | 720.6                   | 274.67                 | 3.623              |          |
| 13,000.0  | 5,811.0               | 12,752.1              | 5,912.0               | 138.4            | 140.2         | -95.82                | -7,326.4                            | -113.8       | 995.2                  | 716.8                   | 278.46                 | 3.574              |          |
| 13,100.0  | 5,811.0               | 12,852.1              | 5,912.0               | 140.3            | 142.2         | -95.82                | -7,426.4                            | -113.8       | 995.2                  | 713.0                   | 282.26                 | 3.526              |          |
| 13,200.0  | 5,811.0               | 12,952.1              | 5,912.0               | 142.1            | 144.1         | -95.82                | -7,526.4                            | -113.8       | 995.2                  | 709.2                   | 286.05                 | 3.479              |          |
| 13,300.0  | 5,811.0               | 13,052.1              | 5,912.0               | 144.0            | 146.0         | -95.82                | -7,626.4                            | -113.8       | 995.2                  | 705.4                   | 289.85                 | 3.434              |          |
| 13,400.0  | 5,811.0               | 13,152.1              | 5,912.0               | 145.9            | 147.9         | -95.82                | -7,726.4                            | -113.8       | 995.2                  | 701.6                   | 293.64                 | 3.389              |          |
| 13,500.0  | 5,811.0               | 13,252.1              | 5,912.0               | 147.8            | 149.8         | -95.82                | -7,826.4                            | -113.8       | 995.2                  | 697.8                   | 297.44                 | 3.346              |          |
| 13,600.0  | 5,811.0               | 13,352.1              | 5,912.0               | 149.7            | 151.7         | -95.82                | -7,926.4                            | -113.8       | 995.2                  | 694.0                   | 301.24                 | 3.304              |          |
| 13,700.0  | 5,811.0               | 13,452.1              | 5,912.0               | 151.6            | 153.6         | -95.82                | -8,026.4                            | -113.8       | 995.2                  | 690.2                   | 305.04                 | 3.263              |          |
| 13,800.0  | 5,811.0               | 13,552.1              | 5,912.0               | 153.4            | 155.6         | -95.82                | -8,126.4                            | -113.8       | 995.2                  | 686.4                   | 308.84                 | 3.223              |          |
| 13,900.0  | 5,811.0               | 13,652.1              | 5,912.0               | 155.3            | 157.5         | -95.82                | -8,226.4                            | -113.8       | 995.2                  | 682.6                   | 312.64                 | 3.183              |          |
| 13,915.9  | 5,811.0               | 13,667.9              | 5,912.0               | 155.6            | 157.8         | -95.82                | -8,242.2                            | -113.8       | 995.2                  | 682.0                   | 313.24                 | 3.177              |          |
| 13,919.8  | 5,811.0               | 13,667.9              | 5,912.0               | 155.7            | 157.8         | -95.82                | -8,242.2                            | -113.8       | 995.2                  | 681.9                   | 313.31                 | 3.177 SF           |          |

# Cathedral Energy Services

## Anticollision Report

|                           |                               |                                     |  |
|---------------------------|-------------------------------|-------------------------------------|--|
| <b>Company:</b>           | Whiting Petroleum Corporation | <b>Local Co-ordinate Reference:</b> | Well Razor Federal #12F-1301A          |
| <b>Project:</b>           | Weld County, CO               | <b>TVD Reference:</b>               | WELL @ 4953.6usft (Original Well Elev) |
| <b>Reference Site:</b>    | S12-T10N-R58W                 | <b>MD Reference:</b>                | WELL @ 4953.6usft (Original Well Elev) |
| <b>Site Error:</b>        | 0.0usft                       | <b>North Reference:</b>             | True                                   |
| <b>Reference Well:</b>    | Razor Federal #12F-1301A      | <b>Survey Calculation Method:</b>   | Minimum Curvature                      |
| <b>Well Error:</b>        | 0.0usft                       | <b>Output errors are at</b>         | 2.00 sigma                             |
| <b>Reference Wellbore</b> | HZ                            | <b>Database:</b>                    | USA EDM 5000 Multi Users DB            |
| <b>Reference Design:</b>  | Plan #3                       | <b>Offset TVD Reference:</b>        | Offset Datum                           |

| Offset Design S12-T10N-R58W - Razor Federal #12F-1305A - 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                                 | 132.2        | 132.2                  |                         |                        |                   |                             |  |
| 100.0   | 100.0                 | 100.0                 | 100.0                 | 0.1              | 0.1           | 90.00                 | 0.0                                 | 132.2        | 132.2                  | 132.0                   | 0.19                   | 706.708           |                             |  |
| 200.0   | 200.0                 | 200.0                 | 200.0                 | 0.3              | 0.3           | 90.00                 | 0.0                                 | 132.2        | 132.2                  | 131.5                   | 0.64                   | 207.638           |                             |  |
| 300.0   | 300.0                 | 300.0                 | 300.0                 | 0.5              | 0.5           | 90.00                 | 0.0                                 | 132.2        | 132.2                  | 131.1                   | 1.09                   | 121.697           |                             |  |
| 400.0   | 400.0                 | 400.0                 | 400.0                 | 0.8              | 0.8           | 90.00                 | 0.0                                 | 132.2        | 132.2                  | 130.6                   | 1.54                   | 86.072            |                             |  |
| 500.0   | 500.0                 | 500.0                 | 500.0                 | 1.0              | 1.0           | 90.00                 | 0.0                                 | 132.2        | 132.2                  | 130.2                   | 1.99                   | 66.581            |                             |  |
| 600.0   | 600.0                 | 600.0                 | 600.0                 | 1.2              | 1.2           | 90.00                 | 0.0                                 | 132.2        | 132.2                  | 129.7                   | 2.43                   | 54.288            |                             |  |
| 700.0   | 700.0                 | 700.0                 | 700.0                 | 1.4              | 1.4           | 90.00                 | 0.0                                 | 132.2        | 132.2                  | 129.3                   | 2.88                   | 45.827            |                             |  |
| 800.0   | 800.0                 | 800.0                 | 800.0                 | 1.7              | 1.7           | 90.00                 | 0.0                                 | 132.2        | 132.2                  | 128.8                   | 3.33                   | 39.647            |                             |  |
| 900.0   | 900.0                 | 900.0                 | 900.0                 | 1.9              | 1.9           | 90.00                 | 0.0                                 | 132.2        | 132.2                  | 128.4                   | 3.78                   | 34.936 CC         |                             |  |
| 1,000.0   | 1,000.0               | 999.5                 | 999.5                 | 2.1              | 2.1           | 90.75                 | -1.7                                | 132.3        | 132.3                  | 128.1                   | 4.20                   | 31.483 ES         |                             |  |
| 1,100.0   | 1,100.0               | 1,098.9               | 1,098.7               | 2.3              | 2.3           | -131.63               | -6.9                                | 132.8        | 134.1                  | 129.6                   | 4.58                   | 29.298            |                             |  |
| 1,200.0   | 1,199.8               | 1,198.7               | 1,198.3               | 2.5              | 2.5           | -130.32               | -13.8                               | 133.4        | 138.6                  | 133.6                   | 4.95                   | 27.989            |                             |  |
| 1,300.0   | 1,299.6               | 1,298.6               | 1,297.9               | 2.7              | 2.7           | -129.69               | -20.7                               | 134.1        | 144.2                  | 138.8                   | 5.35                   | 26.964            |                             |  |
| 1,400.0   | 1,399.4               | 1,398.4               | 1,397.5               | 2.9              | 2.9           | -129.11               | -27.7                               | 134.7        | 149.8                  | 144.1                   | 5.76                   | 25.998            |                             |  |
| 1,500.0   | 1,499.1               | 1,498.2               | 1,497.1               | 3.1              | 3.1           | -128.58               | -34.6                               | 135.4        | 155.5                  | 149.3                   | 6.19                   | 25.101            |                             |  |
| 1,600.0   | 1,598.9               | 1,598.1               | 1,596.7               | 3.4              | 3.3           | -128.08               | -41.5                               | 136.0        | 161.1                  | 154.5                   | 6.64                   | 24.277            |                             |  |
| 1,700.0   | 1,698.6               | 1,697.9               | 1,696.3               | 3.6              | 3.6           | -127.61               | -48.5                               | 136.6        | 166.8                  | 159.7                   | 7.09                   | 23.524            |                             |  |
| 1,800.0   | 1,798.4               | 1,797.7               | 1,795.9               | 3.8              | 3.8           | -127.18               | -55.4                               | 137.3        | 172.4                  | 164.9                   | 7.55                   | 22.838            |                             |  |
| 1,900.0   | 1,898.1               | 1,897.6               | 1,895.5               | 4.1              | 4.0           | -126.77               | -62.4                               | 137.9        | 178.1                  | 170.1                   | 8.02                   | 22.212            |                             |  |
| 2,000.0   | 1,997.9               | 1,997.4               | 1,995.0               | 4.3              | 4.3           | -126.39               | -69.3                               | 138.5        | 183.8                  | 175.3                   | 8.49                   | 21.642            |                             |  |
| 2,100.0   | 2,097.6               | 2,097.2               | 2,094.6               | 4.5              | 4.5           | -126.03               | -76.2                               | 139.2        | 189.5                  | 180.5                   | 8.97                   | 21.122            |                             |  |
| 2,200.0   | 2,197.4               | 2,197.0               | 2,194.2               | 4.8              | 4.8           | -125.69               | -83.2                               | 139.8        | 195.2                  | 185.8                   | 9.46                   | 20.645            |                             |  |
| 2,300.0   | 2,297.2               | 2,296.9               | 2,293.8               | 5.0              | 5.0           | -125.37               | -90.1                               | 140.5        | 200.9                  | 191.0                   | 9.94                   | 20.209            |                             |  |
| 2,400.0   | 2,396.9               | 2,396.7               | 2,393.4               | 5.3              | 5.3           | -125.07               | -97.0                               | 141.1        | 206.7                  | 196.2                   | 10.43                  | 19.808            |                             |  |
| 2,500.0   | 2,496.7               | 2,496.5               | 2,493.0               | 5.5              | 5.5           | -124.78               | -104.0                              | 141.7        | 212.4                  | 201.5                   | 10.93                  | 19.439            |                             |  |
| 2,600.0   | 2,596.4               | 2,596.4               | 2,592.6               | 5.8              | 5.8           | -124.51               | -110.9                              | 142.4        | 218.1                  | 206.7                   | 11.42                  | 19.098            |                             |  |
| 2,700.0   | 2,696.2               | 2,696.2               | 2,692.2               | 6.0              | 6.0           | -124.26               | -117.8                              | 143.0        | 223.8                  | 211.9                   | 11.92                  | 18.783            |                             |  |
| 2,800.0   | 2,795.9               | 2,796.0               | 2,791.7               | 6.3              | 6.3           | -124.01               | -124.8                              | 143.6        | 229.6                  | 217.2                   | 12.42                  | 18.490            |                             |  |
| 2,900.0   | 2,895.7               | 2,895.9               | 2,891.3               | 6.5              | 6.5           | -123.78               | -131.7                              | 144.3        | 235.3                  | 222.4                   | 12.92                  | 18.218            |                             |  |
| 3,000.0   | 2,995.5               | 2,995.7               | 2,990.9               | 6.8              | 6.8           | -123.56               | -138.6                              | 144.9        | 241.1                  | 227.6                   | 13.42                  | 17.965            |                             |  |
| 3,100.0   | 3,095.2               | 3,095.5               | 3,090.5               | 7.1              | 7.1           | -123.35               | -145.6                              | 145.6        | 246.8                  | 232.9                   | 13.92                  | 17.729            |                             |  |
| 3,200.0   | 3,195.0               | 3,195.4               | 3,190.1               | 7.3              | 7.3           | -123.15               | -152.5                              | 146.2        | 252.6                  | 238.1                   | 14.43                  | 17.508            |                             |  |
| 3,300.0   | 3,294.7               | 3,295.2               | 3,289.7               | 7.6              | 7.6           | -122.96               | -159.4                              | 146.8        | 258.3                  | 243.4                   | 14.93                  | 17.301            |                             |  |
| 3,400.0   | 3,394.5               | 3,395.0               | 3,389.3               | 7.8              | 7.8           | -122.78               | -166.4                              | 147.5        | 264.1                  | 248.6                   | 15.44                  | 17.107            |                             |  |
| 3,500.0   | 3,494.2               | 3,494.8               | 3,488.9               | 8.1              | 8.1           | -122.60               | -173.3                              | 148.1        | 269.8                  | 253.9                   | 15.94                  | 16.924            |                             |  |
| 3,600.0   | 3,594.0               | 3,594.7               | 3,588.4               | 8.3              | 8.3           | -122.43               | -180.2                              | 148.7        | 275.6                  | 259.1                   | 16.45                  | 16.752            |                             |  |
| 3,700.0   | 3,693.7               | 3,694.5               | 3,688.0               | 8.6              | 8.6           | -122.27               | -187.2                              | 149.4        | 281.4                  | 264.4                   | 16.96                  | 16.590            |                             |  |
| 3,800.0   | 3,793.5               | 3,794.3               | 3,787.6               | 8.9              | 8.9           | -122.12               | -194.1                              | 150.0        | 287.1                  | 269.7                   | 17.47                  | 16.437            |                             |  |
| 3,900.0   | 3,893.3               | 3,894.2               | 3,887.2               | 9.1              | 9.1           | -121.97               | -201.0                              | 150.6        | 292.9                  | 274.9                   | 17.98                  | 16.292            |                             |  |
| 4,000.0   | 3,993.0               | 3,994.0               | 3,986.8               | 9.4              | 9.4           | -121.82               | -208.0                              | 151.3        | 298.7                  | 280.2                   | 18.49                  | 16.154            |                             |  |
| 4,100.0   | 4,092.8               | 4,093.8               | 4,086.4               | 9.6              | 9.6           | -121.69               | -214.9                              | 151.9        | 304.4                  | 285.4                   | 19.00                  | 16.024            |                             |  |
| 4,200.0   | 4,192.5               | 4,193.7               | 4,186.0               | 9.9              | 9.9           | -121.55               | -221.8                              | 152.6        | 310.2                  | 290.7                   | 19.51                  | 15.900            |                             |  |
| 4,300.0   | 4,292.3               | 4,293.5               | 4,285.6               | 10.2             | 10.2          | -121.43               | -228.8                              | 153.2        | 316.0                  | 296.0                   | 20.02                  | 15.783            |                             |  |
| 4,400.0   | 4,392.0               | 4,393.3               | 4,385.1               | 10.4             | 10.4          | -121.30               | -235.7                              | 153.8        | 321.8                  | 301.2                   | 20.53                  | 15.670            |                             |  |
| 4,500.0   | 4,491.8               | 4,493.2               | 4,484.7               | 10.7             | 10.7          | -121.18               | -242.7                              | 154.5        | 327.5                  | 306.5                   | 21.05                  | 15.564            |                             |  |
| 4,600.0   | 4,591.6               | 4,593.0               | 4,584.3               | 11.0             | 11.0          | -121.07               | -249.6                              | 155.1        | 333.3                  | 311.8                   | 21.56                  | 15.462            |                             |  |
| 4,700.0   | 4,691.3               | 4,692.8               | 4,683.9               | 11.2             | 11.2          | -120.96               | -256.5                              | 155.7        | 339.1                  | 317.0                   | 22.07                  | 15.365            |                             |  |
| 4,800.0   | 4,791.1               | 4,792.6               | 4,783.5               | 11.5             | 11.5          | -120.85               | -263.5                              | 156.4        | 344.9                  | 322.3                   | 22.58                  | 15.272            |                             |  |
| 4,900.0   | 4,890.8               | 4,892.5               | 4,883.1               | 11.7             | 11.7          | -120.75               | -270.4                              | 157.0        | 350.7                  | 327.6                   | 23.10                  | 15.183            |                             |  |
| 5,000.0   | 4,990.6               | 4,992.3               | 4,982.7               | 12.0             | 12.0          | -120.65               | -277.3                              | 157.7        | 356.5                  | 332.8                   | 23.61                  | 15.097            |                             |  |
| 5,100.0   | 5,090.3               | 5,092.1               | 5,082.3               | 12.3             | 12.3          | -120.55               | -284.3                              | 158.3        | 362.2                  | 338.1                   | 24.12                  | 15.016            |                             |  |

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

# Cathedral Energy Services

## Anticollision Report

|                           |                               |                                     |  |
|---------------------------|-------------------------------|-------------------------------------|--|
| <b>Company:</b>           | Whiting Petroleum Corporation | <b>Local Co-ordinate Reference:</b> | Well Razor Federal #12F-1301A          |
| <b>Project:</b>           | Weld County, CO               | <b>TVD Reference:</b>               | WELL @ 4953.6usft (Original Well Elev) |
| <b>Reference Site:</b>    | S12-T10N-R58W                 | <b>MD Reference:</b>                | WELL @ 4953.6usft (Original Well Elev) |
| <b>Site Error:</b>        | 0.0usft                       | <b>North Reference:</b>             | True                                   |
| <b>Reference Well:</b>    | Razor Federal #12F-1301A      | <b>Survey Calculation Method:</b>   | Minimum Curvature                      |
| <b>Well Error:</b>        | 0.0usft                       | <b>Output errors are at</b>         | 2.00 sigma                             |
| <b>Reference Wellbore</b> | HZ                            | <b>Database:</b>                    | USA EDM 5000 Multi Users DB            |
| <b>Reference Design:</b>  | Plan #3                       | <b>Offset TVD Reference:</b>        | Offset Datum                           |

| Offset Design S12-T10N-R58W - Razor Federal #12F-1305A - 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   | 5,190.1               | 5,192.0               | 5,181.8               | 12.5             | 12.5          | -120.46               | -291.2                              | 158.9        | 368.0                  | 343.4                   | 24.64                  | 14.937            |                             |  |
| 5,300.0   | 5,289.9               | 5,291.8               | 5,281.4               | 12.8             | 12.8          | -120.37               | -298.1                              | 159.6        | 373.8                  | 348.7                   | 25.15                  | 14.862            |                             |  |
| 5,400.0   | 5,389.2               | 5,381.0               | 5,370.3               | 13.1             | 13.0          | -119.82               | -306.2                              | 160.3        | 382.3                  | 356.7                   | 25.60                  | 14.930            |                             |  |
| 5,500.0   | 5,485.0               | 5,459.7               | 5,446.8               | 13.5             | 13.4          | -118.07               | -324.0                              | 161.9        | 403.8                  | 377.7                   | 26.06                  | 15.498            |                             |  |
| 5,600.0   | 5,573.6               | 5,534.6               | 5,516.4               | 14.2             | 13.8          | -115.14               | -351.5                              | 164.5        | 438.5                  | 411.8                   | 26.68                  | 16.432            |                             |  |
| 5,700.0   | 5,651.8               | 5,600.0               | 5,573.3               | 15.0             | 14.2          | -110.92               | -383.3                              | 167.4        | 484.5                  | 456.9                   | 27.68                  | 17.506            |                             |  |
| 5,800.0   | 5,716.7               | 5,669.6               | 5,629.1               | 16.1             | 14.7          | -105.71               | -424.8                              | 171.2        | 539.9                  | 510.6                   | 29.31                  | 18.419            |                             |  |
| 5,900.0   | 5,766.0               | 5,729.3               | 5,672.1               | 17.3             | 15.3          | -99.24                | -466.0                              | 175.0        | 602.4                  | 571.0                   | 31.40                  | 19.183            |                             |  |
| 6,000.0   | 5,797.8               | 5,784.4               | 5,707.3               | 18.8             | 15.9          | -91.80                | -508.1                              | 178.9        | 670.0                  | 636.3                   | 33.70                  | 19.881            |                             |  |
| 6,100.0   | 5,811.0               | 5,835.4               | 5,735.8               | 20.4             | 16.4          | -83.78                | -550.2                              | 182.7        | 740.7                  | 704.9                   | 35.81                  | 20.682            |                             |  |
| 6,200.0   | 5,811.3               | 5,887.0               | 5,760.3               | 21.9             | 17.1          | -84.90                | -595.4                              | 186.9        | 812.1                  | 773.8                   | 38.28                  | 21.217            |                             |  |
| 6,300.0   | 5,811.3               | 5,947.1               | 5,783.0               | 23.4             | 17.9          | -87.48                | -650.8                              | 192.0        | 881.8                  | 841.0                   | 40.81                  | 21.607            |                             |  |
| 6,400.0   | 5,811.3               | 6,015.8               | 5,800.9               | 25.0             | 18.8          | -89.17                | -716.8                              | 198.0        | 948.7                  | 905.3                   | 43.46                  | 21.830            |                             |  |
| 6,500.0   | 5,811.3               | 6,091.7               | 5,810.3               | 26.6             | 19.9          | -89.93                | -791.7                              | 204.9        | 1,012.1                | 965.9                   | 46.25                  | 21.883            |                             |  |
| 6,600.0   | 5,811.3               | 6,240.2               | 5,811.1               | 28.2             | 22.1          | -89.98                | -939.8                              | 214.7        | 1,069.7                | 1,019.9                 | 49.87                  | 21.452            |                             |  |
| 6,700.0   | 5,811.3               | 6,358.3               | 5,811.1               | 29.8             | 23.8          | -89.99                | -1,057.9                            | 215.4        | 1,117.2                | 1,063.9                 | 53.31                  | 20.955            |                             |  |
| 6,800.0   | 5,811.3               | 6,448.8               | 5,811.0               | 31.4             | 25.3          | -89.99                | -1,148.5                            | 215.4        | 1,159.7                | 1,103.1                 | 56.53                  | 20.512            |                             |  |
| 6,900.0   | 5,811.3               | 6,541.5               | 5,811.0               | 33.0             | 26.9          | -89.99                | -1,241.1                            | 215.4        | 1,197.3                | 1,137.6                 | 59.76                  | 20.034            |                             |  |
| 7,000.0   | 5,811.3               | 6,635.9               | 5,811.0               | 34.6             | 28.5          | -89.99                | -1,335.6                            | 215.4        | 1,230.1                | 1,167.1                 | 62.97                  | 19.534            |                             |  |
| 7,100.0   | 5,811.3               | 6,732.0               | 5,811.0               | 36.2             | 30.2          | -89.99                | -1,431.6                            | 215.5        | 1,257.9                | 1,191.7                 | 66.12                  | 19.023            |                             |  |
| 7,200.0   | 5,811.3               | 6,829.4               | 5,811.0               | 37.7             | 31.9          | -89.99                | -1,529.0                            | 215.5        | 1,280.6                | 1,211.4                 | 69.19                  | 18.507            |                             |  |
| 7,300.0   | 5,811.3               | 6,927.8               | 5,811.0               | 39.2             | 33.6          | -89.99                | -1,627.4                            | 215.5        | 1,298.2                | 1,226.0                 | 72.15                  | 17.991            |                             |  |
| 7,400.0   | 5,811.3               | 7,027.0               | 5,811.0               | 40.7             | 35.4          | -89.99                | -1,726.6                            | 215.5        | 1,310.6                | 1,235.6                 | 74.97                  | 17.480            |                             |  |
| 7,500.0   | 5,811.3               | 7,126.7               | 5,811.0               | 42.1             | 37.2          | -89.99                | -1,826.4                            | 215.5        | 1,317.8                | 1,240.1                 | 77.63                  | 16.975            |                             |  |
| 7,600.0   | 5,811.3               | 7,226.7               | 5,811.0               | 43.6             | 39.0          | -89.99                | -1,926.3                            | 215.5        | 1,319.8                | 1,239.5                 | 80.23                  | 16.450            |                             |  |
| 7,700.0   | 5,811.3               | 7,326.7               | 5,811.0               | 45.0             | 40.8          | -89.99                | -2,026.3                            | 215.5        | 1,319.8                | 1,236.1                 | 83.66                  | 15.776            |                             |  |
| 7,800.0   | 5,811.3               | 7,426.7               | 5,811.0               | 46.4             | 42.7          | -89.99                | -2,126.3                            | 215.5        | 1,319.8                | 1,232.7                 | 87.12                  | 15.149            |                             |  |
| 7,900.0   | 5,811.2               | 7,526.7               | 5,811.0               | 47.9             | 44.5          | -89.99                | -2,226.3                            | 215.5        | 1,319.8                | 1,229.2                 | 90.61                  | 14.565            |                             |  |
| 8,000.0   | 5,811.2               | 7,626.7               | 5,811.0               | 49.4             | 46.3          | -89.99                | -2,326.3                            | 215.5        | 1,319.8                | 1,225.6                 | 94.14                  | 14.020            |                             |  |
| 8,100.0   | 5,811.2               | 7,726.7               | 5,811.0               | 50.9             | 48.2          | -89.99                | -2,426.3                            | 215.5        | 1,319.8                | 1,222.1                 | 97.68                  | 13.511            |                             |  |
| 8,200.0   | 5,811.2               | 7,826.7               | 5,811.0               | 52.5             | 50.1          | -89.99                | -2,526.3                            | 215.5        | 1,319.8                | 1,218.5                 | 101.25                 | 13.035            |                             |  |
| 8,300.0   | 5,811.2               | 7,926.7               | 5,811.0               | 54.0             | 51.9          | -89.99                | -2,626.3                            | 215.6        | 1,319.8                | 1,214.9                 | 104.84                 | 12.588            |                             |  |
| 8,400.0   | 5,811.2               | 8,026.7               | 5,811.0               | 55.6             | 53.8          | -89.99                | -2,726.3                            | 215.6        | 1,319.8                | 1,211.3                 | 108.45                 | 12.170            |                             |  |
| 8,500.0   | 5,811.2               | 8,126.7               | 5,811.0               | 57.2             | 55.6          | -89.99                | -2,826.3                            | 215.6        | 1,319.8                | 1,207.7                 | 112.07                 | 11.776            |                             |  |
| 8,600.0   | 5,811.2               | 8,226.7               | 5,811.0               | 58.9             | 57.5          | -89.99                | -2,926.3                            | 215.6        | 1,319.8                | 1,204.1                 | 115.71                 | 11.406            |                             |  |
| 8,700.0   | 5,811.2               | 8,326.7               | 5,811.0               | 60.5             | 59.4          | -89.99                | -3,026.3                            | 215.6        | 1,319.8                | 1,200.4                 | 119.36                 | 11.057            |                             |  |
| 8,800.0   | 5,811.2               | 8,426.7               | 5,811.0               | 62.2             | 61.3          | -89.99                | -3,126.3                            | 215.6        | 1,319.8                | 1,196.8                 | 123.03                 | 10.728            |                             |  |
| 8,900.0   | 5,811.2               | 8,526.7               | 5,811.0               | 63.9             | 63.2          | -89.99                | -3,226.3                            | 215.6        | 1,319.8                | 1,193.1                 | 126.70                 | 10.417            |                             |  |
| 9,000.0   | 5,811.2               | 8,626.7               | 5,811.0               | 65.6             | 65.0          | -89.99                | -3,326.3                            | 215.6        | 1,319.8                | 1,189.4                 | 130.39                 | 10.122            |                             |  |
| 9,100.0   | 5,811.2               | 8,726.7               | 5,811.0               | 67.3             | 66.9          | -89.99                | -3,426.3                            | 215.6        | 1,319.8                | 1,185.7                 | 134.08                 | 9.843             |                             |  |
| 9,200.0   | 5,811.2               | 8,826.7               | 5,811.0               | 69.0             | 68.8          | -89.99                | -3,526.3                            | 215.6        | 1,319.8                | 1,182.0                 | 137.78                 | 9.579             |                             |  |
| 9,300.0   | 5,811.2               | 8,926.7               | 5,811.0               | 70.7             | 70.7          | -89.99                | -3,626.3                            | 215.6        | 1,319.8                | 1,178.3                 | 141.49                 | 9.328             |                             |  |
| 9,400.0   | 5,811.2               | 9,026.7               | 5,811.0               | 72.5             | 72.6          | -89.99                | -3,726.3                            | 215.6        | 1,319.8                | 1,174.6                 | 145.21                 | 9.089             |                             |  |
| 9,500.0   | 5,811.2               | 9,126.7               | 5,811.0               | 74.2             | 74.5          | -89.99                | -3,826.3                            | 215.6        | 1,319.8                | 1,170.9                 | 148.93                 | 8.862             |                             |  |
| 9,600.0   | 5,811.2               | 9,226.7               | 5,811.0               | 76.0             | 76.4          | -89.99                | -3,926.3                            | 215.7        | 1,319.8                | 1,167.1                 | 152.66                 | 8.645             |                             |  |
| 9,700.0   | 5,811.2               | 9,326.7               | 5,811.0               | 77.7             | 78.3          | -89.99                | -4,026.3                            | 215.7        | 1,319.8                | 1,163.4                 | 156.40                 | 8.439             |                             |  |
| 9,800.0   | 5,811.2               | 9,426.7               | 5,811.0               | 79.5             | 80.2          | -89.99                | -4,126.3                            | 215.7        | 1,319.8                | 1,159.7                 | 160.14                 | 8.242             |                             |  |
| 9,900.0   | 5,811.2               | 9,526.7               | 5,811.0               | 81.3             | 82.1          | -89.99                | -4,226.3                            | 215.7        | 1,319.8                | 1,155.9                 | 163.88                 | 8.053             |                             |  |
| 10,000.0  | 5,811.2               | 9,626.7               | 5,811.0               | 83.1             | 84.0          | -89.99                | -4,326.3                            | 215.7        | 1,319.8                | 1,152.2                 | 167.63                 | 7.873             |                             |  |
| 10,100.0  | 5,811.2               | 9,726.7               | 5,811.0               | 84.9             | 85.9          | -89.99                | -4,426.3                            | 215.7        | 1,319.8                | 1,148.4                 | 171.39                 | 7.701             |                             |  |
| 10,200.0  | 5,811.1               | 9,826.7               | 5,811.0               | 86.7             | 87.8          | -89.99                | -4,526.3                            | 215.7        | 1,319.8                | 1,144.7                 | 175.15                 | 7.536             |                             |  |
| 10,300.0  | 5,811.1               | 9,926.7               | 5,811.0               | 88.5             | 89.7          | -89.99                | -4,626.3                            | 215.7        | 1,319.8                | 1,140.9                 | 178.91                 | 7.377             |                             |  |

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

# Cathedral Energy Services

## Anticollision Report

|                           |                               |                                     |  |
|---------------------------|-------------------------------|-------------------------------------|--|
| <b>Company:</b>           | Whiting Petroleum Corporation | <b>Local Co-ordinate Reference:</b> | Well Razor Federal #12F-1301A          |
| <b>Project:</b>           | Weld County, CO               | <b>TVD Reference:</b>               | WELL @ 4953.6usft (Original Well Elev) |
| <b>Reference Site:</b>    | S12-T10N-R58W                 | <b>MD Reference:</b>                | WELL @ 4953.6usft (Original Well Elev) |
| <b>Site Error:</b>        | 0.0usft                       | <b>North Reference:</b>             | True                                   |
| <b>Reference Well:</b>    | Razor Federal #12F-1301A      | <b>Survey Calculation Method:</b>   | Minimum Curvature                      |
| <b>Well Error:</b>        | 0.0usft                       | <b>Output errors are at</b>         | 2.00 sigma                             |
| <b>Reference Wellbore</b> | HZ                            | <b>Database:</b>                    | USA EDM 5000 Multi Users DB            |
| <b>Reference Design:</b>  | Plan #3                       | <b>Offset TVD Reference:</b>        | Offset Datum                           |

| Offset Design S12-T10N-R58W - Razor Federal #12F-1305A - 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 |                             |         |
| 10,400.0  | 5,811.1               | 10,026.7              | 5,811.0               | 90.3             | 91.6          | -89.99                | -4,726.3                            | 215.7        | 1,319.8                | 1,137.1                 | 182.67                 | 7.225             |                             |         |
| 10,500.0  | 5,811.1               | 10,126.7              | 5,811.0               | 92.1             | 93.5          | -89.99                | -4,826.3                            | 215.7        | 1,319.8                | 1,133.4                 | 186.44                 | 7.079             |                             |         |
| 10,600.0  | 5,811.1               | 10,226.7              | 5,811.0               | 93.9             | 95.4          | -90.00                | -4,926.3                            | 215.7        | 1,319.8                | 1,129.6                 | 190.21                 | 6.939             |                             |         |
| 10,700.0  | 5,811.1               | 10,326.7              | 5,811.0               | 95.7             | 97.3          | -90.00                | -5,026.3                            | 215.7        | 1,319.8                | 1,125.8                 | 193.99                 | 6.804             |                             |         |
| 10,800.0  | 5,811.1               | 10,426.7              | 5,811.0               | 97.5             | 99.2          | -90.00                | -5,126.3                            | 215.8        | 1,319.8                | 1,122.1                 | 197.77                 | 6.674             |                             |         |
| 10,900.0  | 5,811.1               | 10,526.7              | 5,811.0               | 99.4             | 101.1         | -90.00                | -5,226.3                            | 215.8        | 1,319.8                | 1,118.3                 | 201.55                 | 6.549             |                             |         |
| 11,000.0  | 5,811.1               | 10,626.7              | 5,811.0               | 101.2            | 103.0         | -90.00                | -5,326.3                            | 215.8        | 1,319.8                | 1,114.5                 | 205.33                 | 6.428             |                             |         |
| 11,100.0  | 5,811.1               | 10,726.7              | 5,811.0               | 103.0            | 104.9         | -90.00                | -5,426.3                            | 215.8        | 1,319.8                | 1,110.7                 | 209.11                 | 6.312             |                             |         |
| 11,200.0  | 5,811.1               | 10,826.7              | 5,811.0               | 104.9            | 106.8         | -90.00                | -5,526.3                            | 215.8        | 1,319.8                | 1,106.9                 | 212.90                 | 6.199             |                             |         |
| 11,300.0  | 5,811.1               | 10,926.7              | 5,811.0               | 106.7            | 108.7         | -90.00                | -5,626.3                            | 215.8        | 1,319.8                | 1,103.1                 | 216.69                 | 6.091             |                             |         |
| 11,400.0  | 5,811.1               | 11,026.7              | 5,811.0               | 108.6            | 110.7         | -90.00                | -5,726.3                            | 215.8        | 1,319.8                | 1,099.4                 | 220.48                 | 5.986             |                             |         |
| 11,500.0  | 5,811.1               | 11,126.7              | 5,811.0               | 110.4            | 112.6         | -90.00                | -5,826.3                            | 215.8        | 1,319.8                | 1,095.6                 | 224.27                 | 5.885             |                             |         |
| 11,600.0  | 5,811.1               | 11,226.7              | 5,811.0               | 112.3            | 114.5         | -90.00                | -5,926.3                            | 215.8        | 1,319.8                | 1,091.8                 | 228.07                 | 5.787             |                             |         |
| 11,700.0  | 5,811.1               | 11,326.7              | 5,811.0               | 114.1            | 116.4         | -90.00                | -6,026.3                            | 215.8        | 1,319.8                | 1,088.0                 | 231.86                 | 5.692             |                             |         |
| 11,800.0  | 5,811.1               | 11,426.7              | 5,811.0               | 116.0            | 118.3         | -90.00                | -6,126.3                            | 215.8        | 1,319.8                | 1,084.2                 | 235.66                 | 5.601             |                             |         |
| 11,900.0  | 5,811.1               | 11,526.7              | 5,811.0               | 117.8            | 120.2         | -90.00                | -6,226.3                            | 215.8        | 1,319.8                | 1,080.4                 | 239.46                 | 5.512             |                             |         |
| 12,000.0  | 5,811.1               | 11,626.7              | 5,811.0               | 119.7            | 122.1         | -90.00                | -6,326.3                            | 215.9        | 1,319.8                | 1,076.6                 | 243.26                 | 5.426             |                             |         |
| 12,100.0  | 5,811.1               | 11,726.7              | 5,811.0               | 121.6            | 124.0         | -90.00                | -6,426.3                            | 215.9        | 1,319.8                | 1,072.8                 | 247.06                 | 5.342             |                             |         |
| 12,200.0  | 5,811.1               | 11,826.7              | 5,811.0               | 123.4            | 125.9         | -90.00                | -6,526.3                            | 215.9        | 1,319.9                | 1,069.0                 | 250.87                 | 5.261             |                             |         |
| 12,300.0  | 5,811.1               | 11,926.7              | 5,811.0               | 125.3            | 127.9         | -90.00                | -6,626.3                            | 215.9        | 1,319.9                | 1,065.2                 | 254.67                 | 5.183             |                             |         |
| 12,400.0  | 5,811.1               | 12,026.7              | 5,811.0               | 127.2            | 129.8         | -90.00                | -6,726.3                            | 215.9        | 1,319.9                | 1,061.4                 | 258.48                 | 5.106             |                             |         |
| 12,500.0  | 5,811.0               | 12,126.7              | 5,811.0               | 129.0            | 131.7         | -90.00                | -6,826.3                            | 215.9        | 1,319.9                | 1,057.6                 | 262.28                 | 5.032             |                             |         |
| 12,600.0  | 5,811.0               | 12,226.7              | 5,811.0               | 130.9            | 133.6         | -90.00                | -6,926.3                            | 215.9        | 1,319.9                | 1,053.8                 | 266.09                 | 4.960             |                             |         |
| 12,700.0  | 5,811.0               | 12,326.7              | 5,811.0               | 132.8            | 135.5         | -90.00                | -7,026.3                            | 215.9        | 1,319.9                | 1,050.0                 | 269.90                 | 4.890             |                             |         |
| 12,800.0  | 5,811.0               | 12,426.7              | 5,811.0               | 134.6            | 137.4         | -90.00                | -7,126.3                            | 215.9        | 1,319.9                | 1,046.2                 | 273.71                 | 4.822             |                             |         |
| 12,900.0  | 5,811.0               | 12,526.7              | 5,811.0               | 136.5            | 139.3         | -90.00                | -7,226.3                            | 215.9        | 1,319.9                | 1,042.3                 | 277.52                 | 4.756             |                             |         |
| 13,000.0  | 5,811.0               | 12,626.7              | 5,811.0               | 138.4            | 141.2         | -90.00                | -7,326.3                            | 215.9        | 1,319.9                | 1,038.5                 | 281.33                 | 4.692             |                             |         |
| 13,100.0  | 5,811.0               | 12,726.7              | 5,811.0               | 140.3            | 143.2         | -90.00                | -7,426.3                            | 215.9        | 1,319.9                | 1,034.7                 | 285.14                 | 4.629             |                             |         |
| 13,200.0  | 5,811.0               | 12,826.7              | 5,811.0               | 142.1            | 145.1         | -90.00                | -7,526.3                            | 215.9        | 1,319.9                | 1,030.9                 | 288.96                 | 4.568             |                             |         |
| 13,300.0  | 5,811.0               | 12,926.7              | 5,811.0               | 144.0            | 147.0         | -90.00                | -7,626.3                            | 216.0        | 1,319.9                | 1,027.1                 | 292.77                 | 4.508             |                             |         |
| 13,400.0  | 5,811.0               | 13,026.7              | 5,811.0               | 145.9            | 148.9         | -90.00                | -7,726.3                            | 216.0        | 1,319.9                | 1,023.3                 | 296.59                 | 4.450             |                             |         |
| 13,500.0  | 5,811.0               | 13,126.7              | 5,811.0               | 147.8            | 150.8         | -90.00                | -7,826.3                            | 216.0        | 1,319.9                | 1,019.5                 | 300.40                 | 4.394             |                             |         |
| 13,600.0  | 5,811.0               | 13,226.7              | 5,811.0               | 149.7            | 152.7         | -90.00                | -7,926.3                            | 216.0        | 1,319.9                | 1,015.7                 | 304.22                 | 4.339             |                             |         |
| 13,700.0  | 5,811.0               | 13,326.7              | 5,811.0               | 151.6            | 154.7         | -90.00                | -8,026.3                            | 216.0        | 1,319.9                | 1,011.8                 | 308.03                 | 4.285             |                             |         |
| 13,800.0  | 5,811.0               | 13,426.7              | 5,811.0               | 153.4            | 156.6         | -90.00                | -8,126.3                            | 216.0        | 1,319.9                | 1,008.0                 | 311.85                 | 4.232             |                             |         |
| 13,900.0  | 5,811.0               | 13,526.7              | 5,811.0               | 155.3            | 158.5         | -90.00                | -8,226.3                            | 216.0        | 1,319.9                | 1,004.2                 | 315.67                 | 4.181             |                             |         |
| 13,905.4  | 5,811.0               | 13,532.1              | 5,811.0               | 155.4            | 158.6         | -90.00                | -8,231.7                            | 216.0        | 1,319.9                | 1,004.0                 | 315.87                 | 4.179             |                             |         |
| 13,919.8  | 5,811.0               | 13,541.6              | 5,811.0               | 155.7            | 158.8         | -90.00                | -8,241.2                            | 216.0        | 1,319.9                | 1,003.6                 | 316.33                 | 4.173 SF          |                             |         |



# Cathedral Energy Services

## Anticollision Report

|                           |                               |                                     |  |
|---------------------------|-------------------------------|-------------------------------------|--|
| <b>Company:</b>           | Whiting Petroleum Corporation | <b>Local Co-ordinate Reference:</b> | Well Razor Federal #12F-1301A          |
| <b>Project:</b>           | Weld County, CO               | <b>TVD Reference:</b>               | WELL @ 4953.6usft (Original Well Elev) |
| <b>Reference Site:</b>    | S12-T10N-R58W                 | <b>MD Reference:</b>                | WELL @ 4953.6usft (Original Well Elev) |
| <b>Site Error:</b>        | 0.0usft                       | <b>North Reference:</b>             | True                                   |
| <b>Reference Well:</b>    | Razor Federal #12F-1301A      | <b>Survey Calculation Method:</b>   | Minimum Curvature                      |
| <b>Well Error:</b>        | 0.0usft                       | <b>Output errors are at</b>         | 2.00 sigma                             |
| <b>Reference Wellbore</b> | HZ                            | <b>Database:</b>                    | USA EDM 5000 Multi Users DB            |
| <b>Reference Design:</b>  | Plan #3                       | <b>Offset TVD Reference:</b>        | Offset Datum                           |

| Offset Design S12-T10N-R58W - Razor Federal #12F-1306B - HZ - Plan #2 |                       |                       |                       |                  |               |                       |                                     |              |                        |                         |                        |                   | Offset Site Error: 0.0 usft |  |
|---|-----------------------|-----------------------|-----------------------|------------------|---------------|-----------------------|-------------------------------------|--------------|------------------------|-------------------------|------------------------|-------------------|-----------------------------|--|
| Survey Program: O-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 |                             |  |
| 0.0   | 0.0                   | 0.0                   | 0.0                   | 0.0              | 0.0           | 90.01                 | 0.0                                 | 164.4        | 164.4                  |                         |                        |                   |                             |  |
| 100.0   | 100.0                 | 100.0                 | 100.0                 | 0.1              | 0.1           | 90.01                 | 0.0                                 | 164.4        | 164.4                  | 164.3                   | 0.19                   | 879.222           |                             |  |
| 200.0   | 200.0                 | 200.0                 | 200.0                 | 0.3              | 0.3           | 90.01                 | 0.0                                 | 164.4        | 164.4                  | 163.8                   | 0.64                   | 258.336           |                             |  |
| 300.0   | 300.0                 | 300.0                 | 300.0                 | 0.5              | 0.5           | 90.01                 | 0.0                                 | 164.4        | 164.4                  | 163.4                   | 1.09                   | 151.412           |                             |  |
| 400.0   | 400.0                 | 400.0                 | 400.0                 | 0.8              | 0.8           | 90.01                 | 0.0                                 | 164.4        | 164.4                  | 162.9                   | 1.54                   | 107.089           |                             |  |
| 500.0   | 500.0                 | 500.0                 | 500.0                 | 1.0              | 1.0           | 90.01                 | 0.0                                 | 164.4        | 164.4                  | 162.5                   | 1.99                   | 82.839            |                             |  |
| 600.0   | 600.0                 | 600.0                 | 600.0                 | 1.2              | 1.2           | 90.01                 | 0.0                                 | 164.4        | 164.4                  | 162.0                   | 2.43                   | 67.544            |                             |  |
| 700.0   | 700.0                 | 700.0                 | 700.0                 | 1.4              | 1.4           | 90.01                 | 0.0                                 | 164.4        | 164.4                  | 161.6                   | 2.88                   | 57.017            |                             |  |
| 800.0   | 800.0                 | 800.0                 | 800.0                 | 1.7              | 1.7           | 90.01                 | 0.0                                 | 164.4        | 164.4                  | 161.1                   | 3.33                   | 49.328            |                             |  |
| 900.0   | 900.0                 | 900.0                 | 900.0                 | 1.9              | 1.9           | 90.01                 | 0.0                                 | 164.4        | 164.4                  | 160.7                   | 3.78                   | 43.467            |                             |  |
| 966.7   | 966.7                 | 966.7                 | 966.7                 | 2.0              | 2.0           | 90.01                 | 0.0                                 | 164.4        | 164.4                  | 160.4                   | 4.08                   | 40.277 CC         |                             |  |
| 1,000.0   | 1,000.0               | 1,000.0               | 1,000.0               | 2.1              | 2.1           | 90.01                 | 0.0                                 | 164.4        | 164.4                  | 160.2                   | 4.23                   | 38.851 ES         |                             |  |
| 1,100.0   | 1,100.0               | 1,098.1               | 1,098.1               | 2.3              | 2.3           | -133.90               | -1.6                                | 165.0        | 166.2                  | 161.6                   | 4.63                   | 35.938            |                             |  |
| 1,200.0   | 1,199.8               | 1,196.0               | 1,195.9               | 2.5              | 2.5           | -133.48               | -6.3                                | 166.7        | 171.6                  | 166.6                   | 4.98                   | 34.445            |                             |  |
| 1,300.0   | 1,299.6               | 1,295.7               | 1,295.3               | 2.7              | 2.7           | -133.00               | -12.9                               | 169.0        | 178.8                  | 173.4                   | 5.36                   | 33.334            |                             |  |
| 1,400.0   | 1,399.4               | 1,395.4               | 1,394.8               | 2.9              | 2.9           | -132.55               | -19.5                               | 171.3        | 186.0                  | 180.2                   | 5.76                   | 32.264            |                             |  |
| 1,500.0   | 1,499.1               | 1,495.1               | 1,494.2               | 3.1              | 3.1           | -132.14               | -26.0                               | 173.6        | 193.2                  | 187.0                   | 6.18                   | 31.252            |                             |  |
| 1,600.0   | 1,598.9               | 1,594.9               | 1,593.7               | 3.4              | 3.3           | -131.76               | -32.6                               | 175.9        | 200.4                  | 193.8                   | 6.61                   | 30.308            |                             |  |
| 1,700.0   | 1,698.6               | 1,694.6               | 1,693.2               | 3.6              | 3.5           | -131.41               | -39.1                               | 178.2        | 207.6                  | 200.6                   | 7.05                   | 29.436            |                             |  |
| 1,800.0   | 1,798.4               | 1,794.3               | 1,792.7               | 3.8              | 3.8           | -131.08               | -45.7                               | 180.5        | 214.8                  | 207.3                   | 7.50                   | 28.633            |                             |  |
| 1,900.0   | 1,898.1               | 1,894.0               | 1,892.2               | 4.1              | 4.0           | -130.77               | -52.3                               | 182.8        | 222.1                  | 214.1                   | 7.96                   | 27.895            |                             |  |
| 2,000.0   | 1,997.9               | 1,993.8               | 1,991.7               | 4.3              | 4.2           | -130.48               | -58.8                               | 185.2        | 229.3                  | 220.9                   | 8.42                   | 27.219            |                             |  |
| 2,100.0   | 2,097.6               | 2,093.5               | 2,091.2               | 4.5              | 4.5           | -130.21               | -65.4                               | 187.5        | 236.6                  | 227.7                   | 8.89                   | 26.598            |                             |  |
| 2,200.0   | 2,197.4               | 2,193.2               | 2,190.7               | 4.8              | 4.7           | -129.95               | -72.0                               | 189.8        | 243.8                  | 234.4                   | 9.37                   | 26.027            |                             |  |
| 2,300.0   | 2,297.2               | 2,293.0               | 2,290.1               | 5.0              | 5.0           | -129.71               | -78.5                               | 192.1        | 251.1                  | 241.2                   | 9.85                   | 25.501            |                             |  |
| 2,400.0   | 2,396.9               | 2,392.7               | 2,389.6               | 5.3              | 5.2           | -129.48               | -85.1                               | 194.4        | 258.3                  | 248.0                   | 10.33                  | 25.017            |                             |  |
| 2,500.0   | 2,496.7               | 2,492.4               | 2,489.1               | 5.5              | 5.5           | -129.27               | -91.6                               | 196.7        | 265.6                  | 254.8                   | 10.81                  | 24.570            |                             |  |
| 2,600.0   | 2,596.4               | 2,592.2               | 2,588.6               | 5.8              | 5.7           | -129.06               | -98.2                               | 199.0        | 272.9                  | 261.6                   | 11.30                  | 24.155            |                             |  |
| 2,700.0   | 2,696.2               | 2,691.9               | 2,688.1               | 6.0              | 6.0           | -128.87               | -104.8                              | 201.3        | 280.1                  | 268.4                   | 11.79                  | 23.771            |                             |  |
| 2,800.0   | 2,795.9               | 2,791.6               | 2,787.6               | 6.3              | 6.2           | -128.69               | -111.3                              | 203.6        | 287.4                  | 275.1                   | 12.28                  | 23.414            |                             |  |
| 2,900.0   | 2,895.7               | 2,891.4               | 2,887.1               | 6.5              | 6.5           | -128.51               | -117.9                              | 206.0        | 294.7                  | 281.9                   | 12.77                  | 23.082            |                             |  |
| 3,000.0   | 2,995.5               | 2,991.1               | 2,986.6               | 6.8              | 6.7           | -128.35               | -124.5                              | 208.3        | 302.0                  | 288.7                   | 13.26                  | 22.772            |                             |  |
| 3,100.0   | 3,095.2               | 3,090.8               | 3,086.0               | 7.1              | 7.0           | -128.19               | -131.0                              | 210.6        | 309.3                  | 295.5                   | 13.76                  | 22.482            |                             |  |
| 3,200.0   | 3,195.0               | 3,190.5               | 3,185.5               | 7.3              | 7.2           | -128.04               | -137.6                              | 212.9        | 316.6                  | 302.3                   | 14.25                  | 22.210            |                             |  |
| 3,300.0   | 3,294.7               | 3,290.3               | 3,285.0               | 7.6              | 7.5           | -127.89               | -144.1                              | 215.2        | 323.8                  | 309.1                   | 14.75                  | 21.956            |                             |  |
| 3,400.0   | 3,394.5               | 3,390.0               | 3,384.5               | 7.8              | 7.7           | -127.76               | -150.7                              | 217.5        | 331.1                  | 315.9                   | 15.25                  | 21.716            |                             |  |
| 3,500.0   | 3,494.2               | 3,489.7               | 3,484.0               | 8.1              | 8.0           | -127.63               | -157.3                              | 219.8        | 338.4                  | 322.7                   | 15.75                  | 21.491            |                             |  |
| 3,600.0   | 3,594.0               | 3,589.5               | 3,583.5               | 8.3              | 8.3           | -127.50               | -163.8                              | 222.1        | 345.7                  | 329.5                   | 16.25                  | 21.278            |                             |  |
| 3,700.0   | 3,693.7               | 3,689.2               | 3,683.0               | 8.6              | 8.5           | -127.38               | -170.4                              | 224.4        | 353.0                  | 336.3                   | 16.75                  | 21.078            |                             |  |
| 3,800.0   | 3,793.5               | 3,788.9               | 3,782.5               | 8.9              | 8.8           | -127.26               | -176.9                              | 226.8        | 360.3                  | 343.1                   | 17.25                  | 20.888            |                             |  |
| 3,900.0   | 3,893.3               | 3,888.7               | 3,881.9               | 9.1              | 9.0           | -127.15               | -183.5                              | 229.1        | 367.6                  | 349.9                   | 17.75                  | 20.708            |                             |  |
| 4,000.0   | 3,993.0               | 3,988.4               | 3,981.4               | 9.4              | 9.3           | -127.04               | -190.1                              | 231.4        | 374.9                  | 356.7                   | 18.25                  | 20.538            |                             |  |
| 4,100.0   | 4,092.8               | 4,088.1               | 4,080.9               | 9.6              | 9.6           | -126.94               | -196.6                              | 233.7        | 382.2                  | 363.5                   | 18.76                  | 20.376            |                             |  |
| 4,200.0   | 4,192.5               | 4,187.9               | 4,180.4               | 9.9              | 9.8           | -126.84               | -203.2                              | 236.0        | 389.5                  | 370.3                   | 19.26                  | 20.223            |                             |  |
| 4,300.0   | 4,292.3               | 4,287.6               | 4,279.9               | 10.2             | 10.1          | -126.75               | -209.8                              | 238.3        | 396.8                  | 377.1                   | 19.77                  | 20.077            |                             |  |
| 4,400.0   | 4,392.0               | 4,387.3               | 4,379.4               | 10.4             | 10.3          | -126.65               | -216.3                              | 240.6        | 404.1                  | 383.9                   | 20.27                  | 19.937            |                             |  |
| 4,500.0   | 4,491.8               | 4,487.0               | 4,478.9               | 10.7             | 10.6          | -126.57               | -222.9                              | 242.9        | 411.4                  | 390.7                   | 20.77                  | 19.804            |                             |  |
| 4,600.0   | 4,591.6               | 4,586.8               | 4,578.4               | 11.0             | 10.9          | -126.48               | -229.4                              | 245.2        | 418.7                  | 397.5                   | 21.28                  | 19.678            |                             |  |
| 4,700.0   | 4,691.3               | 4,686.5               | 4,677.9               | 11.2             | 11.1          | -126.40               | -236.0                              | 247.6        | 426.0                  | 404.3                   | 21.79                  | 19.556            |                             |  |
| 4,800.0   | 4,791.1               | 4,786.2               | 4,777.3               | 11.5             | 11.4          | -126.32               | -242.6                              | 249.9        | 433.3                  | 411.1                   | 22.29                  | 19.440            |                             |  |
| 4,900.0   | 4,890.8               | 4,886.0               | 4,876.8               | 11.7             | 11.6          | -126.24               | -249.1                              | 252.2        | 440.7                  | 417.9                   | 22.80                  | 19.329            |                             |  |
| 5,000.0   | 4,990.6               | 4,985.7               | 4,976.3               | 12.0             | 11.9          | -126.16               | -255.7                              | 254.5        | 448.0                  | 424.7                   | 23.30                  | 19.223            |                             |  |

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



# Cathedral Energy Services

## Anticollision Report

|                           |                               |                                     |  |
|---------------------------|-------------------------------|-------------------------------------|--|
| <b>Company:</b>           | Whiting Petroleum Corporation | <b>Local Co-ordinate Reference:</b> | Well Razor Federal #12F-1301A          |
| <b>Project:</b>           | Weld County, CO               | <b>TVD Reference:</b>               | WELL @ 4953.6usft (Original Well Elev) |
| <b>Reference Site:</b>    | S12-T10N-R58W                 | <b>MD Reference:</b>                | WELL @ 4953.6usft (Original Well Elev) |
| <b>Site Error:</b>        | 0.0usft                       | <b>North Reference:</b>             | True                                   |
| <b>Reference Well:</b>    | Razor Federal #12F-1301A      | <b>Survey Calculation Method:</b>   | Minimum Curvature                      |
| <b>Well Error:</b>        | 0.0usft                       | <b>Output errors are at</b>         | 2.00 sigma                             |
| <b>Reference Wellbore</b> | HZ                            | <b>Database:</b>                    | USA EDM 5000 Multi Users DB            |
| <b>Reference Design:</b>  | Plan #3                       | <b>Offset TVD Reference:</b>        | Offset Datum                           |

| Offset Design S12-T10N-R58W - Razor Federal #12F-1306B - 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 |                    |          |
| 5,100.0   | 5,090.3               | 5,085.4               | 5,075.8               | 12.3             | 12.2          | -126.09               | -262.3                              | 256.8        | 455.3                  | 431.5                   | 23.81                  | 19.121            |                    |          |
| 5,200.0   | 5,190.1               | 5,185.2               | 5,175.3               | 12.5             | 12.4          | -126.02               | -268.8                              | 259.1        | 462.6                  | 438.3                   | 24.32                  | 19.023            |                    |          |
| 5,300.0   | 5,289.9               | 5,284.9               | 5,274.8               | 12.8             | 12.7          | -125.95               | -275.4                              | 261.4        | 469.9                  | 445.1                   | 24.82                  | 18.929            |                    |          |
| 5,400.0   | 5,389.2               | 5,384.3               | 5,374.0               | 13.1             | 12.9          | -125.65               | -281.9                              | 263.7        | 479.4                  | 454.2                   | 25.24                  | 18.997            |                    |          |
| 5,500.0   | 5,485.0               | 5,468.3               | 5,457.7               | 13.5             | 13.2          | -125.29               | -288.3                              | 266.0        | 500.0                  | 474.6                   | 25.44                  | 19.654            |                    |          |
| 5,600.0   | 5,573.6               | 5,533.0               | 5,521.1               | 14.2             | 13.4          | -123.41               | -299.8                              | 270.0        | 536.2                  | 510.5                   | 25.64                  | 20.911            |                    |          |
| 5,700.0   | 5,651.8               | 5,592.2               | 5,577.5               | 15.0             | 13.7          | -119.79               | -316.8                              | 276.0        | 586.7                  | 560.6                   | 26.16                  | 22.425            |                    |          |
| 5,800.0   | 5,716.7               | 5,650.0               | 5,630.2               | 16.1             | 14.0          | -114.35               | -339.0                              | 283.8        | 649.2                  | 621.7                   | 27.51                  | 23.597            |                    |          |
| 5,900.0   | 5,766.0               | 5,689.6               | 5,664.7               | 17.3             | 14.3          | -105.97               | -357.4                              | 290.3        | 720.6                  | 690.9                   | 29.76                  | 24.216            |                    |          |
| 6,000.0   | 5,797.8               | 5,726.5               | 5,695.4               | 18.8             | 14.6          | -95.22                | -376.7                              | 297.1        | 798.5                  | 766.1                   | 32.40                  | 24.643            |                    |          |
| 6,100.0   | 5,811.0               | 5,750.0               | 5,714.1               | 20.4             | 14.7          | -81.78                | -390.1                              | 301.8        | 880.1                  | 845.9                   | 34.27                  | 25.679            |                    |          |
| 6,200.0   | 5,811.3               | 5,778.9               | 5,736.3               | 21.9             | 15.0          | -82.06                | -407.6                              | 308.0        | 962.9                  | 926.5                   | 36.35                  | 26.492            |                    |          |
| 6,300.0   | 5,811.3               | 5,808.3               | 5,757.7               | 23.4             | 15.3          | -84.88                | -426.5                              | 314.6        | 1,045.2                | 1,006.7                 | 38.48                  | 27.164            |                    |          |
| 6,400.0   | 5,811.3               | 5,844.5               | 5,782.6               | 25.0             | 15.6          | -87.53                | -451.4                              | 323.4        | 1,126.4                | 1,085.8                 | 40.58                  | 27.755            |                    |          |
| 6,500.0   | 5,811.3               | 5,889.1               | 5,810.5               | 26.6             | 16.1          | -89.94                | -484.1                              | 334.9        | 1,206.2                | 1,163.5                 | 42.68                  | 28.261            |                    |          |
| 6,600.0   | 5,811.3               | 5,943.9               | 5,840.7               | 28.2             | 16.7          | -92.03                | -527.3                              | 350.1        | 1,283.8                | 1,239.0                 | 44.79                  | 28.662            |                    |          |
| 6,700.0   | 5,811.3               | 6,010.6               | 5,870.6               | 29.8             | 17.6          | -93.67                | -583.5                              | 369.9        | 1,358.6                | 1,311.7                 | 46.99                  | 28.911            |                    |          |
| 6,800.0   | 5,811.3               | 6,089.8               | 5,895.9               | 31.4             | 18.7          | -94.70                | -654.1                              | 394.8        | 1,429.9                | 1,380.5                 | 49.37                  | 28.963            |                    |          |
| 6,900.0   | 5,811.3               | 6,179.9               | 5,910.5               | 33.0             | 20.1          | -94.98                | -737.9                              | 424.3        | 1,496.8                | 1,444.8                 | 51.99                  | 28.789            |                    |          |
| 7,000.0   | 5,811.3               | 6,466.2               | 5,912.1               | 34.6             | 24.3          | -94.27                | -1,012.6                            | 504.2        | 1,556.1                | 1,498.9                 | 57.18                  | 27.212            |                    |          |
| 7,100.0   | 5,811.3               | 6,888.3               | 5,912.0               | 36.2             | 30.8          | -93.75                | -1,431.8                            | 546.0        | 1,591.6                | 1,526.5                 | 65.15                  | 24.431            |                    |          |
| 7,200.0   | 5,811.3               | 6,985.7               | 5,912.0               | 37.7             | 32.4          | -93.65                | -1,529.1                            | 546.0        | 1,614.3                | 1,545.8                 | 68.45                  | 23.582            |                    |          |
| 7,300.0   | 5,811.3               | 7,084.1               | 5,912.0               | 39.2             | 34.1          | -93.58                | -1,627.6                            | 546.0        | 1,631.8                | 1,560.1                 | 71.67                  | 22.769            |                    |          |
| 7,400.0   | 5,811.3               | 7,183.4               | 5,912.0               | 40.7             | 35.8          | -93.53                | -1,726.8                            | 546.0        | 1,644.2                | 1,569.4                 | 74.76                  | 21.993            |                    |          |
| 7,500.0   | 5,811.3               | 7,283.1               | 5,912.0               | 42.1             | 37.5          | -93.50                | -1,826.5                            | 546.0        | 1,651.3                | 1,573.7                 | 77.69                  | 21.255            |                    |          |
| 7,600.0   | 5,811.3               | 7,383.1               | 5,912.0               | 43.6             | 39.3          | -93.49                | -1,926.5                            | 546.0        | 1,653.3                | 1,572.8                 | 80.54                  | 20.529            |                    |          |
| 7,700.0   | 5,811.3               | 7,483.1               | 5,912.0               | 45.0             | 41.0          | -93.49                | -2,026.5                            | 546.0        | 1,653.3                | 1,569.4                 | 83.93                  | 19.698            |                    |          |
| 7,800.0   | 5,811.3               | 7,583.1               | 5,912.0               | 46.4             | 42.8          | -93.49                | -2,126.5                            | 546.0        | 1,653.3                | 1,566.0                 | 87.36                  | 18.924            |                    |          |
| 7,900.0   | 5,811.2               | 7,683.1               | 5,912.0               | 47.9             | 44.6          | -93.49                | -2,226.5                            | 546.0        | 1,653.3                | 1,562.5                 | 90.83                  | 18.202            |                    |          |
| 8,000.0   | 5,811.2               | 7,783.1               | 5,912.0               | 49.4             | 46.4          | -93.49                | -2,326.5                            | 546.0        | 1,653.3                | 1,559.0                 | 94.33                  | 17.527            |                    |          |
| 8,100.0   | 5,811.2               | 7,883.1               | 5,912.0               | 50.9             | 48.2          | -93.50                | -2,426.5                            | 546.0        | 1,653.3                | 1,555.4                 | 97.85                  | 16.896            |                    |          |
| 8,200.0   | 5,811.2               | 7,983.1               | 5,912.0               | 52.5             | 50.0          | -93.50                | -2,526.5                            | 546.0        | 1,653.3                | 1,551.9                 | 101.39                 | 16.305            |                    |          |
| 8,300.0   | 5,811.2               | 8,083.1               | 5,912.0               | 54.0             | 51.9          | -93.50                | -2,626.5                            | 546.0        | 1,653.3                | 1,548.3                 | 104.96                 | 15.751            |                    |          |
| 8,400.0   | 5,811.2               | 8,183.1               | 5,912.0               | 55.6             | 53.7          | -93.50                | -2,726.5                            | 546.0        | 1,653.3                | 1,544.7                 | 108.55                 | 15.231            |                    |          |
| 8,500.0   | 5,811.2               | 8,283.1               | 5,912.0               | 57.2             | 55.5          | -93.50                | -2,826.5                            | 546.0        | 1,653.3                | 1,541.1                 | 112.15                 | 14.741            |                    |          |
| 8,600.0   | 5,811.2               | 8,383.1               | 5,912.0               | 58.9             | 57.4          | -93.50                | -2,926.5                            | 546.0        | 1,653.2                | 1,537.5                 | 115.77                 | 14.280            |                    |          |
| 8,700.0   | 5,811.2               | 8,483.1               | 5,912.0               | 60.5             | 59.2          | -93.50                | -3,026.5                            | 545.9        | 1,653.2                | 1,533.8                 | 119.40                 | 13.846            |                    |          |
| 8,800.0   | 5,811.2               | 8,583.1               | 5,912.0               | 62.2             | 61.1          | -93.50                | -3,126.5                            | 545.9        | 1,653.2                | 1,530.2                 | 123.05                 | 13.435            |                    |          |
| 8,900.0   | 5,811.2               | 8,683.1               | 5,912.0               | 63.9             | 62.9          | -93.50                | -3,226.5                            | 545.9        | 1,653.2                | 1,526.5                 | 126.71                 | 13.048            |                    |          |
| 9,000.0   | 5,811.2               | 8,783.1               | 5,912.0               | 65.6             | 64.8          | -93.50                | -3,326.5                            | 545.9        | 1,653.2                | 1,522.8                 | 130.38                 | 12.680            |                    |          |
| 9,100.0   | 5,811.2               | 8,883.1               | 5,912.0               | 67.3             | 66.7          | -93.50                | -3,426.5                            | 545.9        | 1,653.2                | 1,519.1                 | 134.05                 | 12.332            |                    |          |
| 9,200.0   | 5,811.2               | 8,983.1               | 5,912.0               | 69.0             | 68.5          | -93.50                | -3,526.5                            | 545.9        | 1,653.2                | 1,515.4                 | 137.74                 | 12.002            |                    |          |
| 9,300.0   | 5,811.2               | 9,083.1               | 5,912.0               | 70.7             | 70.4          | -93.50                | -3,626.5                            | 545.9        | 1,653.2                | 1,511.7                 | 141.44                 | 11.689            |                    |          |
| 9,400.0   | 5,811.2               | 9,183.1               | 5,912.0               | 72.5             | 72.3          | -93.50                | -3,726.5                            | 545.9        | 1,653.2                | 1,508.0                 | 145.14                 | 11.390            |                    |          |
| 9,500.0   | 5,811.2               | 9,283.1               | 5,912.0               | 74.2             | 74.2          | -93.50                | -3,826.5                            | 545.9        | 1,653.2                | 1,504.3                 | 148.85                 | 11.106            |                    |          |
| 9,600.0   | 5,811.2               | 9,383.1               | 5,912.0               | 76.0             | 76.0          | -93.50                | -3,926.5                            | 545.9        | 1,653.2                | 1,500.6                 | 152.56                 | 10.836            |                    |          |
| 9,700.0   | 5,811.2               | 9,483.1               | 5,912.0               | 77.7             | 77.9          | -93.50                | -4,026.5                            | 545.9        | 1,653.1                | 1,496.9                 | 156.29                 | 10.578            |                    |          |
| 9,800.0   | 5,811.2               | 9,583.1               | 5,912.0               | 79.5             | 79.8          | -93.50                | -4,126.5                            | 545.9        | 1,653.1                | 1,493.1                 | 160.01                 | 10.331            |                    |          |
| 9,900.0   | 5,811.2               | 9,683.1               | 5,912.0               | 81.3             | 81.7          | -93.50                | -4,226.5                            | 545.9        | 1,653.1                | 1,489.4                 | 163.75                 | 10.096            |                    |          |
| 10,000.0  | 5,811.2               | 9,783.1               | 5,912.0               | 83.1             | 83.6          | -93.50                | -4,326.5                            | 545.9        | 1,653.1                | 1,485.6                 | 167.49                 | 9.870             |                    |          |
| 10,100.0  | 5,811.2               | 9,883.1               | 5,912.0               | 84.9             | 85.5          | -93.50                | -4,426.5                            | 545.9        | 1,653.1                | 1,481.9                 | 171.23                 | 9.654             |                    |          |
| 10,200.0  | 5,811.1               | 9,983.1               | 5,912.0               | 86.7             | 87.4          | -93.50                | -4,526.5                            | 545.9        | 1,653.1                | 1,478.1                 | 174.97                 | 9.448             |                    |          |

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

# Cathedral Energy Services

## Anticollision Report

|                           |                               |                                     |  |
|---------------------------|-------------------------------|-------------------------------------|--|
| <b>Company:</b>           | Whiting Petroleum Corporation | <b>Local Co-ordinate Reference:</b> | Well Razor Federal #12F-1301A          |
| <b>Project:</b>           | Weld County, CO               | <b>TVD Reference:</b>               | WELL @ 4953.6usft (Original Well Elev) |
| <b>Reference Site:</b>    | S12-T10N-R58W                 | <b>MD Reference:</b>                | WELL @ 4953.6usft (Original Well Elev) |
| <b>Site Error:</b>        | 0.0usft                       | <b>North Reference:</b>             | True                                   |
| <b>Reference Well:</b>    | Razor Federal #12F-1301A      | <b>Survey Calculation Method:</b>   | Minimum Curvature                      |
| <b>Well Error:</b>        | 0.0usft                       | <b>Output errors are at</b>         | 2.00 sigma                             |
| <b>Reference Wellbore</b> | HZ                            | <b>Database:</b>                    | USA EDM 5000 Multi Users DB            |
| <b>Reference Design:</b>  | Plan #3                       | <b>Offset TVD Reference:</b>        | Offset Datum                           |

| Offset Design S12-T10N-R58W - Razor Federal #12F-1306B - 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                                  |                 |                              |                               | Total<br>Uncertainty<br>Axis | Separation<br>Factor | Warning            |          |
| Measured<br>Depth<br>(usft)   | Vertical<br>Depth<br>(usft) | Measured<br>Depth<br>(usft) | Vertical<br>Depth<br>(usft) | Reference<br>(usft) | Offset<br>(usft) | Highside<br>Toolface<br>(°) | Offset Wellbore Centre<br>+N/-S<br>(usft) | +E/-W<br>(usft) | Between<br>Centres<br>(usft) | Between<br>Ellipses<br>(usft) |                              |                      |                    |          |
| 10,300.0  | 5,811.1                     | 10,083.1                    | 5,912.0                     | 88.5                | 89.2             | -93.50                      | -4,626.5                                  | 545.9           | 1,653.1                      | 1,474.4                       | 178.73                       | 9.249                |                    |          |
| 10,400.0  | 5,811.1                     | 10,183.1                    | 5,912.0                     | 90.3                | 91.1             | -93.50                      | -4,726.5                                  | 545.9           | 1,653.1                      | 1,470.6                       | 182.48                       | 9.059                |                    |          |
| 10,500.0  | 5,811.1                     | 10,283.1                    | 5,912.0                     | 92.1                | 93.0             | -93.50                      | -4,826.5                                  | 545.9           | 1,653.1                      | 1,466.8                       | 186.24                       | 8.876                |                    |          |
| 10,600.0  | 5,811.1                     | 10,383.1                    | 5,912.0                     | 93.9                | 94.9             | -93.50                      | -4,926.5                                  | 545.9           | 1,653.1                      | 1,463.1                       | 190.00                       | 8.700                |                    |          |
| 10,700.0  | 5,811.1                     | 10,483.1                    | 5,912.0                     | 95.7                | 96.8             | -93.50                      | -5,026.5                                  | 545.9           | 1,653.0                      | 1,459.3                       | 193.76                       | 8.531                |                    |          |
| 10,800.0  | 5,811.1                     | 10,583.1                    | 5,912.0                     | 97.5                | 98.7             | -93.50                      | -5,126.5                                  | 545.9           | 1,653.0                      | 1,455.5                       | 197.53                       | 8.369                |                    |          |
| 10,900.0  | 5,811.1                     | 10,683.1                    | 5,912.0                     | 99.4                | 100.6            | -93.50                      | -5,226.5                                  | 545.9           | 1,653.0                      | 1,451.7                       | 201.30                       | 8.212                |                    |          |
| 11,000.0  | 5,811.1                     | 10,783.1                    | 5,912.0                     | 101.2               | 102.5            | -93.50                      | -5,326.5                                  | 545.9           | 1,653.0                      | 1,447.9                       | 205.07                       | 8.061                |                    |          |
| 11,100.0  | 5,811.1                     | 10,883.1                    | 5,912.0                     | 103.0               | 104.4            | -93.50                      | -5,426.5                                  | 545.9           | 1,653.0                      | 1,444.2                       | 208.85                       | 7.915                |                    |          |
| 11,200.0  | 5,811.1                     | 10,983.1                    | 5,912.0                     | 104.9               | 106.3            | -93.50                      | -5,526.5                                  | 545.9           | 1,653.0                      | 1,440.4                       | 212.62                       | 7.774                |                    |          |
| 11,300.0  | 5,811.1                     | 11,083.1                    | 5,912.0                     | 106.7               | 108.2            | -93.50                      | -5,626.5                                  | 545.9           | 1,653.0                      | 1,436.6                       | 216.40                       | 7.639                |                    |          |
| 11,400.0  | 5,811.1                     | 11,183.1                    | 5,912.0                     | 108.6               | 110.1            | -93.50                      | -5,726.5                                  | 545.9           | 1,653.0                      | 1,432.8                       | 220.18                       | 7.507                |                    |          |
| 11,500.0  | 5,811.1                     | 11,283.1                    | 5,912.0                     | 110.4               | 112.0            | -93.50                      | -5,826.5                                  | 545.9           | 1,653.0                      | 1,429.0                       | 223.97                       | 7.380                |                    |          |
| 11,600.0  | 5,811.1                     | 11,383.1                    | 5,912.0                     | 112.3               | 113.9            | -93.50                      | -5,926.5                                  | 545.9           | 1,653.0                      | 1,425.2                       | 227.75                       | 7.258                |                    |          |
| 11,700.0  | 5,811.1                     | 11,483.1                    | 5,912.0                     | 114.1               | 115.8            | -93.50                      | -6,026.5                                  | 545.9           | 1,653.0                      | 1,421.4                       | 231.54                       | 7.139                |                    |          |
| 11,800.0  | 5,811.1                     | 11,583.1                    | 5,912.0                     | 116.0               | 117.7            | -93.50                      | -6,126.5                                  | 545.9           | 1,652.9                      | 1,417.6                       | 235.33                       | 7.024                |                    |          |
| 11,900.0  | 5,811.1                     | 11,683.1                    | 5,912.0                     | 117.8               | 119.6            | -93.50                      | -6,226.5                                  | 545.8           | 1,652.9                      | 1,413.8                       | 239.12                       | 6.913                |                    |          |
| 12,000.0  | 5,811.1                     | 11,783.1                    | 5,912.0                     | 119.7               | 121.5            | -93.50                      | -6,326.5                                  | 545.8           | 1,652.9                      | 1,410.0                       | 242.91                       | 6.805                |                    |          |
| 12,100.0  | 5,811.1                     | 11,883.1                    | 5,912.0                     | 121.6               | 123.4            | -93.50                      | -6,426.5                                  | 545.8           | 1,652.9                      | 1,406.2                       | 246.70                       | 6.700                |                    |          |
| 12,200.0  | 5,811.1                     | 11,983.1                    | 5,912.0                     | 123.4               | 125.4            | -93.50                      | -6,526.5                                  | 545.8           | 1,652.9                      | 1,402.4                       | 250.49                       | 6.599                |                    |          |
| 12,300.0  | 5,811.1                     | 12,083.1                    | 5,912.0                     | 125.3               | 127.3            | -93.50                      | -6,626.5                                  | 545.8           | 1,652.9                      | 1,398.6                       | 254.29                       | 6.500                |                    |          |
| 12,400.0  | 5,811.1                     | 12,183.1                    | 5,912.0                     | 127.2               | 129.2            | -93.50                      | -6,726.5                                  | 545.8           | 1,652.9                      | 1,394.8                       | 258.09                       | 6.404                |                    |          |
| 12,500.0  | 5,811.0                     | 12,283.1                    | 5,912.0                     | 129.0               | 131.1            | -93.50                      | -6,826.5                                  | 545.8           | 1,652.9                      | 1,391.0                       | 261.88                       | 6.311                |                    |          |
| 12,600.0  | 5,811.0                     | 12,383.1                    | 5,912.0                     | 130.9               | 133.0            | -93.50                      | -6,926.5                                  | 545.8           | 1,652.9                      | 1,387.2                       | 265.68                       | 6.221                |                    |          |
| 12,700.0  | 5,811.0                     | 12,483.1                    | 5,912.0                     | 132.8               | 134.9            | -93.50                      | -7,026.5                                  | 545.8           | 1,652.9                      | 1,383.4                       | 269.48                       | 6.133                |                    |          |
| 12,800.0  | 5,811.0                     | 12,583.1                    | 5,912.0                     | 134.6               | 136.8            | -93.50                      | -7,126.5                                  | 545.8           | 1,652.8                      | 1,379.6                       | 273.28                       | 6.048                |                    |          |
| 12,900.0  | 5,811.0                     | 12,683.1                    | 5,912.0                     | 136.5               | 138.7            | -93.50                      | -7,226.5                                  | 545.8           | 1,652.8                      | 1,375.8                       | 277.09                       | 5.965                |                    |          |
| 13,000.0  | 5,811.0                     | 12,783.1                    | 5,912.0                     | 138.4               | 140.6            | -93.50                      | -7,326.5                                  | 545.8           | 1,652.8                      | 1,371.9                       | 280.89                       | 5.884                |                    |          |
| 13,100.0  | 5,811.0                     | 12,883.1                    | 5,912.0                     | 140.3               | 142.5            | -93.50                      | -7,426.5                                  | 545.8           | 1,652.8                      | 1,368.1                       | 284.69                       | 5.806                |                    |          |
| 13,200.0  | 5,811.0                     | 12,983.1                    | 5,912.0                     | 142.1               | 144.4            | -93.50                      | -7,526.5                                  | 545.8           | 1,652.8                      | 1,364.3                       | 288.50                       | 5.729                |                    |          |
| 13,300.0  | 5,811.0                     | 13,083.1                    | 5,912.0                     | 144.0               | 146.4            | -93.50                      | -7,626.5                                  | 545.8           | 1,652.8                      | 1,360.5                       | 292.31                       | 5.654                |                    |          |
| 13,400.0  | 5,811.0                     | 13,183.1                    | 5,912.0                     | 145.9               | 148.3            | -93.50                      | -7,726.5                                  | 545.8           | 1,652.8                      | 1,356.7                       | 296.11                       | 5.582                |                    |          |
| 13,500.0  | 5,811.0                     | 13,283.1                    | 5,912.0                     | 147.8               | 150.2            | -93.50                      | -7,826.5                                  | 545.8           | 1,652.8                      | 1,352.9                       | 299.92                       | 5.511                |                    |          |
| 13,600.0  | 5,811.0                     | 13,383.1                    | 5,912.0                     | 149.7               | 152.1            | -93.50                      | -7,926.5                                  | 545.8           | 1,652.8                      | 1,349.0                       | 303.73                       | 5.442                |                    |          |
| 13,700.0  | 5,811.0                     | 13,483.1                    | 5,912.0                     | 151.6               | 154.0            | -93.50                      | -8,026.5                                  | 545.8           | 1,652.8                      | 1,345.2                       | 307.54                       | 5.374                |                    |          |
| 13,800.0  | 5,811.0                     | 13,583.1                    | 5,912.0                     | 153.4               | 155.9            | -93.50                      | -8,126.5                                  | 545.8           | 1,652.8                      | 1,341.4                       | 311.35                       | 5.308                |                    |          |
| 13,900.0  | 5,811.0                     | 13,683.1                    | 5,912.0                     | 155.3               | 157.5            | -93.50                      | -8,226.5                                  | 545.8           | 1,652.7                      | 1,337.9                       | 314.86                       | 5.249                |                    |          |
| 13,912.9  | 5,811.0                     | 13,695.8                    | 5,912.0                     | 155.6               | 157.7            | -93.50                      | -8,239.2                                  | 545.8           | 1,652.7                      | 1,337.4                       | 315.30                       | 5.242                |                    |          |
| 13,919.8  | 5,811.0                     | 13,695.8                    | 5,912.0                     | 155.7               | 157.7            | -93.50                      | -8,239.2                                  | 545.8           | 1,652.8                      | 1,337.3                       | 315.43                       | 5.240 SF             |                    |          |

# Cathedral Energy Services

## Anticollision Report

|                           |                               |                                     |  |
|---------------------------|-------------------------------|-------------------------------------|--|
| <b>Company:</b>           | Whiting Petroleum Corporation | <b>Local Co-ordinate Reference:</b> | Well Razor Federal #12F-1301A          |
| <b>Project:</b>           | Weld County, CO               | <b>TVD Reference:</b>               | WELL @ 4953.6usft (Original Well Elev) |
| <b>Reference Site:</b>    | S12-T10N-R58W                 | <b>MD Reference:</b>                | WELL @ 4953.6usft (Original Well Elev) |
| <b>Site Error:</b>        | 0.0usft                       | <b>North Reference:</b>             | True                                   |
| <b>Reference Well:</b>    | Razor Federal #12F-1301A      | <b>Survey Calculation Method:</b>   | Minimum Curvature                      |
| <b>Well Error:</b>        | 0.0usft                       | <b>Output errors are at</b>         | 2.00 sigma                             |
| <b>Reference Wellbore</b> | HZ                            | <b>Database:</b>                    | USA EDM 5000 Multi Users DB            |
| <b>Reference Design:</b>  | Plan #3                       | <b>Offset TVD Reference:</b>        | Offset Datum                           |

| Offset Design S12-T10N-R58W - Razor Federal #12F-1307A - 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                                 | 197.5        | 197.5                  |                         |                        |                   |                             |  |
| 100.0   | 100.0                 | 100.0                 | 100.0                 | 0.1              | 0.1           | 90.00                 | 0.0                                 | 197.5        | 197.5                  | 197.3                   | 0.19                   | 1,055.953         |                             |  |
| 200.0   | 200.0                 | 200.0                 | 200.0                 | 0.3              | 0.3           | 90.00                 | 0.0                                 | 197.5        | 197.5                  | 196.9                   | 0.64                   | 310.250           |                             |  |
| 300.0   | 300.0                 | 300.0                 | 300.0                 | 0.5              | 0.5           | 90.00                 | 0.0                                 | 197.5        | 197.5                  | 196.4                   | 1.09                   | 181.838           |                             |  |
| 366.7   | 366.7                 | 366.7                 | 366.7                 | 0.7              | 0.7           | 90.00                 | 0.0                                 | 197.5        | 197.5                  | 196.1                   | 1.39                   | 142.514 CC        |                             |  |
| 400.0   | 400.0                 | 400.0                 | 400.0                 | 0.8              | 0.8           | 90.00                 | 0.0                                 | 197.5        | 197.5                  | 196.0                   | 1.54                   | 128.608 ES        |                             |  |
| 500.0   | 500.0                 | 496.7                 | 496.6                 | 1.0              | 1.0           | 90.41                 | -1.4                                | 198.3        | 198.3                  | 196.4                   | 1.95                   | 101.496           |                             |  |
| 600.0   | 600.0                 | 593.1                 | 592.9                 | 1.2              | 1.2           | 91.61                 | -5.6                                | 200.7        | 200.9                  | 198.6                   | 2.37                   | 84.872            |                             |  |
| 700.0   | 700.0                 | 692.6                 | 692.2                 | 1.4              | 1.4           | 93.27                 | -11.7                               | 204.2        | 204.7                  | 201.8                   | 2.81                   | 72.909            |                             |  |
| 800.0   | 800.0                 | 792.3                 | 791.7                 | 1.7              | 1.6           | 94.87                 | -17.7                               | 207.6        | 208.5                  | 205.3                   | 3.26                   | 63.929            |                             |  |
| 900.0   | 900.0                 | 892.1                 | 891.2                 | 1.9              | 1.8           | 96.42                 | -23.7                               | 211.1        | 212.6                  | 208.9                   | 3.73                   | 57.054            |                             |  |
| 1,000.0   | 1,000.0               | 991.9                 | 990.7                 | 2.1              | 2.1           | 97.90                 | -29.8                               | 214.5        | 216.8                  | 212.6                   | 4.20                   | 51.662            |                             |  |
| 1,100.0   | 1,100.0               | 1,091.6               | 1,090.3               | 2.3              | 2.3           | -125.01               | -35.8                               | 218.0        | 222.1                  | 217.5                   | 4.60                   | 48.263            |                             |  |
| 1,200.0   | 1,199.8               | 1,191.3               | 1,189.7               | 2.5              | 2.6           | -124.61               | -41.8                               | 221.5        | 229.5                  | 224.5                   | 5.02                   | 45.682            |                             |  |
| 1,300.0   | 1,299.6               | 1,291.0               | 1,289.1               | 2.7              | 2.8           | -124.68               | -47.9                               | 224.9        | 237.9                  | 232.4                   | 5.46                   | 43.570            |                             |  |
| 1,400.0   | 1,399.4               | 1,390.6               | 1,388.5               | 2.9              | 3.1           | -124.76               | -53.9                               | 228.4        | 246.3                  | 240.3                   | 5.91                   | 41.692            |                             |  |
| 1,500.0   | 1,499.1               | 1,490.3               | 1,488.0               | 3.1              | 3.4           | -124.83               | -59.9                               | 231.8        | 254.6                  | 248.3                   | 6.36                   | 40.024            |                             |  |
| 1,600.0   | 1,598.9               | 1,589.9               | 1,587.4               | 3.4              | 3.6           | -124.89               | -66.0                               | 235.3        | 263.0                  | 256.2                   | 6.82                   | 38.540            |                             |  |
| 1,700.0   | 1,698.6               | 1,689.6               | 1,686.8               | 3.6              | 3.9           | -124.95               | -72.0                               | 238.7        | 271.4                  | 264.1                   | 7.29                   | 37.212            |                             |  |
| 1,800.0   | 1,798.4               | 1,789.2               | 1,786.2               | 3.8              | 4.1           | -125.01               | -78.0                               | 242.2        | 279.7                  | 272.0                   | 7.77                   | 36.021            |                             |  |
| 1,900.0   | 1,898.1               | 1,888.9               | 1,885.6               | 4.1              | 4.4           | -125.06               | -84.1                               | 245.6        | 288.1                  | 279.9                   | 8.24                   | 34.949            |                             |  |
| 2,000.0   | 1,997.9               | 1,988.5               | 1,985.0               | 4.3              | 4.6           | -125.12               | -90.1                               | 249.1        | 296.5                  | 287.8                   | 8.72                   | 33.983            |                             |  |
| 2,100.0   | 2,097.6               | 2,088.2               | 2,084.4               | 4.5              | 4.9           | -125.16               | -96.1                               | 252.6        | 304.8                  | 295.6                   | 9.21                   | 33.107            |                             |  |
| 2,200.0   | 2,197.4               | 2,187.8               | 2,183.8               | 4.8              | 5.2           | -125.21               | -102.2                              | 256.0        | 313.2                  | 303.5                   | 9.69                   | 32.311            |                             |  |
| 2,300.0   | 2,297.2               | 2,287.5               | 2,283.2               | 5.0              | 5.4           | -125.25               | -108.2                              | 259.5        | 321.6                  | 311.4                   | 10.18                  | 31.584            |                             |  |
| 2,400.0   | 2,396.9               | 2,387.1               | 2,382.6               | 5.3              | 5.7           | -125.29               | -114.2                              | 262.9        | 330.0                  | 319.3                   | 10.67                  | 30.919            |                             |  |
| 2,500.0   | 2,496.7               | 2,486.8               | 2,482.0               | 5.5              | 6.0           | -125.33               | -120.3                              | 266.4        | 338.3                  | 327.2                   | 11.16                  | 30.308            |                             |  |
| 2,600.0   | 2,596.4               | 2,586.4               | 2,581.4               | 5.8              | 6.2           | -125.37               | -126.3                              | 269.8        | 346.7                  | 335.1                   | 11.66                  | 29.746            |                             |  |
| 2,700.0   | 2,696.2               | 2,686.1               | 2,680.8               | 6.0              | 6.5           | -125.40               | -132.3                              | 273.3        | 355.1                  | 342.9                   | 12.15                  | 29.226            |                             |  |
| 2,800.0   | 2,795.9               | 2,785.7               | 2,780.2               | 6.3              | 6.7           | -125.44               | -138.4                              | 276.7        | 363.5                  | 350.8                   | 12.64                  | 28.744            |                             |  |
| 2,900.0   | 2,895.7               | 2,885.4               | 2,879.6               | 6.5              | 7.0           | -125.47               | -144.4                              | 280.2        | 371.8                  | 358.7                   | 13.14                  | 28.297            |                             |  |
| 3,000.0   | 2,995.5               | 2,985.0               | 2,979.0               | 6.8              | 7.3           | -125.50               | -150.4                              | 283.6        | 380.2                  | 366.6                   | 13.64                  | 27.881            |                             |  |
| 3,100.0   | 3,095.2               | 3,084.7               | 3,078.5               | 7.1              | 7.5           | -125.53               | -156.5                              | 287.1        | 388.6                  | 374.4                   | 14.13                  | 27.492            |                             |  |
| 3,200.0   | 3,195.0               | 3,184.3               | 3,177.9               | 7.3              | 7.8           | -125.56               | -162.5                              | 290.6        | 396.9                  | 382.3                   | 14.63                  | 27.129            |                             |  |
| 3,300.0   | 3,294.7               | 3,284.0               | 3,277.3               | 7.6              | 8.1           | -125.58               | -168.5                              | 294.0        | 405.3                  | 390.2                   | 15.13                  | 26.789            |                             |  |
| 3,400.0   | 3,394.5               | 3,383.6               | 3,376.7               | 7.8              | 8.3           | -125.61               | -174.6                              | 297.5        | 413.7                  | 398.1                   | 15.63                  | 26.469            |                             |  |
| 3,500.0   | 3,494.2               | 3,483.3               | 3,476.1               | 8.1              | 8.6           | -125.64               | -180.6                              | 300.9        | 422.1                  | 405.9                   | 16.13                  | 26.169            |                             |  |
| 3,600.0   | 3,594.0               | 3,582.9               | 3,575.5               | 8.3              | 8.8           | -125.66               | -186.6                              | 304.4        | 430.4                  | 413.8                   | 16.63                  | 25.885            |                             |  |
| 3,700.0   | 3,693.7               | 3,682.6               | 3,674.9               | 8.6              | 9.1           | -125.68               | -192.6                              | 307.8        | 438.8                  | 421.7                   | 17.13                  | 25.618            |                             |  |
| 3,800.0   | 3,793.5               | 3,782.2               | 3,774.3               | 8.9              | 9.4           | -125.70               | -198.7                              | 311.3        | 447.2                  | 429.6                   | 17.63                  | 25.366            |                             |  |
| 3,900.0   | 3,893.3               | 3,881.9               | 3,873.7               | 9.1              | 9.6           | -125.73               | -204.7                              | 314.7        | 455.6                  | 437.4                   | 18.13                  | 25.127            |                             |  |
| 4,000.0   | 3,993.0               | 3,981.5               | 3,973.1               | 9.4              | 9.9           | -125.75               | -210.7                              | 318.2        | 463.9                  | 445.3                   | 18.63                  | 24.900            |                             |  |
| 4,100.0   | 4,092.8               | 4,081.2               | 4,072.5               | 9.6              | 10.2          | -125.77               | -216.8                              | 321.6        | 472.3                  | 453.2                   | 19.13                  | 24.685            |                             |  |
| 4,200.0   | 4,192.5               | 4,180.8               | 4,171.9               | 9.9              | 10.4          | -125.79               | -222.8                              | 325.1        | 480.7                  | 461.0                   | 19.64                  | 24.481            |                             |  |
| 4,300.0   | 4,292.3               | 4,280.4               | 4,271.3               | 10.2             | 10.7          | -125.80               | -228.8                              | 328.6        | 489.1                  | 468.9                   | 20.14                  | 24.286            |                             |  |
| 4,400.0   | 4,392.0               | 4,380.1               | 4,370.7               | 10.4             | 10.9          | -125.82               | -234.9                              | 332.0        | 497.4                  | 476.8                   | 20.64                  | 24.101            |                             |  |
| 4,500.0   | 4,491.8               | 4,479.7               | 4,470.1               | 10.7             | 11.2          | -125.84               | -240.9                              | 335.5        | 505.8                  | 484.7                   | 21.14                  | 23.924            |                             |  |
| 4,600.0   | 4,591.6               | 4,579.4               | 4,569.5               | 11.0             | 11.5          | -125.86               | -246.9                              | 338.9        | 514.2                  | 492.5                   | 21.64                  | 23.755            |                             |  |
| 4,700.0   | 4,691.3               | 4,679.0               | 4,668.9               | 11.2             | 11.7          | -125.87               | -253.0                              | 342.4        | 522.5                  | 500.4                   | 22.15                  | 23.594            |                             |  |
| 4,800.0   | 4,791.1               | 4,778.7               | 4,768.4               | 11.5             | 12.0          | -125.89               | -259.0                              | 345.8        | 530.9                  | 508.3                   | 22.65                  | 23.440            |                             |  |
| 4,900.0   | 4,890.8               | 4,878.3               | 4,867.8               | 11.7             | 12.3          | -125.90               | -265.0                              | 349.3        | 539.3                  | 516.1                   | 23.15                  | 23.292            |                             |  |
| 5,000.0   | 4,990.6               | 4,978.0               | 4,967.2               | 12.0             | 12.5          | -125.92               | -271.1                              | 352.7        | 547.7                  | 524.0                   | 23.66                  | 23.151            |                             |  |

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

# Cathedral Energy Services

## Anticollision Report

|                           |                               |                                     |  |
|---------------------------|-------------------------------|-------------------------------------|--|
| <b>Company:</b>           | Whiting Petroleum Corporation | <b>Local Co-ordinate Reference:</b> | Well Razor Federal #12F-1301A          |
| <b>Project:</b>           | Weld County, CO               | <b>TVD Reference:</b>               | WELL @ 4953.6usft (Original Well Elev) |
| <b>Reference Site:</b>    | S12-T10N-R58W                 | <b>MD Reference:</b>                | WELL @ 4953.6usft (Original Well Elev) |
| <b>Site Error:</b>        | 0.0usft                       | <b>North Reference:</b>             | True                                   |
| <b>Reference Well:</b>    | Razor Federal #12F-1301A      | <b>Survey Calculation Method:</b>   | Minimum Curvature                      |
| <b>Well Error:</b>        | 0.0usft                       | <b>Output errors are at</b>         | 2.00 sigma                             |
| <b>Reference Wellbore</b> | HZ                            | <b>Database:</b>                    | USA EDM 5000 Multi Users DB            |
| <b>Reference Design:</b>  | Plan #3                       | <b>Offset TVD Reference:</b>        | Offset Datum                           |

| Offset Design S12-T10N-R58W - Razor Federal #12F-1307A - 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 |                             |  |
| 5,100.0   | 5,090.3               | 5,077.6               | 5,066.6               | 12.3             | 12.8          | -125.93               | -277.1                              | 356.2        | 556.0                  | 531.9                   | 24.16                  | 23.015            |                             |  |
| 5,200.0   | 5,190.1               | 5,177.3               | 5,166.0               | 12.5             | 13.1          | -125.95               | -283.1                              | 359.6        | 564.4                  | 539.8                   | 24.66                  | 22.885            |                             |  |
| 5,300.0   | 5,289.9               | 5,276.9               | 5,265.4               | 12.8             | 13.3          | -125.96               | -289.2                              | 363.1        | 572.8                  | 547.6                   | 25.17                  | 22.759            |                             |  |
| 5,400.0   | 5,389.2               | 5,360.7               | 5,348.9               | 13.1             | 13.5          | -125.41               | -294.7                              | 366.2        | 583.9                  | 558.4                   | 25.53                  | 22.874            |                             |  |
| 5,500.0   | 5,485.0               | 5,417.4               | 5,404.8               | 13.5             | 13.7          | -123.46               | -302.9                              | 371.0        | 610.5                  | 584.8                   | 25.69                  | 23.764            |                             |  |
| 5,600.0   | 5,573.6               | 5,469.3               | 5,454.8               | 14.2             | 14.0          | -120.00               | -315.0                              | 377.9        | 653.1                  | 627.1                   | 25.95                  | 25.163            |                             |  |
| 5,700.0   | 5,651.8               | 5,515.1               | 5,497.5               | 15.0             | 14.2          | -114.69               | -329.2                              | 386.0        | 709.1                  | 682.5                   | 26.64                  | 26.615            |                             |  |
| 5,800.0   | 5,716.7               | 5,550.0               | 5,529.0               | 16.1             | 14.4          | -106.95               | -342.2                              | 393.5        | 775.8                  | 747.6                   | 28.20                  | 27.513            |                             |  |
| 5,900.0   | 5,766.0               | 5,584.8               | 5,559.4               | 17.3             | 14.7          | -97.06                | -356.9                              | 401.9        | 850.1                  | 819.7                   | 30.35                  | 28.011            |                             |  |
| 6,000.0   | 5,797.8               | 5,600.0               | 5,572.3               | 18.8             | 14.8          | -84.00                | -363.9                              | 405.9        | 929.2                  | 897.0                   | 32.18                  | 28.873            |                             |  |
| 6,100.0   | 5,811.0               | 5,623.2               | 5,591.5               | 20.4             | 15.0          | -71.18                | -375.2                              | 412.4        | 1,010.2                | 977.5                   | 32.71                  | 30.879            |                             |  |
| 6,200.0   | 5,811.3               | 5,633.5               | 5,599.8               | 21.9             | 15.1          | -70.57                | -380.4                              | 415.4        | 1,091.4                | 1,057.0                 | 34.46                  | 31.674            |                             |  |
| 6,300.0   | 5,811.3               | 5,650.0               | 5,612.9               | 23.4             | 15.2          | -73.20                | -389.1                              | 420.4        | 1,172.7                | 1,136.0                 | 36.71                  | 31.942            |                             |  |
| 6,400.0   | 5,811.3               | 5,661.3               | 5,621.7               | 25.0             | 15.3          | -75.15                | -395.3                              | 423.9        | 1,253.6                | 1,214.8                 | 38.82                  | 32.296            |                             |  |
| 6,500.0   | 5,811.3               | 5,679.9               | 5,635.9               | 26.6             | 15.5          | -77.33                | -405.8                              | 429.9        | 1,334.0                | 1,293.1                 | 40.95                  | 32.578            |                             |  |
| 6,600.0   | 5,811.3               | 5,700.0               | 5,650.6               | 28.2             | 15.7          | -79.29                | -417.6                              | 436.7        | 1,413.6                | 1,370.6                 | 42.99                  | 32.883            |                             |  |
| 6,700.0   | 5,811.3               | 5,729.4               | 5,671.2               | 29.8             | 16.0          | -81.41                | -435.8                              | 447.1        | 1,492.0                | 1,447.0                 | 45.02                  | 33.139            |                             |  |
| 6,800.0   | 5,811.3               | 5,761.9               | 5,692.6               | 31.4             | 16.3          | -83.29                | -457.0                              | 459.2        | 1,569.1                | 1,522.1                 | 46.96                  | 33.411            |                             |  |
| 6,900.0   | 5,811.3               | 5,800.0               | 5,715.7               | 33.0             | 16.8          | -85.01                | -483.3                              | 474.3        | 1,644.4                | 1,595.5                 | 48.84                  | 33.669            |                             |  |
| 7,000.0   | 5,811.3               | 5,850.0               | 5,742.5               | 34.6             | 17.4          | -86.70                | -519.9                              | 495.3        | 1,717.5                | 1,666.8                 | 50.74                  | 33.851            |                             |  |
| 7,100.0   | 5,811.3               | 5,902.6               | 5,766.2               | 36.2             | 18.1          | -88.00                | -560.7                              | 518.6        | 1,788.2                | 1,735.6                 | 52.60                  | 33.997            |                             |  |
| 7,200.0   | 5,811.3               | 5,966.8               | 5,788.5               | 37.7             | 19.0          | -89.06                | -612.9                              | 548.5        | 1,855.7                | 1,801.2                 | 54.55                  | 34.016            |                             |  |
| 7,300.0   | 5,811.3               | 6,039.5               | 5,804.6               | 39.2             | 20.2          | -89.75                | -674.3                              | 583.7        | 1,919.8                | 1,863.1                 | 56.62                  | 33.907            |                             |  |
| 7,400.0   | 5,811.3               | 7,147.1               | 5,810.8               | 40.7             | 37.9          | -89.99                | -1,726.9                            | 876.0        | 1,971.1                | 1,895.6                 | 75.53                  | 26.097            |                             |  |
| 7,500.0   | 5,811.3               | 7,246.9               | 5,810.8               | 42.1             | 39.5          | -89.99                | -1,826.6                            | 876.0        | 1,978.3                | 1,899.6                 | 78.72                  | 25.131            |                             |  |
| 7,600.0   | 5,811.3               | 7,346.8               | 5,810.8               | 43.6             | 41.1          | -89.99                | -1,926.6                            | 876.0        | 1,980.3                | 1,898.5                 | 81.79                  | 24.210            |                             |  |
| 7,700.0   | 5,811.3               | 7,446.8               | 5,810.8               | 45.0             | 42.8          | -89.99                | -2,026.6                            | 876.0        | 1,980.3                | 1,895.1                 | 85.15                  | 23.257            |                             |  |
| 7,800.0   | 5,811.3               | 7,546.8               | 5,810.8               | 46.4             | 44.5          | -89.99                | -2,126.6                            | 876.0        | 1,980.2                | 1,891.7                 | 88.54                  | 22.364            |                             |  |
| 7,900.0   | 5,811.2               | 7,646.8               | 5,810.8               | 47.9             | 46.2          | -89.99                | -2,226.6                            | 876.0        | 1,980.2                | 1,888.3                 | 91.98                  | 21.530            |                             |  |
| 8,000.0   | 5,811.2               | 7,746.8               | 5,810.8               | 49.4             | 47.9          | -89.99                | -2,326.6                            | 876.0        | 1,980.2                | 1,884.8                 | 95.44                  | 20.748            |                             |  |
| 8,100.0   | 5,811.2               | 7,846.8               | 5,810.9               | 50.9             | 49.7          | -89.99                | -2,426.6                            | 876.0        | 1,980.2                | 1,881.3                 | 98.94                  | 20.015            |                             |  |
| 8,200.0   | 5,811.2               | 7,946.8               | 5,810.9               | 52.5             | 51.4          | -89.99                | -2,526.6                            | 875.9        | 1,980.2                | 1,877.7                 | 102.46                 | 19.327            |                             |  |
| 8,300.0   | 5,811.2               | 8,046.8               | 5,810.9               | 54.0             | 53.2          | -89.99                | -2,626.6                            | 875.9        | 1,980.2                | 1,874.2                 | 106.00                 | 18.680            |                             |  |
| 8,400.0   | 5,811.2               | 8,146.8               | 5,810.9               | 55.6             | 54.9          | -89.99                | -2,726.6                            | 875.9        | 1,980.2                | 1,870.6                 | 109.57                 | 18.072            |                             |  |
| 8,500.0   | 5,811.2               | 8,246.8               | 5,810.9               | 57.2             | 56.7          | -89.99                | -2,826.6                            | 875.9        | 1,980.2                | 1,867.0                 | 113.16                 | 17.499            |                             |  |
| 8,600.0   | 5,811.2               | 8,346.8               | 5,810.9               | 58.9             | 58.5          | -89.99                | -2,926.6                            | 875.9        | 1,980.1                | 1,863.4                 | 116.76                 | 16.959            |                             |  |
| 8,700.0   | 5,811.2               | 8,446.8               | 5,810.9               | 60.5             | 60.3          | -89.99                | -3,026.6                            | 875.9        | 1,980.1                | 1,859.7                 | 120.37                 | 16.450            |                             |  |
| 8,800.0   | 5,811.2               | 8,546.8               | 5,810.9               | 62.2             | 62.1          | -89.99                | -3,126.6                            | 875.9        | 1,980.1                | 1,856.1                 | 124.01                 | 15.968            |                             |  |
| 8,900.0   | 5,811.2               | 8,646.8               | 5,810.9               | 63.9             | 63.9          | -89.99                | -3,226.6                            | 875.9        | 1,980.1                | 1,852.4                 | 127.65                 | 15.512            |                             |  |
| 9,000.0   | 5,811.2               | 8,746.8               | 5,810.9               | 65.6             | 65.7          | -89.99                | -3,326.6                            | 875.9        | 1,980.1                | 1,848.8                 | 131.31                 | 15.080            |                             |  |
| 9,100.0   | 5,811.2               | 8,846.8               | 5,810.9               | 67.3             | 67.6          | -89.99                | -3,426.6                            | 875.9        | 1,980.1                | 1,845.1                 | 134.97                 | 14.670            |                             |  |
| 9,200.0   | 5,811.2               | 8,946.8               | 5,810.9               | 69.0             | 69.4          | -89.99                | -3,526.6                            | 875.9        | 1,980.1                | 1,841.4                 | 138.65                 | 14.281            |                             |  |
| 9,300.0   | 5,811.2               | 9,046.8               | 5,810.9               | 70.7             | 71.2          | -89.99                | -3,626.6                            | 875.9        | 1,980.0                | 1,837.7                 | 142.34                 | 13.911            |                             |  |
| 9,400.0   | 5,811.2               | 9,146.8               | 5,810.9               | 72.5             | 73.0          | -89.99                | -3,726.6                            | 875.9        | 1,980.0                | 1,834.0                 | 146.03                 | 13.559            |                             |  |
| 9,500.0   | 5,811.2               | 9,246.8               | 5,810.9               | 74.2             | 74.9          | -89.99                | -3,826.6                            | 875.9        | 1,980.0                | 1,830.3                 | 149.74                 | 13.223            |                             |  |
| 9,600.0   | 5,811.2               | 9,346.8               | 5,810.9               | 76.0             | 76.7          | -89.99                | -3,926.6                            | 875.9        | 1,980.0                | 1,826.6                 | 153.44                 | 12.904            |                             |  |
| 9,700.0   | 5,811.2               | 9,446.8               | 5,810.9               | 77.7             | 78.6          | -89.99                | -4,026.6                            | 875.8        | 1,980.0                | 1,822.8                 | 157.16                 | 12.599            |                             |  |
| 9,800.0   | 5,811.2               | 9,546.8               | 5,810.9               | 79.5             | 80.4          | -89.99                | -4,126.6                            | 875.8        | 1,980.0                | 1,819.1                 | 160.88                 | 12.307            |                             |  |
| 9,900.0   | 5,811.2               | 9,646.8               | 5,810.9               | 81.3             | 82.3          | -89.99                | -4,226.6                            | 875.8        | 1,980.0                | 1,815.4                 | 164.61                 | 12.028            |                             |  |
| 10,000.0  | 5,811.2               | 9,746.8               | 5,810.9               | 83.1             | 84.2          | -89.99                | -4,326.6                            | 875.8        | 1,980.0                | 1,811.6                 | 168.34                 | 11.761            |                             |  |
| 10,100.0  | 5,811.2               | 9,846.8               | 5,810.9               | 84.9             | 86.0          | -89.99                | -4,426.6                            | 875.8        | 1,979.9                | 1,807.9                 | 172.08                 | 11.506            |                             |  |
| 10,200.0  | 5,811.1               | 9,946.8               | 5,810.9               | 86.7             | 87.9          | -89.99                | -4,526.6                            | 875.8        | 1,979.9                | 1,804.1                 | 175.83                 | 11.261            |                             |  |

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

# Cathedral Energy Services

## Anticollision Report

|                           |                               |                                     |  |
|---------------------------|-------------------------------|-------------------------------------|--|
| <b>Company:</b>           | Whiting Petroleum Corporation | <b>Local Co-ordinate Reference:</b> | Well Razor Federal #12F-1301A          |
| <b>Project:</b>           | Weld County, CO               | <b>TVD Reference:</b>               | WELL @ 4953.6usft (Original Well Elev) |
| <b>Reference Site:</b>    | S12-T10N-R58W                 | <b>MD Reference:</b>                | WELL @ 4953.6usft (Original Well Elev) |
| <b>Site Error:</b>        | 0.0usft                       | <b>North Reference:</b>             | True                                   |
| <b>Reference Well:</b>    | Razor Federal #12F-1301A      | <b>Survey Calculation Method:</b>   | Minimum Curvature                      |
| <b>Well Error:</b>        | 0.0usft                       | <b>Output errors are at</b>         | 2.00 sigma                             |
| <b>Reference Wellbore</b> | HZ                            | <b>Database:</b>                    | USA EDM 5000 Multi Users DB            |
| <b>Reference Design:</b>  | Plan #3                       | <b>Offset TVD Reference:</b>        | Offset Datum                           |

| Offset Design S12-T10N-R58W - Razor Federal #12F-1307A - 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            |          |
| 10,300.0  | 5,811.1               | 10,046.8              | 5,810.9               | 88.5             | 89.7          | -89.99                | -4,626.6                            | 875.8        | 1,979.9                | 1,800.3                 | 179.57                 | 11.026            |                    |          |
| 10,400.0  | 5,811.1               | 10,146.8              | 5,810.9               | 90.3             | 91.6          | -89.99                | -4,726.6                            | 875.8        | 1,979.9                | 1,796.6                 | 183.33                 | 10.800            |                    |          |
| 10,500.0  | 5,811.1               | 10,246.8              | 5,810.9               | 92.1             | 93.5          | -89.99                | -4,826.6                            | 875.8        | 1,979.9                | 1,792.8                 | 187.08                 | 10.583            |                    |          |
| 10,600.0  | 5,811.1               | 10,346.8              | 5,810.9               | 93.9             | 95.4          | -89.99                | -4,926.6                            | 875.8        | 1,979.9                | 1,789.0                 | 190.84                 | 10.375            |                    |          |
| 10,700.0  | 5,811.1               | 10,446.8              | 5,810.9               | 95.7             | 97.2          | -89.99                | -5,026.6                            | 875.8        | 1,979.9                | 1,785.3                 | 194.60                 | 10.174            |                    |          |
| 10,800.0  | 5,811.1               | 10,546.8              | 5,810.9               | 97.5             | 99.1          | -89.99                | -5,126.6                            | 875.8        | 1,979.8                | 1,781.5                 | 198.37                 | 9.981             |                    |          |
| 10,900.0  | 5,811.1               | 10,646.8              | 5,810.9               | 99.4             | 101.0         | -89.99                | -5,226.6                            | 875.8        | 1,979.8                | 1,777.7                 | 202.14                 | 9.795             |                    |          |
| 11,000.0  | 5,811.1               | 10,746.8              | 5,810.9               | 101.2            | 102.9         | -89.99                | -5,326.6                            | 875.8        | 1,979.8                | 1,773.9                 | 205.91                 | 9.615             |                    |          |
| 11,100.0  | 5,811.1               | 10,846.8              | 5,810.9               | 103.0            | 104.8         | -89.99                | -5,426.6                            | 875.8        | 1,979.8                | 1,770.1                 | 209.68                 | 9.442             |                    |          |
| 11,200.0  | 5,811.1               | 10,946.8              | 5,810.9               | 104.9            | 106.6         | -89.99                | -5,526.6                            | 875.7        | 1,979.8                | 1,766.3                 | 213.46                 | 9.275             |                    |          |
| 11,300.0  | 5,811.1               | 11,046.8              | 5,810.9               | 106.7            | 108.5         | -89.99                | -5,626.6                            | 875.7        | 1,979.8                | 1,762.5                 | 217.24                 | 9.113             |                    |          |
| 11,400.0  | 5,811.1               | 11,146.8              | 5,810.9               | 108.6            | 110.4         | -90.00                | -5,726.6                            | 875.7        | 1,979.8                | 1,758.7                 | 221.02                 | 8.957             |                    |          |
| 11,500.0  | 5,811.1               | 11,246.8              | 5,810.9               | 110.4            | 112.3         | -90.00                | -5,826.6                            | 875.7        | 1,979.8                | 1,755.0                 | 224.80                 | 8.807             |                    |          |
| 11,600.0  | 5,811.1               | 11,346.8              | 5,810.9               | 112.3            | 114.2         | -90.00                | -5,926.6                            | 875.7        | 1,979.7                | 1,751.2                 | 228.59                 | 8.661             |                    |          |
| 11,700.0  | 5,811.1               | 11,446.8              | 5,810.9               | 114.1            | 116.1         | -90.00                | -6,026.6                            | 875.7        | 1,979.7                | 1,747.4                 | 232.37                 | 8.520             |                    |          |
| 11,800.0  | 5,811.1               | 11,546.8              | 5,810.9               | 116.0            | 118.0         | -90.00                | -6,126.6                            | 875.7        | 1,979.7                | 1,743.5                 | 236.16                 | 8.383             |                    |          |
| 11,900.0  | 5,811.1               | 11,646.8              | 5,810.9               | 117.8            | 119.9         | -90.00                | -6,226.6                            | 875.7        | 1,979.7                | 1,739.7                 | 239.96                 | 8.250             |                    |          |
| 12,000.0  | 5,811.1               | 11,746.8              | 5,810.9               | 119.7            | 121.7         | -90.00                | -6,326.6                            | 875.7        | 1,979.7                | 1,735.9                 | 243.75                 | 8.122             |                    |          |
| 12,100.0  | 5,811.1               | 11,846.8              | 5,810.9               | 121.6            | 123.6         | -90.00                | -6,426.6                            | 875.7        | 1,979.7                | 1,732.1                 | 247.54                 | 7.997             |                    |          |
| 12,200.0  | 5,811.1               | 11,946.8              | 5,810.9               | 123.4            | 125.5         | -90.00                | -6,526.6                            | 875.7        | 1,979.7                | 1,728.3                 | 251.34                 | 7.876             |                    |          |
| 12,300.0  | 5,811.1               | 12,046.8              | 5,811.0               | 125.3            | 127.4         | -90.00                | -6,626.6                            | 875.7        | 1,979.6                | 1,724.5                 | 255.14                 | 7.759             |                    |          |
| 12,400.0  | 5,811.1               | 12,146.8              | 5,811.0               | 127.2            | 129.3         | -90.00                | -6,726.6                            | 875.7        | 1,979.6                | 1,720.7                 | 258.93                 | 7.645             |                    |          |
| 12,500.0  | 5,811.0               | 12,246.8              | 5,811.0               | 129.0            | 131.2         | -90.00                | -6,826.6                            | 875.7        | 1,979.6                | 1,716.9                 | 262.73                 | 7.535             |                    |          |
| 12,600.0  | 5,811.0               | 12,346.8              | 5,811.0               | 130.9            | 133.1         | -90.00                | -6,926.6                            | 875.7        | 1,979.6                | 1,713.1                 | 266.54                 | 7.427             |                    |          |
| 12,700.0  | 5,811.0               | 12,446.8              | 5,811.0               | 132.8            | 135.0         | -90.00                | -7,026.6                            | 875.6        | 1,979.6                | 1,709.3                 | 270.34                 | 7.323             |                    |          |
| 12,800.0  | 5,811.0               | 12,546.8              | 5,811.0               | 134.6            | 136.9         | -90.00                | -7,126.6                            | 875.6        | 1,979.6                | 1,705.4                 | 274.14                 | 7.221             |                    |          |
| 12,900.0  | 5,811.0               | 12,646.8              | 5,811.0               | 136.5            | 138.8         | -90.00                | -7,226.6                            | 875.6        | 1,979.6                | 1,701.6                 | 277.95                 | 7.122             |                    |          |
| 13,000.0  | 5,811.0               | 12,746.8              | 5,811.0               | 138.4            | 140.7         | -90.00                | -7,326.6                            | 875.6        | 1,979.6                | 1,697.8                 | 281.75                 | 7.026             |                    |          |
| 13,100.0  | 5,811.0               | 12,846.8              | 5,811.0               | 140.3            | 142.6         | -90.00                | -7,426.6                            | 875.6        | 1,979.5                | 1,694.0                 | 285.56                 | 6.932             |                    |          |
| 13,200.0  | 5,811.0               | 12,946.8              | 5,811.0               | 142.1            | 144.5         | -90.00                | -7,526.6                            | 875.6        | 1,979.5                | 1,690.2                 | 289.37                 | 6.841             |                    |          |
| 13,300.0  | 5,811.0               | 13,046.8              | 5,811.0               | 144.0            | 146.4         | -90.00                | -7,626.6                            | 875.6        | 1,979.5                | 1,686.3                 | 293.18                 | 6.752             |                    |          |
| 13,400.0  | 5,811.0               | 13,146.8              | 5,811.0               | 145.9            | 148.3         | -90.00                | -7,726.6                            | 875.6        | 1,979.5                | 1,682.5                 | 296.98                 | 6.665             |                    |          |
| 13,500.0  | 5,811.0               | 13,246.8              | 5,811.0               | 147.8            | 150.2         | -90.00                | -7,826.6                            | 875.6        | 1,979.5                | 1,678.7                 | 300.80                 | 6.581             |                    |          |
| 13,600.0  | 5,811.0               | 13,346.8              | 5,811.0               | 149.7            | 152.1         | -90.00                | -7,926.6                            | 875.6        | 1,979.5                | 1,674.9                 | 304.61                 | 6.498             |                    |          |
| 13,700.0  | 5,811.0               | 13,446.8              | 5,811.0               | 151.6            | 154.0         | -90.00                | -8,026.6                            | 875.6        | 1,979.5                | 1,671.0                 | 308.42                 | 6.418             |                    |          |
| 13,800.0  | 5,811.0               | 13,546.8              | 5,811.0               | 153.4            | 155.9         | -90.00                | -8,126.6                            | 875.6        | 1,979.4                | 1,667.2                 | 312.23                 | 6.340             |                    |          |
| 13,900.0  | 5,811.0               | 13,646.8              | 5,811.0               | 155.3            | 157.8         | -90.00                | -8,226.6                            | 875.6        | 1,979.4                | 1,663.4                 | 316.05                 | 6.263             |                    |          |
| 13,911.9  | 5,811.0               | 13,658.4              | 5,811.0               | 155.5            | 158.1         | -90.00                | -8,238.2                            | 875.6        | 1,979.4                | 1,662.9                 | 316.49                 | 6.254             |                    |          |
| 13,919.8  | 5,811.0               | 13,658.4              | 5,811.0               | 155.7            | 158.1         | -90.00                | -8,238.2                            | 875.6        | 1,979.4                | 1,662.8                 | 316.64                 | 6.251 SF          |                    |          |

# Cathedral Energy Services

## Anticollision Report

|                           |                               |                                     |  |
|---------------------------|-------------------------------|-------------------------------------|--|
| <b>Company:</b>           | Whiting Petroleum Corporation | <b>Local Co-ordinate Reference:</b> | Well Razor Federal #12F-1301A          |
| <b>Project:</b>           | Weld County, CO               | <b>TVD Reference:</b>               | WELL @ 4953.6usft (Original Well Elev) |
| <b>Reference Site:</b>    | S12-T10N-R58W                 | <b>MD Reference:</b>                | WELL @ 4953.6usft (Original Well Elev) |
| <b>Site Error:</b>        | 0.0usft                       | <b>North Reference:</b>             | True                                   |
| <b>Reference Well:</b>    | Razor Federal #12F-1301A      | <b>Survey Calculation Method:</b>   | Minimum Curvature                      |
| <b>Well Error:</b>        | 0.0usft                       | <b>Output errors are at</b>         | 2.00 sigma                             |
| <b>Reference Wellbore</b> | HZ                            | <b>Database:</b>                    | USA EDM 5000 Multi Users DB            |
| <b>Reference Design:</b>  | Plan #3                       | <b>Offset TVD Reference:</b>        | Offset Datum                           |

| Offset Design S12-T10N-R58W - Razor Federal #12F-1308B - 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 |                             |  |
| 0.0   | 0.0                   | 0.0                   | 0.0                   | 0.0              | 0.0           | 90.01                 | 0.0                                 | 230.5        | 230.5                  |                         |                        |                   |                             |  |
| 100.0   | 100.0                 | 100.0                 | 100.0                 | 0.1              | 0.1           | 90.01                 | 0.0                                 | 230.5        | 230.5                  | 230.3                   | 0.19                   | 1,232.555         |                             |  |
| 200.0   | 200.0                 | 200.0                 | 200.0                 | 0.3              | 0.3           | 90.01                 | 0.0                                 | 230.5        | 230.5                  | 229.9                   | 0.64                   | 362.153           |                             |  |
| 300.0   | 300.0                 | 300.0                 | 300.0                 | 0.5              | 0.5           | 90.01                 | 0.0                                 | 230.5        | 230.5                  | 229.4                   | 1.09                   | 212.260           |                             |  |
| 400.0   | 400.0                 | 400.0                 | 400.0                 | 0.8              | 0.8           | 90.01                 | 0.0                                 | 230.5        | 230.5                  | 229.0                   | 1.54                   | 150.124           |                             |  |
| 500.0   | 500.0                 | 500.0                 | 500.0                 | 1.0              | 1.0           | 90.01                 | 0.0                                 | 230.5        | 230.5                  | 228.6                   | 1.99                   | 116.129           |                             |  |
| 600.0   | 600.0                 | 600.0                 | 600.0                 | 1.2              | 1.2           | 90.01                 | 0.0                                 | 230.5        | 230.5                  | 228.1                   | 2.43                   | 94.688            |                             |  |
| 700.0   | 700.0                 | 700.0                 | 700.0                 | 1.4              | 1.4           | 90.01                 | 0.0                                 | 230.5        | 230.5                  | 227.7                   | 2.88                   | 79.930            |                             |  |
| 800.0   | 800.0                 | 800.0                 | 800.0                 | 1.7              | 1.7           | 90.01                 | 0.0                                 | 230.5        | 230.5                  | 227.2                   | 3.33                   | 69.152            |                             |  |
| 866.7   | 866.7                 | 866.7                 | 866.7                 | 1.8              | 1.8           | 90.01                 | 0.0                                 | 230.5        | 230.5                  | 226.9                   | 3.63                   | 63.449 CC         |                             |  |
| 900.0   | 900.0                 | 900.0                 | 900.0                 | 1.9              | 1.9           | 90.01                 | 0.0                                 | 230.5        | 230.5                  | 226.8                   | 3.78                   | 60.936 ES         |                             |  |
| 1,000.0   | 1,000.0               | 995.1                 | 995.0                 | 2.1              | 2.1           | 90.31                 | -1.2                                | 231.5        | 231.6                  | 227.4                   | 4.20                   | 55.166            |                             |  |
| 1,100.0   | 1,100.0               | 1,089.9               | 1,089.8               | 2.3              | 2.3           | -133.10               | -4.9                                | 234.6        | 236.0                  | 231.5                   | 4.57                   | 51.598            |                             |  |
| 1,200.0   | 1,199.8               | 1,189.0               | 1,188.6               | 2.5              | 2.5           | -132.65               | -10.2                               | 239.0        | 244.2                  | 239.2                   | 4.95                   | 49.330            |                             |  |
| 1,300.0   | 1,299.6               | 1,288.6               | 1,288.0               | 2.7              | 2.7           | -132.62               | -15.5                               | 243.4        | 253.5                  | 248.1                   | 5.34                   | 47.446            |                             |  |
| 1,400.0   | 1,399.4               | 1,388.1               | 1,387.3               | 2.9              | 2.9           | -132.59               | -20.8                               | 247.9        | 262.8                  | 257.0                   | 5.75                   | 45.688            |                             |  |
| 1,500.0   | 1,499.1               | 1,487.7               | 1,486.6               | 3.1              | 3.1           | -132.57               | -26.1                               | 252.4        | 272.1                  | 265.9                   | 6.17                   | 44.068            |                             |  |
| 1,600.0   | 1,598.9               | 1,587.3               | 1,585.9               | 3.4              | 3.3           | -132.55               | -31.5                               | 256.8        | 281.4                  | 274.8                   | 6.61                   | 42.586            |                             |  |
| 1,700.0   | 1,698.6               | 1,686.8               | 1,685.2               | 3.6              | 3.6           | -132.53               | -36.8                               | 261.3        | 290.8                  | 283.7                   | 7.05                   | 41.236            |                             |  |
| 1,800.0   | 1,798.4               | 1,786.4               | 1,784.6               | 3.8              | 3.8           | -132.51               | -42.1                               | 265.7        | 300.1                  | 292.6                   | 7.50                   | 40.005            |                             |  |
| 1,900.0   | 1,898.1               | 1,886.0               | 1,883.9               | 4.1              | 4.1           | -132.49               | -47.5                               | 270.2        | 309.4                  | 301.4                   | 7.96                   | 38.884            |                             |  |
| 2,000.0   | 1,997.9               | 1,985.5               | 1,983.2               | 4.3              | 4.3           | -132.47               | -52.8                               | 274.6        | 318.7                  | 310.3                   | 8.42                   | 37.862            |                             |  |
| 2,100.0   | 2,097.6               | 2,085.1               | 2,082.5               | 4.5              | 4.5           | -132.46               | -58.1                               | 279.1        | 328.0                  | 319.1                   | 8.88                   | 36.929            |                             |  |
| 2,200.0   | 2,197.4               | 2,184.7               | 2,181.9               | 4.8              | 4.8           | -132.44               | -63.5                               | 283.5        | 337.3                  | 328.0                   | 9.35                   | 36.074            |                             |  |
| 2,300.0   | 2,297.2               | 2,284.2               | 2,281.2               | 5.0              | 5.0           | -132.43               | -68.8                               | 288.0        | 346.7                  | 336.8                   | 9.82                   | 35.290            |                             |  |
| 2,400.0   | 2,396.9               | 2,383.8               | 2,380.5               | 5.3              | 5.3           | -132.41               | -74.1                               | 292.4        | 356.0                  | 345.7                   | 10.30                  | 34.569            |                             |  |
| 2,500.0   | 2,496.7               | 2,483.4               | 2,479.8               | 5.5              | 5.5           | -132.40               | -79.4                               | 296.9        | 365.3                  | 354.5                   | 10.77                  | 33.904            |                             |  |
| 2,600.0   | 2,596.4               | 2,582.9               | 2,579.1               | 5.8              | 5.8           | -132.39               | -84.8                               | 301.3        | 374.6                  | 363.4                   | 11.25                  | 33.289            |                             |  |
| 2,700.0   | 2,696.2               | 2,682.5               | 2,678.5               | 6.0              | 6.0           | -132.38               | -90.1                               | 305.8        | 383.9                  | 372.2                   | 11.73                  | 32.719            |                             |  |
| 2,800.0   | 2,795.9               | 2,782.1               | 2,777.8               | 6.3              | 6.3           | -132.36               | -95.4                               | 310.2        | 393.3                  | 381.0                   | 12.22                  | 32.190            |                             |  |
| 2,900.0   | 2,895.7               | 2,881.6               | 2,877.1               | 6.5              | 6.6           | -132.35               | -100.8                              | 314.7        | 402.6                  | 389.9                   | 12.70                  | 31.698            |                             |  |
| 3,000.0   | 2,995.5               | 2,981.2               | 2,976.4               | 6.8              | 6.8           | -132.34               | -106.1                              | 319.2        | 411.9                  | 398.7                   | 13.19                  | 31.239            |                             |  |
| 3,100.0   | 3,095.2               | 3,080.7               | 3,075.8               | 7.1              | 7.1           | -132.33               | -111.4                              | 323.6        | 421.2                  | 407.6                   | 13.67                  | 30.810            |                             |  |
| 3,200.0   | 3,195.0               | 3,180.3               | 3,175.1               | 7.3              | 7.3           | -132.32               | -116.7                              | 328.1        | 430.5                  | 416.4                   | 14.16                  | 30.409            |                             |  |
| 3,300.0   | 3,294.7               | 3,279.9               | 3,274.4               | 7.6              | 7.6           | -132.32               | -122.1                              | 332.5        | 439.9                  | 425.2                   | 14.65                  | 30.032            |                             |  |
| 3,400.0   | 3,394.5               | 3,379.4               | 3,373.7               | 7.8              | 7.8           | -132.31               | -127.4                              | 337.0        | 449.2                  | 434.0                   | 15.14                  | 29.678            |                             |  |
| 3,500.0   | 3,494.2               | 3,479.0               | 3,473.0               | 8.1              | 8.1           | -132.30               | -132.7                              | 341.4        | 458.5                  | 442.9                   | 15.62                  | 29.345            |                             |  |
| 3,600.0   | 3,594.0               | 3,578.6               | 3,572.4               | 8.3              | 8.4           | -132.29               | -138.1                              | 345.9        | 467.8                  | 451.7                   | 16.11                  | 29.030            |                             |  |
| 3,700.0   | 3,693.7               | 3,678.1               | 3,671.7               | 8.6              | 8.6           | -132.28               | -143.4                              | 350.3        | 477.1                  | 460.5                   | 16.61                  | 28.734            |                             |  |
| 3,800.0   | 3,793.5               | 3,777.7               | 3,771.0               | 8.9              | 8.9           | -132.28               | -148.7                              | 354.8        | 486.5                  | 469.4                   | 17.10                  | 28.453            |                             |  |
| 3,900.0   | 3,893.3               | 3,877.3               | 3,870.3               | 9.1              | 9.1           | -132.27               | -154.1                              | 359.2        | 495.8                  | 478.2                   | 17.59                  | 28.187            |                             |  |
| 4,000.0   | 3,993.0               | 3,976.8               | 3,969.7               | 9.4              | 9.4           | -132.26               | -159.4                              | 363.7        | 505.1                  | 487.0                   | 18.08                  | 27.935            |                             |  |
| 4,100.0   | 4,092.8               | 4,076.4               | 4,069.0               | 9.6              | 9.7           | -132.26               | -164.7                              | 368.1        | 514.4                  | 495.8                   | 18.57                  | 27.696            |                             |  |
| 4,200.0   | 4,192.5               | 4,176.0               | 4,168.3               | 9.9              | 9.9           | -132.25               | -170.0                              | 372.6        | 523.7                  | 504.7                   | 19.07                  | 27.469            |                             |  |
| 4,300.0   | 4,292.3               | 4,275.5               | 4,267.6               | 10.2             | 10.2          | -132.24               | -175.4                              | 377.0        | 533.1                  | 513.5                   | 19.56                  | 27.252            |                             |  |
| 4,400.0   | 4,392.0               | 4,375.1               | 4,367.0               | 10.4             | 10.4          | -132.24               | -180.7                              | 381.5        | 542.4                  | 522.3                   | 20.05                  | 27.046            |                             |  |
| 4,500.0   | 4,491.8               | 4,474.7               | 4,466.3               | 10.7             | 10.7          | -132.23               | -186.0                              | 385.9        | 551.7                  | 531.1                   | 20.55                  | 26.849            |                             |  |
| 4,600.0   | 4,591.6               | 4,574.2               | 4,565.6               | 11.0             | 11.0          | -132.23               | -191.4                              | 390.4        | 561.0                  | 540.0                   | 21.04                  | 26.661            |                             |  |
| 4,700.0   | 4,691.3               | 4,673.8               | 4,664.9               | 11.2             | 11.2          | -132.22               | -196.7                              | 394.9        | 570.3                  | 548.8                   | 21.54                  | 26.481            |                             |  |
| 4,800.0   | 4,791.1               | 4,773.3               | 4,764.2               | 11.5             | 11.5          | -132.22               | -202.0                              | 399.3        | 579.7                  | 557.6                   | 22.03                  | 26.309            |                             |  |
| 4,900.0   | 4,890.8               | 4,872.9               | 4,863.6               | 11.7             | 11.7          | -132.21               | -207.4                              | 403.8        | 589.0                  | 566.4                   | 22.53                  | 26.145            |                             |  |
| 5,000.0   | 4,990.6               | 4,972.5               | 4,962.9               | 12.0             | 12.0          | -132.21               | -212.7                              | 408.2        | 598.3                  | 575.3                   | 23.02                  | 25.987            |                             |  |

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

# Cathedral Energy Services

## Anticollision Report

|                           |                               |                                     |  |
|---------------------------|-------------------------------|-------------------------------------|--|
| <b>Company:</b>           | Whiting Petroleum Corporation | <b>Local Co-ordinate Reference:</b> | Well Razor Federal #12F-1301A          |
| <b>Project:</b>           | Weld County, CO               | <b>TVD Reference:</b>               | WELL @ 4953.6usft (Original Well Elev) |
| <b>Reference Site:</b>    | S12-T10N-R58W                 | <b>MD Reference:</b>                | WELL @ 4953.6usft (Original Well Elev) |
| <b>Site Error:</b>        | 0.0usft                       | <b>North Reference:</b>             | True                                   |
| <b>Reference Well:</b>    | Razor Federal #12F-1301A      | <b>Survey Calculation Method:</b>   | Minimum Curvature                      |
| <b>Well Error:</b>        | 0.0usft                       | <b>Output errors are at</b>         | 2.00 sigma                             |
| <b>Reference Wellbore</b> | HZ                            | <b>Database:</b>                    | USA EDM 5000 Multi Users DB            |
| <b>Reference Design:</b>  | Plan #3                       | <b>Offset TVD Reference:</b>        | Offset Datum                           |

| Offset Design S12-T10N-R58W - Razor Federal #12F-1308B - 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   | 5,090.3               | 5,072.0               | 5,062.2               | 12.3             | 12.3          | -132.20               | -218.0                              | 412.7        | 607.6                  | 584.1                   | 23.52                  | 25.836             |          |
| 5,200.0   | 5,190.1               | 5,171.6               | 5,161.5               | 12.5             | 12.5          | -132.20               | -223.3                              | 417.1        | 616.9                  | 592.9                   | 24.01                  | 25.690             |          |
| 5,300.0   | 5,289.9               | 5,271.2               | 5,260.9               | 12.8             | 12.8          | -132.19               | -228.7                              | 421.6        | 626.3                  | 601.7                   | 24.51                  | 25.551             |          |
| 5,400.0   | 5,389.2               | 5,370.3               | 5,359.8               | 13.1             | 13.0          | -131.75               | -234.0                              | 426.0        | 638.1                  | 613.2                   | 24.86                  | 25.663             |          |
| 5,500.0   | 5,485.0               | 5,465.0               | 5,454.9               | 13.5             | 13.3          | -130.77               | -238.3                              | 429.7        | 662.1                  | 637.2                   | 24.90                  | 26.590             |          |
| 5,600.0   | 5,573.6               | 5,550.0               | 5,488.7               | 14.2             | 13.4          | -128.10               | -243.7                              | 434.2        | 702.7                  | 677.9                   | 24.86                  | 28.269             |          |
| 5,700.0   | 5,651.8               | 5,550.0               | 5,537.3               | 15.0             | 13.6          | -123.62               | -252.7                              | 441.7        | 759.1                  | 733.9                   | 25.21                  | 30.110             |          |
| 5,800.0   | 5,716.7               | 5,578.5               | 5,564.4               | 16.1             | 13.8          | -115.87               | -259.4                              | 447.3        | 827.8                  | 801.2                   | 26.64                  | 31.075             |          |
| 5,900.0   | 5,766.0               | 5,600.0               | 5,584.5               | 17.3             | 13.9          | -104.38               | -265.3                              | 452.2        | 905.7                  | 876.4                   | 29.27                  | 30.938             |          |
| 6,000.0   | 5,797.8               | 5,622.0               | 5,604.8               | 18.8             | 14.0          | -89.72                | -271.9                              | 457.7        | 989.1                  | 957.2                   | 31.90                  | 31.010             |          |
| 6,100.0   | 5,811.0               | 5,630.6               | 5,612.6               | 20.4             | 14.1          | -72.44                | -274.6                              | 460.0        | 1,075.0                | 1,042.5                 | 32.47                  | 33.108             |          |
| 6,200.0   | 5,811.3               | 5,633.6               | 5,615.3               | 21.9             | 14.1          | -70.83                | -275.6                              | 460.8        | 1,160.9                | 1,126.9                 | 33.97                  | 34.174             |          |
| 6,300.0   | 5,811.3               | 5,637.6               | 5,619.0               | 23.4             | 14.1          | -72.75                | -277.0                              | 461.9        | 1,246.5                | 1,210.5                 | 35.99                  | 34.639             |          |
| 6,400.0   | 5,811.3               | 5,650.0               | 5,630.0               | 25.0             | 14.2          | -75.12                | -281.2                              | 465.5        | 1,331.7                | 1,293.6                 | 38.08                  | 34.966             |          |
| 6,500.0   | 5,811.3               | 5,650.0               | 5,630.0               | 26.6             | 14.2          | -76.29                | -281.2                              | 465.5        | 1,416.1                | 1,376.2                 | 39.91                  | 35.484             |          |
| 6,600.0   | 5,811.3               | 5,650.0               | 5,630.0               | 28.2             | 14.2          | -77.34                | -281.2                              | 465.5        | 1,499.9                | 1,458.3                 | 41.66                  | 36.006             |          |
| 6,700.0   | 5,811.3               | 5,669.7               | 5,647.3               | 29.8             | 14.3          | -79.48                | -288.4                              | 471.5        | 1,582.7                | 1,539.2                 | 43.55                  | 36.340             |          |
| 6,800.0   | 5,811.3               | 5,683.0               | 5,658.8               | 31.4             | 14.4          | -80.96                | -293.5                              | 475.8        | 1,664.5                | 1,619.3                 | 45.23                  | 36.800             |          |
| 6,900.0   | 5,811.3               | 5,700.0               | 5,673.2               | 33.0             | 14.5          | -82.42                | -300.4                              | 481.5        | 1,745.2                | 1,698.4                 | 46.81                  | 37.279             |          |
| 7,000.0   | 5,811.3               | 5,718.9               | 5,688.9               | 34.6             | 14.7          | -83.77                | -308.5                              | 488.3        | 1,824.5                | 1,776.2                 | 48.28                  | 37.788             |          |
| 7,100.0   | 5,811.3               | 5,743.0               | 5,708.4               | 36.2             | 14.9          | -85.13                | -319.5                              | 497.4        | 1,902.3                | 1,852.7                 | 49.65                  | 38.311             |          |
| 7,200.0   | 5,811.3               | 5,772.8               | 5,731.4               | 37.7             | 15.1          | -86.49                | -333.9                              | 509.5        | 1,978.4                | 1,927.5                 | 50.94                  | 38.837             |          |
| 7,300.0   | 5,811.3               | 5,809.5               | 5,758.4               | 39.2             | 15.5          | -87.83                | -353.0                              | 525.5        | 2,052.6                | 2,000.5                 | 52.16                  | 39.352             |          |
| 7,400.0   | 5,811.3               | 5,855.2               | 5,789.3               | 40.7             | 15.9          | -89.16                | -378.8                              | 547.0        | 2,124.6                | 2,071.3                 | 53.35                  | 39.823             |          |
| 7,500.0   | 5,811.3               | 5,911.9               | 5,823.4               | 42.1             | 16.6          | -90.43                | -413.5                              | 576.0        | 2,193.9                | 2,139.3                 | 54.58                  | 40.198             |          |
| 7,600.0   | 5,811.3               | 5,981.7               | 5,858.3               | 43.6             | 17.5          | -91.57                | -459.9                              | 614.8        | 2,260.1                | 2,204.1                 | 56.05                  | 40.325             |          |
| 7,700.0   | 5,811.3               | 7,714.8               | 5,911.8               | 45.0             | 45.9          | -92.49                | -2,026.6                            | 1,206.5      | 2,312.9                | 2,226.2                 | 86.70                  | 26.676             |          |
| 7,800.0   | 5,811.3               | 7,814.8               | 5,911.8               | 46.4             | 47.5          | -92.49                | -2,126.6                            | 1,206.4      | 2,312.9                | 2,222.9                 | 90.04                  | 25.688             |          |
| 7,900.0   | 5,811.2               | 7,914.8               | 5,911.8               | 47.9             | 49.1          | -92.49                | -2,226.6                            | 1,206.4      | 2,312.9                | 2,219.5                 | 93.42                  | 24.759             |          |
| 8,000.0   | 5,811.2               | 8,014.8               | 5,911.8               | 49.4             | 50.7          | -92.49                | -2,326.6                            | 1,206.4      | 2,312.9                | 2,216.1                 | 96.83                  | 23.886             |          |
| 8,100.0   | 5,811.2               | 8,114.8               | 5,911.8               | 50.9             | 52.3          | -92.49                | -2,426.6                            | 1,206.4      | 2,312.9                | 2,212.6                 | 100.28                 | 23.065             |          |
| 8,200.0   | 5,811.2               | 8,214.8               | 5,911.8               | 52.5             | 53.9          | -92.49                | -2,526.6                            | 1,206.4      | 2,312.9                | 2,209.1                 | 103.75                 | 22.292             |          |
| 8,300.0   | 5,811.2               | 8,314.8               | 5,911.8               | 54.0             | 55.6          | -92.49                | -2,626.6                            | 1,206.4      | 2,312.8                | 2,205.6                 | 107.25                 | 21.564             |          |
| 8,400.0   | 5,811.2               | 8,414.8               | 5,911.8               | 55.6             | 57.3          | -92.49                | -2,726.6                            | 1,206.4      | 2,312.8                | 2,202.1                 | 110.78                 | 20.878             |          |
| 8,500.0   | 5,811.2               | 8,514.8               | 5,911.8               | 57.2             | 59.0          | -92.49                | -2,826.6                            | 1,206.4      | 2,312.8                | 2,198.5                 | 114.33                 | 20.230             |          |
| 8,600.0   | 5,811.2               | 8,614.8               | 5,911.8               | 58.9             | 60.7          | -92.49                | -2,926.6                            | 1,206.4      | 2,312.8                | 2,194.9                 | 117.89                 | 19.618             |          |
| 8,700.0   | 5,811.2               | 8,714.8               | 5,911.8               | 60.5             | 62.4          | -92.49                | -3,026.6                            | 1,206.4      | 2,312.8                | 2,191.3                 | 121.48                 | 19.039             |          |
| 8,800.0   | 5,811.2               | 8,814.8               | 5,911.9               | 62.2             | 64.1          | -92.49                | -3,126.6                            | 1,206.4      | 2,312.8                | 2,187.7                 | 125.08                 | 18.491             |          |
| 8,900.0   | 5,811.2               | 8,914.8               | 5,911.9               | 63.9             | 65.8          | -92.49                | -3,226.6                            | 1,206.4      | 2,312.8                | 2,184.1                 | 128.69                 | 17.972             |          |
| 9,000.0   | 5,811.2               | 9,014.8               | 5,911.9               | 65.6             | 67.6          | -92.49                | -3,326.6                            | 1,206.4      | 2,312.8                | 2,180.4                 | 132.32                 | 17.479             |          |
| 9,100.0   | 5,811.2               | 9,114.8               | 5,911.9               | 67.3             | 69.4          | -92.49                | -3,426.6                            | 1,206.4      | 2,312.8                | 2,176.8                 | 135.96                 | 17.011             |          |
| 9,200.0   | 5,811.2               | 9,214.8               | 5,911.9               | 69.0             | 71.1          | -92.49                | -3,526.6                            | 1,206.4      | 2,312.7                | 2,173.1                 | 139.61                 | 16.566             |          |
| 9,300.0   | 5,811.2               | 9,314.8               | 5,911.9               | 70.7             | 72.9          | -92.49                | -3,626.6                            | 1,206.4      | 2,312.7                | 2,169.5                 | 143.27                 | 16.143             |          |
| 9,400.0   | 5,811.2               | 9,414.8               | 5,911.9               | 72.5             | 74.7          | -92.49                | -3,726.6                            | 1,206.4      | 2,312.7                | 2,165.8                 | 146.94                 | 15.739             |          |
| 9,500.0   | 5,811.2               | 9,514.8               | 5,911.9               | 74.2             | 76.5          | -92.50                | -3,826.6                            | 1,206.4      | 2,312.7                | 2,162.1                 | 150.62                 | 15.355             |          |
| 9,600.0   | 5,811.2               | 9,614.8               | 5,911.9               | 76.0             | 78.3          | -92.50                | -3,926.6                            | 1,206.3      | 2,312.7                | 2,158.4                 | 154.31                 | 14.988             |          |
| 9,700.0   | 5,811.2               | 9,714.8               | 5,911.9               | 77.7             | 80.1          | -92.50                | -4,026.6                            | 1,206.3      | 2,312.7                | 2,154.7                 | 158.00                 | 14.637             |          |
| 9,800.0   | 5,811.2               | 9,814.8               | 5,911.9               | 79.5             | 81.9          | -92.50                | -4,126.6                            | 1,206.3      | 2,312.7                | 2,151.0                 | 161.70                 | 14.302             |          |
| 9,900.0   | 5,811.2               | 9,914.8               | 5,911.9               | 81.3             | 83.7          | -92.50                | -4,226.6                            | 1,206.3      | 2,312.7                | 2,147.2                 | 165.41                 | 13.981             |          |
| 10,000.0  | 5,811.2               | 10,014.8              | 5,911.9               | 83.1             | 85.5          | -92.50                | -4,326.6                            | 1,206.3      | 2,312.6                | 2,143.5                 | 169.13                 | 13.674             |          |
| 10,100.0  | 5,811.2               | 10,114.8              | 5,911.9               | 84.9             | 87.3          | -92.50                | -4,426.6                            | 1,206.3      | 2,312.6                | 2,139.8                 | 172.85                 | 13.380             |          |
| 10,200.0  | 5,811.1               | 10,214.8              | 5,911.9               | 86.7             | 89.1          | -92.50                | -4,526.6                            | 1,206.3      | 2,312.6                | 2,136.0                 | 176.57                 | 13.097             |          |

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



# Cathedral Energy Services

## Anticollision Report

|                           |                               |                                     |  |
|---------------------------|-------------------------------|-------------------------------------|--|
| <b>Company:</b>           | Whiting Petroleum Corporation | <b>Local Co-ordinate Reference:</b> | Well Razor Federal #12F-1301A          |
| <b>Project:</b>           | Weld County, CO               | <b>TVD Reference:</b>               | WELL @ 4953.6usft (Original Well Elev) |
| <b>Reference Site:</b>    | S12-T10N-R58W                 | <b>MD Reference:</b>                | WELL @ 4953.6usft (Original Well Elev) |
| <b>Site Error:</b>        | 0.0usft                       | <b>North Reference:</b>             | True                                   |
| <b>Reference Well:</b>    | Razor Federal #12F-1301A      | <b>Survey Calculation Method:</b>   | Minimum Curvature                      |
| <b>Well Error:</b>        | 0.0usft                       | <b>Output errors are at</b>         | 2.00 sigma                             |
| <b>Reference Wellbore</b> | HZ                            | <b>Database:</b>                    | USA EDM 5000 Multi Users DB            |
| <b>Reference Design:</b>  | Plan #3                       | <b>Offset TVD Reference:</b>        | Offset Datum                           |

| Offset Design S12-T10N-R58W - Razor Federal #12F-1308B - 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 |
| 10,300.0  | 5,811.1               | 10,314.8              | 5,911.9               | 88.5             | 91.0          | -92.50                | -4,626.6                            | 1,206.3      | 2,312.6                | 2,132.3                 | 180.30                 | 12.826                      |                   |
| 10,400.0  | 5,811.1               | 10,414.8              | 5,911.9               | 90.3             | 92.8          | -92.50                | -4,726.6                            | 1,206.3      | 2,312.6                | 2,128.6                 | 184.04                 | 12.566                      |                   |
| 10,500.0  | 5,811.1               | 10,514.8              | 5,911.9               | 92.1             | 94.6          | -92.50                | -4,826.6                            | 1,206.3      | 2,312.6                | 2,124.8                 | 187.78                 | 12.315                      |                   |
| 10,600.0  | 5,811.1               | 10,614.8              | 5,911.9               | 93.9             | 96.5          | -92.50                | -4,926.6                            | 1,206.3      | 2,312.6                | 2,121.1                 | 191.52                 | 12.075                      |                   |
| 10,700.0  | 5,811.1               | 10,714.8              | 5,911.9               | 95.7             | 98.3          | -92.50                | -5,026.6                            | 1,206.3      | 2,312.6                | 2,117.3                 | 195.27                 | 11.843                      |                   |
| 10,800.0  | 5,811.1               | 10,814.8              | 5,911.9               | 97.5             | 100.2         | -92.50                | -5,126.6                            | 1,206.3      | 2,312.6                | 2,113.5                 | 199.02                 | 11.620                      |                   |
| 10,900.0  | 5,811.1               | 10,914.8              | 5,911.9               | 99.4             | 102.0         | -92.50                | -5,226.6                            | 1,206.3      | 2,312.5                | 2,109.8                 | 202.78                 | 11.404                      |                   |
| 11,000.0  | 5,811.1               | 11,014.8              | 5,911.9               | 101.2            | 103.9         | -92.50                | -5,326.6                            | 1,206.3      | 2,312.5                | 2,106.0                 | 206.53                 | 11.197                      |                   |
| 11,100.0  | 5,811.1               | 11,114.8              | 5,911.9               | 103.0            | 105.7         | -92.50                | -5,426.6                            | 1,206.3      | 2,312.5                | 2,102.2                 | 210.29                 | 10.997                      |                   |
| 11,200.0  | 5,811.1               | 11,214.8              | 5,911.9               | 104.9            | 107.6         | -92.50                | -5,526.6                            | 1,206.3      | 2,312.5                | 2,098.4                 | 214.06                 | 10.803                      |                   |
| 11,300.0  | 5,811.1               | 11,314.8              | 5,911.9               | 106.7            | 109.4         | -92.50                | -5,626.6                            | 1,206.3      | 2,312.5                | 2,094.7                 | 217.83                 | 10.616                      |                   |
| 11,400.0  | 5,811.1               | 11,414.8              | 5,911.9               | 108.6            | 111.3         | -92.50                | -5,726.6                            | 1,206.2      | 2,312.5                | 2,090.9                 | 221.59                 | 10.436                      |                   |
| 11,500.0  | 5,811.1               | 11,514.8              | 5,911.9               | 110.4            | 113.2         | -92.50                | -5,826.6                            | 1,206.2      | 2,312.5                | 2,087.1                 | 225.37                 | 10.261                      |                   |
| 11,600.0  | 5,811.1               | 11,614.8              | 5,911.9               | 112.3            | 115.0         | -92.50                | -5,926.6                            | 1,206.2      | 2,312.5                | 2,083.3                 | 229.14                 | 10.092                      |                   |
| 11,700.0  | 5,811.1               | 11,714.8              | 5,911.9               | 114.1            | 116.9         | -92.50                | -6,026.6                            | 1,206.2      | 2,312.4                | 2,079.5                 | 232.92                 | 9.928                       |                   |
| 11,800.0  | 5,811.1               | 11,814.8              | 5,911.9               | 116.0            | 118.8         | -92.50                | -6,126.6                            | 1,206.2      | 2,312.4                | 2,075.7                 | 236.69                 | 9.770                       |                   |
| 11,900.0  | 5,811.1               | 11,914.8              | 5,911.9               | 117.8            | 120.6         | -92.50                | -6,226.6                            | 1,206.2      | 2,312.4                | 2,071.9                 | 240.47                 | 9.616                       |                   |
| 12,000.0  | 5,811.1               | 12,014.8              | 5,911.9               | 119.7            | 122.5         | -92.50                | -6,326.6                            | 1,206.2      | 2,312.4                | 2,068.2                 | 244.26                 | 9.467                       |                   |
| 12,100.0  | 5,811.1               | 12,114.8              | 5,911.9               | 121.6            | 124.4         | -92.50                | -6,426.6                            | 1,206.2      | 2,312.4                | 2,064.4                 | 248.04                 | 9.323                       |                   |
| 12,200.0  | 5,811.1               | 12,214.8              | 5,912.0               | 123.4            | 126.2         | -92.50                | -6,526.6                            | 1,206.2      | 2,312.4                | 2,060.6                 | 251.83                 | 9.182                       |                   |
| 12,300.0  | 5,811.1               | 12,314.8              | 5,912.0               | 125.3            | 128.1         | -92.50                | -6,626.6                            | 1,206.2      | 2,312.4                | 2,056.8                 | 255.61                 | 9.046                       |                   |
| 12,400.0  | 5,811.1               | 12,414.8              | 5,912.0               | 127.2            | 130.0         | -92.50                | -6,726.6                            | 1,206.2      | 2,312.4                | 2,053.0                 | 259.40                 | 8.914                       |                   |
| 12,500.0  | 5,811.0               | 12,514.8              | 5,912.0               | 129.0            | 131.9         | -92.50                | -6,826.6                            | 1,206.2      | 2,312.4                | 2,049.2                 | 263.19                 | 8.786                       |                   |
| 12,600.0  | 5,811.0               | 12,614.8              | 5,912.0               | 130.9            | 133.8         | -92.50                | -6,926.6                            | 1,206.2      | 2,312.3                | 2,045.4                 | 266.98                 | 8.661                       |                   |
| 12,700.0  | 5,811.0               | 12,714.8              | 5,912.0               | 132.8            | 135.6         | -92.50                | -7,026.6                            | 1,206.2      | 2,312.3                | 2,041.6                 | 270.78                 | 8.540                       |                   |
| 12,800.0  | 5,811.0               | 12,814.8              | 5,912.0               | 134.6            | 137.5         | -92.50                | -7,126.6                            | 1,206.2      | 2,312.3                | 2,037.7                 | 274.57                 | 8.422                       |                   |
| 12,900.0  | 5,811.0               | 12,914.8              | 5,912.0               | 136.5            | 139.4         | -92.50                | -7,226.6                            | 1,206.2      | 2,312.3                | 2,033.9                 | 278.37                 | 8.307                       |                   |
| 13,000.0  | 5,811.0               | 13,014.8              | 5,912.0               | 138.4            | 141.3         | -92.50                | -7,326.6                            | 1,206.2      | 2,312.3                | 2,030.1                 | 282.17                 | 8.195                       |                   |
| 13,100.0  | 5,811.0               | 13,114.8              | 5,912.0               | 140.3            | 143.2         | -92.50                | -7,426.6                            | 1,206.2      | 2,312.3                | 2,026.3                 | 285.96                 | 8.086                       |                   |
| 13,200.0  | 5,811.0               | 13,214.8              | 5,912.0               | 142.1            | 145.1         | -92.50                | -7,526.6                            | 1,206.1      | 2,312.3                | 2,022.5                 | 289.76                 | 7.980                       |                   |
| 13,300.0  | 5,811.0               | 13,314.8              | 5,912.0               | 144.0            | 147.0         | -92.50                | -7,626.6                            | 1,206.1      | 2,312.3                | 2,018.7                 | 293.56                 | 7.877                       |                   |
| 13,400.0  | 5,811.0               | 13,414.8              | 5,912.0               | 145.9            | 148.8         | -92.50                | -7,726.6                            | 1,206.1      | 2,312.2                | 2,014.9                 | 297.37                 | 7.776                       |                   |
| 13,500.0  | 5,811.0               | 13,514.8              | 5,912.0               | 147.8            | 150.7         | -92.50                | -7,826.6                            | 1,206.1      | 2,312.2                | 2,011.1                 | 301.17                 | 7.678                       |                   |
| 13,600.0  | 5,811.0               | 13,614.8              | 5,912.0               | 149.7            | 152.6         | -92.50                | -7,926.6                            | 1,206.1      | 2,312.2                | 2,007.3                 | 304.97                 | 7.582                       |                   |
| 13,700.0  | 5,811.0               | 13,714.8              | 5,912.0               | 151.6            | 154.5         | -92.50                | -8,026.6                            | 1,206.1      | 2,312.2                | 2,003.4                 | 308.78                 | 7.488                       |                   |
| 13,800.0  | 5,811.0               | 13,814.8              | 5,912.0               | 153.4            | 156.4         | -92.50                | -8,126.6                            | 1,206.1      | 2,312.2                | 1,999.6                 | 312.58                 | 7.397                       |                   |
| 13,900.0  | 5,811.0               | 13,914.8              | 5,912.0               | 155.3            | 158.2         | -92.50                | -8,226.6                            | 1,206.1      | 2,312.2                | 1,995.9                 | 316.34                 | 7.309                       |                   |
| 13,910.8  | 5,811.0               | 13,925.4              | 5,912.0               | 155.5            | 158.4         | -92.50                | -8,237.2                            | 1,206.1      | 2,312.2                | 1,995.5                 | 316.70                 | 7.301                       |                   |
| 13,919.8  | 5,811.0               | 13,925.4              | 5,912.0               | 155.7            | 158.4         | -92.50                | -8,237.2                            | 1,206.1      | 2,312.2                | 1,995.3                 | 316.87                 | 7.297 SF                    |                   |



# Cathedral Energy Services

## Anticollision Report

|                           |                               |                                     |  |
|---------------------------|-------------------------------|-------------------------------------|--|
| <b>Company:</b>           | Whiting Petroleum Corporation | <b>Local Co-ordinate Reference:</b> | Well Razor Federal #12F-1301A          |
| <b>Project:</b>           | Weld County, CO               | <b>TVD Reference:</b>               | WELL @ 4953.6usft (Original Well Elev) |
| <b>Reference Site:</b>    | S12-T10N-R58W                 | <b>MD Reference:</b>                | WELL @ 4953.6usft (Original Well Elev) |
| <b>Site Error:</b>        | 0.0usft                       | <b>North Reference:</b>             | True                                   |
| <b>Reference Well:</b>    | Razor Federal #12F-1301A      | <b>Survey Calculation Method:</b>   | Minimum Curvature                      |
| <b>Well Error:</b>        | 0.0usft                       | <b>Output errors are at</b>         | 2.00 sigma                             |
| <b>Reference Wellbore</b> | HZ                            | <b>Database:</b>                    | USA EDM 5000 Multi Users DB            |
| <b>Reference Design:</b>  | Plan #3                       | <b>Offset TVD Reference:</b>        | Offset Datum                           |

| Offset Design S26-T10N-R58W - Razor Federal #26I-2313A - 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 |                    |          |
| 1,100.0   | 1,100.0               | 13,495.1              | 5,574.0               | 2.3              | 157.6         | -28.61                | -8,454.7                            | -2,422.1     | 9,970.2                | 9,909.3                 | 60.92                  | 163.656           |                    |          |
| 1,200.0   | 1,199.8               | 13,495.1              | 5,574.0               | 2.5              | 157.6         | -29.18                | -8,454.7                            | -2,422.1     | 9,919.5                | 9,859.8                 | 59.71                  | 166.139           |                    |          |
| 1,300.0   | 1,299.6               | 13,495.1              | 5,574.0               | 2.7              | 157.6         | -29.18                | -8,454.7                            | -2,422.1     | 9,868.1                | 9,808.2                 | 59.90                  | 164.745           |                    |          |
| 1,400.0   | 1,399.4               | 13,495.1              | 5,574.0               | 2.9              | 157.6         | -29.18                | -8,454.7                            | -2,422.1     | 9,817.6                | 9,757.5                 | 60.10                  | 163.355           |                    |          |
| 1,500.0   | 1,499.1               | 13,495.1              | 5,574.0               | 3.1              | 157.6         | -29.18                | -8,454.7                            | -2,422.1     | 9,767.7                | 9,707.4                 | 60.31                  | 161.972           |                    |          |
| 1,600.0   | 1,598.9               | 13,495.1              | 5,574.0               | 3.4              | 157.6         | -29.18                | -8,454.7                            | -2,422.1     | 9,718.7                | 9,658.2                 | 60.51                  | 160.600           |                    |          |
| 1,700.0   | 1,698.6               | 13,495.1              | 5,574.0               | 3.6              | 157.6         | -29.18                | -8,454.7                            | -2,422.1     | 9,670.4                | 9,609.7                 | 60.73                  | 159.240           |                    |          |
| 1,800.0   | 1,798.4               | 13,495.1              | 5,574.0               | 3.8              | 157.6         | -29.18                | -8,454.7                            | -2,422.1     | 9,622.9                | 9,562.0                 | 60.95                  | 157.895           |                    |          |
| 1,900.0   | 1,898.1               | 13,495.1              | 5,574.0               | 4.1              | 157.6         | -29.18                | -8,454.7                            | -2,422.1     | 9,576.3                | 9,515.1                 | 61.16                  | 156.567           |                    |          |
| 2,000.0   | 1,997.9               | 13,495.1              | 5,574.0               | 4.3              | 157.6         | -29.18                | -8,454.7                            | -2,422.1     | 9,530.4                | 9,469.1                 | 61.39                  | 155.256           |                    |          |
| 2,100.0   | 2,097.6               | 13,495.1              | 5,574.0               | 4.5              | 157.6         | -29.18                | -8,454.7                            | -2,422.1     | 9,485.4                | 9,423.8                 | 61.61                  | 153.963           |                    |          |
| 2,200.0   | 2,197.4               | 13,495.1              | 5,574.0               | 4.8              | 157.6         | -29.18                | -8,454.7                            | -2,422.1     | 9,441.3                | 9,379.4                 | 61.83                  | 152.690           |                    |          |
| 2,300.0   | 2,297.2               | 13,495.1              | 5,574.0               | 5.0              | 157.6         | -29.18                | -8,454.7                            | -2,422.1     | 9,398.0                | 9,335.9                 | 62.06                  | 151.436           |                    |          |
| 2,400.0   | 2,396.9               | 13,495.1              | 5,574.0               | 5.3              | 157.6         | -29.18                | -8,454.7                            | -2,422.1     | 9,355.5                | 9,293.3                 | 62.29                  | 150.203           |                    |          |
| 2,500.0   | 2,496.7               | 13,495.1              | 5,574.0               | 5.5              | 157.6         | -29.18                | -8,454.7                            | -2,422.1     | 9,314.0                | 9,251.5                 | 62.51                  | 148.991           |                    |          |
| 2,600.0   | 2,596.4               | 13,495.1              | 5,574.0               | 5.8              | 157.6         | -29.18                | -8,454.7                            | -2,422.1     | 9,273.3                | 9,210.6                 | 62.74                  | 147.799           |                    |          |
| 2,700.0   | 2,696.2               | 13,495.1              | 5,574.0               | 6.0              | 157.6         | -29.18                | -8,454.7                            | -2,422.1     | 9,233.6                | 9,170.6                 | 62.97                  | 146.629           |                    |          |
| 2,800.0   | 2,795.9               | 13,495.1              | 5,574.0               | 6.3              | 157.6         | -29.18                | -8,454.7                            | -2,422.1     | 9,194.7                | 9,131.5                 | 63.20                  | 145.480           |                    |          |
| 2,900.0   | 2,895.7               | 13,495.1              | 5,574.0               | 6.5              | 157.6         | -29.18                | -8,454.7                            | -2,422.1     | 9,156.8                | 9,093.4                 | 63.43                  | 144.352           |                    |          |
| 3,000.0   | 2,895.5               | 13,495.1              | 5,574.0               | 6.8              | 157.6         | -29.18                | -8,454.7                            | -2,422.1     | 9,119.8                | 9,056.2                 | 63.67                  | 143.246           |                    |          |
| 3,100.0   | 3,095.2               | 13,495.1              | 5,574.0               | 7.1              | 157.6         | -29.18                | -8,454.7                            | -2,422.1     | 9,083.8                | 9,019.9                 | 63.90                  | 142.162           |                    |          |
| 3,200.0   | 3,195.0               | 13,495.1              | 5,574.0               | 7.3              | 157.6         | -29.18                | -8,454.7                            | -2,422.1     | 9,048.7                | 8,984.6                 | 64.13                  | 141.100           |                    |          |
| 3,300.0   | 3,294.7               | 13,495.1              | 5,574.0               | 7.6              | 157.6         | -29.18                | -8,454.7                            | -2,422.1     | 9,014.6                | 8,950.3                 | 64.36                  | 140.060           |                    |          |
| 3,400.0   | 3,394.5               | 13,495.1              | 5,574.0               | 7.8              | 157.6         | -29.18                | -8,454.7                            | -2,422.1     | 8,981.5                | 8,916.9                 | 64.60                  | 139.042           |                    |          |
| 3,500.0   | 3,494.2               | 13,495.1              | 5,574.0               | 8.1              | 157.6         | -29.18                | -8,454.7                            | -2,422.1     | 8,949.4                | 8,884.6                 | 64.83                  | 138.046           |                    |          |
| 3,600.0   | 3,594.0               | 13,495.1              | 5,574.0               | 8.3              | 157.6         | -29.18                | -8,454.7                            | -2,422.1     | 8,918.3                | 8,853.2                 | 65.06                  | 137.072           |                    |          |
| 3,700.0   | 3,693.7               | 13,495.1              | 5,574.0               | 8.6              | 157.6         | -29.18                | -8,454.7                            | -2,422.1     | 8,888.2                | 8,822.9                 | 65.30                  | 136.120           |                    |          |
| 3,800.0   | 3,793.5               | 13,495.1              | 5,574.0               | 8.9              | 157.6         | -29.18                | -8,454.7                            | -2,422.1     | 8,859.1                | 8,793.6                 | 65.53                  | 135.189           |                    |          |
| 3,900.0   | 3,893.3               | 13,495.1              | 5,574.0               | 9.1              | 157.6         | -29.18                | -8,454.7                            | -2,422.1     | 8,831.1                | 8,765.3                 | 65.77                  | 134.281           |                    |          |
| 4,000.0   | 3,993.0               | 13,495.1              | 5,574.0               | 9.4              | 157.6         | -29.18                | -8,454.7                            | -2,422.1     | 8,804.1                | 8,738.1                 | 66.00                  | 133.395           |                    |          |
| 4,100.0   | 4,092.8               | 13,495.1              | 5,574.0               | 9.6              | 157.6         | -29.18                | -8,454.7                            | -2,422.1     | 8,778.2                | 8,712.0                 | 66.24                  | 132.530           |                    |          |
| 4,200.0   | 4,192.5               | 13,495.1              | 5,574.0               | 9.9              | 157.6         | -29.18                | -8,454.7                            | -2,422.1     | 8,753.3                | 8,686.9                 | 66.47                  | 131.687           |                    |          |
| 4,300.0   | 4,292.3               | 13,495.1              | 5,574.0               | 10.2             | 157.6         | -29.18                | -8,454.7                            | -2,422.1     | 8,729.6                | 8,662.9                 | 66.71                  | 130.866           |                    |          |
| 4,400.0   | 4,392.0               | 13,495.1              | 5,574.0               | 10.4             | 157.6         | -29.18                | -8,454.7                            | -2,422.1     | 8,706.9                | 8,639.9                 | 66.94                  | 130.067           |                    |          |
| 4,500.0   | 4,491.8               | 13,495.1              | 5,574.0               | 10.7             | 157.6         | -29.18                | -8,454.7                            | -2,422.1     | 8,685.2                | 8,618.1                 | 67.18                  | 129.289           |                    |          |
| 4,600.0   | 4,591.6               | 13,495.1              | 5,574.0               | 11.0             | 157.6         | -29.18                | -8,454.7                            | -2,422.1     | 8,664.7                | 8,597.3                 | 67.41                  | 128.533           |                    |          |
| 4,700.0   | 4,691.3               | 13,495.1              | 5,574.0               | 11.2             | 157.6         | -29.18                | -8,454.7                            | -2,422.1     | 8,645.3                | 8,577.7                 | 67.65                  | 127.798           |                    |          |
| 4,800.0   | 4,791.1               | 13,495.1              | 5,574.0               | 11.5             | 157.6         | -29.18                | -8,454.7                            | -2,422.1     | 8,627.1                | 8,559.2                 | 67.88                  | 127.084           |                    |          |
| 4,900.0   | 4,890.8               | 13,495.1              | 5,574.0               | 11.7             | 157.6         | -29.18                | -8,454.7                            | -2,422.1     | 8,609.9                | 8,541.8                 | 68.12                  | 126.392           |                    |          |
| 5,000.0   | 4,990.6               | 13,495.1              | 5,574.0               | 12.0             | 157.6         | -29.18                | -8,454.7                            | -2,422.1     | 8,593.9                | 8,525.5                 | 68.36                  | 125.720           |                    |          |
| 5,100.0   | 5,090.3               | 13,495.1              | 5,574.0               | 12.3             | 157.6         | -29.18                | -8,454.7                            | -2,422.1     | 8,579.0                | 8,510.4                 | 68.59                  | 125.070           |                    |          |
| 5,200.0   | 5,190.1               | 13,495.1              | 5,574.0               | 12.5             | 157.6         | -29.18                | -8,454.7                            | -2,422.1     | 8,565.2                | 8,496.4                 | 68.83                  | 124.441           |                    |          |
| 5,300.0   | 5,289.9               | 13,495.1              | 5,574.0               | 12.8             | 157.6         | -29.18                | -8,454.7                            | -2,422.1     | 8,552.6                | 8,483.5                 | 69.07                  | 123.832           |                    |          |
| 5,400.0   | 5,389.2               | 13,495.1              | 5,574.0               | 13.1             | 157.6         | -29.74                | -8,454.7                            | -2,422.1     | 8,537.9                | 8,471.0                 | 66.81                  | 127.785           |                    |          |
| 5,500.0   | 5,485.0               | 13,495.1              | 5,574.0               | 13.5             | 157.6         | -31.43                | -8,454.7                            | -2,422.1     | 8,509.1                | 8,449.0                 | 60.10                  | 141.582           |                    |          |
| 5,600.0   | 5,573.6               | 13,495.1              | 5,574.0               | 14.2             | 157.6         | -34.27                | -8,454.7                            | -2,422.1     | 8,466.2                | 8,414.6                 | 51.56                  | 164.192           |                    |          |
| 5,700.0   | 5,651.8               | 13,495.1              | 5,574.0               | 15.0             | 157.6         | -38.68                | -8,454.7                            | -2,422.1     | 8,410.4                | 8,362.4                 | 47.99                  | 175.256           |                    |          |
| 5,800.0   | 5,716.7               | 13,495.1              | 5,574.0               | 16.1             | 157.6         | -45.31                | -8,454.7                            | -2,422.1     | 8,343.6                | 8,283.2                 | 60.38                  | 138.195           |                    |          |
| 5,900.0   | 5,766.0               | 13,495.1              | 5,574.0               | 17.3             | 157.6         | -55.09                | -8,454.7                            | -2,422.1     | 8,267.9                | 8,181.2                 | 86.72                  | 95.345            |                    |          |
| 6,000.0   | 5,797.8               | 13,495.1              | 5,574.0               | 18.8             | 157.6         | -68.92                | -8,454.7                            | -2,422.1     | 8,186.1                | 8,069.7                 | 116.32                 | 70.373            |                    |          |
| 6,100.0   | 5,811.0               | 13,495.1              | 5,574.0               | 20.4             | 157.6         | -86.36                | -8,454.7                            | -2,422.1     | 8,100.8                | 7,966.1                 | 134.70                 | 60.138            |                    |          |
| 6,200.0   | 5,811.3               | 13,495.1              | 5,574.0               | 21.9             | 157.6         | -89.82                | -8,454.7                            | -2,422.1     | 8,014.2                | 7,872.0                 | 142.19                 | 56.360            |                    |          |

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

# Cathedral Energy Services

## Anticollision Report

|                           |                               |                                     |  |
|---------------------------|-------------------------------|-------------------------------------|--|
| <b>Company:</b>           | Whiting Petroleum Corporation | <b>Local Co-ordinate Reference:</b> | Well Razor Federal #12F-1301A          |
| <b>Project:</b>           | Weld County, CO               | <b>TVD Reference:</b>               | WELL @ 4953.6usft (Original Well Elev) |
| <b>Reference Site:</b>    | S12-T10N-R58W                 | <b>MD Reference:</b>                | WELL @ 4953.6usft (Original Well Elev) |
| <b>Site Error:</b>        | 0.0usft                       | <b>North Reference:</b>             | True                                   |
| <b>Reference Well:</b>    | Razor Federal #12F-1301A      | <b>Survey Calculation Method:</b>   | Minimum Curvature                      |
| <b>Well Error:</b>        | 0.0usft                       | <b>Output errors are at</b>         | 2.00 sigma                             |
| <b>Reference Wellbore</b> | HZ                            | <b>Database:</b>                    | USA EDM 5000 Multi Users DB            |
| <b>Reference Design:</b>  | Plan #3                       | <b>Offset TVD Reference:</b>        | Offset Datum                           |

| Offset Design S26-T10N-R58W - Razor Federal #26I-2313A - 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                            |              |                        |                         |                        |                   | 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 |                             |  |
| 6,300.0   | 5,811.3               | 13,495.1              | 5,574.0               | 23.4             | 157.6         | -89.80                | -8,454.7                            | -2,422.1     | 7,925.3                | 7,775.5                 | 149.77                 | 52.916            |                             |  |
| 6,400.0   | 5,811.3               | 13,495.1              | 5,574.0               | 25.0             | 157.6         | -89.78                | -8,454.7                            | -2,422.1     | 7,834.4                | 7,677.4                 | 157.00                 | 49.902            |                             |  |
| 6,500.0   | 5,811.3               | 13,495.1              | 5,574.0               | 26.6             | 157.6         | -89.75                | -8,454.7                            | -2,422.1     | 7,741.7                | 7,577.8                 | 163.82                 | 47.257            |                             |  |
| 6,600.0   | 5,811.3               | 13,495.1              | 5,574.0               | 28.2             | 157.6         | -89.71                | -8,454.7                            | -2,422.1     | 7,647.2                | 7,477.0                 | 170.21                 | 44.927            |                             |  |
| 6,700.0   | 5,811.3               | 13,495.1              | 5,574.0               | 29.8             | 157.6         | -89.66                | -8,454.7                            | -2,422.1     | 7,551.3                | 7,375.2                 | 176.14                 | 42.871            |                             |  |
| 6,800.0   | 5,811.3               | 13,495.1              | 5,574.0               | 31.4             | 157.6         | -89.57                | -8,454.7                            | -2,422.1     | 7,454.1                | 7,272.5                 | 181.58                 | 41.052            |                             |  |
| 6,900.0   | 5,811.3               | 13,495.1              | 5,574.0               | 33.0             | 157.6         | -89.44                | -8,454.7                            | -2,422.1     | 7,355.9                | 7,169.4                 | 186.49                 | 39.443            |                             |  |
| 7,000.0   | 5,811.3               | 13,495.1              | 5,574.0               | 34.6             | 157.6         | -89.18                | -8,454.7                            | -2,422.1     | 7,256.8                | 7,066.0                 | 190.87                 | 38.020            |                             |  |
| 7,100.0   | 5,811.3               | 13,495.1              | 5,574.0               | 36.2             | 157.6         | -88.47                | -8,454.7                            | -2,422.1     | 7,157.2                | 6,962.6                 | 194.65                 | 36.770            |                             |  |
| 7,200.0   | 5,811.3               | 13,495.1              | 5,574.0               | 37.7             | 157.6         | -80.04                | -8,454.7                            | -2,422.1     | 7,057.3                | 6,862.2                 | 195.08                 | 36.177            |                             |  |
| 7,300.0   | 5,811.3               | 13,495.1              | 5,574.0               | 39.2             | 157.6         | 87.78                 | -8,454.7                            | -2,422.1     | 6,957.3                | 6,768.3                 | 189.04                 | 36.804            |                             |  |
| 7,400.0   | 5,811.3               | 13,495.1              | 5,574.0               | 40.7             | 157.6         | 88.99                 | -8,454.7                            | -2,422.1     | 6,857.6                | 6,666.0                 | 191.61                 | 35.789            |                             |  |
| 7,500.0   | 5,811.3               | 13,495.1              | 5,574.0               | 42.1             | 157.6         | 89.35                 | -8,454.7                            | -2,422.1     | 6,758.4                | 6,564.7                 | 193.62                 | 34.905            |                             |  |
| 7,600.0   | 5,811.3               | 13,495.1              | 5,574.0               | 43.6             | 157.6         | 89.50                 | -8,454.7                            | -2,422.1     | 6,660.0                | 6,464.8                 | 195.16                 | 34.126            |                             |  |
| 7,700.0   | 5,811.3               | 13,495.1              | 5,574.0               | 45.0             | 157.6         | 89.50                 | -8,454.7                            | -2,422.1     | 6,562.0                | 6,365.2                 | 196.76                 | 33.350            |                             |  |
| 7,800.0   | 5,811.3               | 13,495.1              | 5,574.0               | 46.4             | 157.6         | 89.50                 | -8,454.7                            | -2,422.1     | 6,464.0                | 6,265.6                 | 198.39                 | 32.583            |                             |  |
| 7,900.0   | 5,811.2               | 13,495.1              | 5,574.0               | 47.9             | 157.6         | 89.50                 | -8,454.7                            | -2,422.1     | 6,366.2                | 6,166.1                 | 200.04                 | 31.824            |                             |  |
| 8,000.0   | 5,811.2               | 13,495.1              | 5,574.0               | 49.4             | 157.6         | 89.50                 | -8,454.7                            | -2,422.1     | 6,268.4                | 6,066.6                 | 201.72                 | 31.075            |                             |  |
| 8,100.0   | 5,811.2               | 13,495.1              | 5,574.0               | 50.9             | 157.6         | 89.50                 | -8,454.7                            | -2,422.1     | 6,170.6                | 5,967.2                 | 203.41                 | 30.336            |                             |  |
| 8,200.0   | 5,811.2               | 13,495.1              | 5,574.0               | 52.5             | 157.6         | 89.50                 | -8,454.7                            | -2,422.1     | 6,073.0                | 5,867.9                 | 205.12                 | 29.607            |                             |  |
| 8,300.0   | 5,811.2               | 13,495.1              | 5,574.0               | 54.0             | 157.6         | 89.50                 | -8,454.7                            | -2,422.1     | 5,975.4                | 5,768.6                 | 206.85                 | 28.888            |                             |  |
| 8,400.0   | 5,811.2               | 13,495.1              | 5,574.0               | 55.6             | 157.6         | 89.50                 | -8,454.7                            | -2,422.1     | 5,877.9                | 5,669.3                 | 208.59                 | 28.180            |                             |  |
| 8,500.0   | 5,811.2               | 13,495.1              | 5,574.0               | 57.2             | 157.6         | 89.50                 | -8,454.7                            | -2,422.1     | 5,780.5                | 5,570.2                 | 210.34                 | 27.482            |                             |  |
| 8,600.0   | 5,811.2               | 13,495.1              | 5,574.0               | 58.9             | 157.6         | 89.50                 | -8,454.7                            | -2,422.1     | 5,683.2                | 5,471.1                 | 212.10                 | 26.794            |                             |  |
| 8,700.0   | 5,811.2               | 13,495.1              | 5,574.0               | 60.5             | 157.6         | 89.50                 | -8,454.7                            | -2,422.1     | 5,586.0                | 5,372.1                 | 213.88                 | 26.118            |                             |  |
| 8,800.0   | 5,811.2               | 13,495.1              | 5,574.0               | 62.2             | 157.6         | 89.50                 | -8,454.7                            | -2,422.1     | 5,488.8                | 5,273.2                 | 215.66                 | 25.451            |                             |  |
| 8,900.0   | 5,811.2               | 13,495.1              | 5,574.0               | 63.9             | 157.6         | 89.50                 | -8,454.7                            | -2,422.1     | 5,391.8                | 5,174.4                 | 217.45                 | 24.795            |                             |  |
| 9,000.0   | 5,811.2               | 13,495.1              | 5,574.0               | 65.6             | 157.6         | 89.50                 | -8,454.7                            | -2,422.1     | 5,294.9                | 5,075.7                 | 219.25                 | 24.150            |                             |  |
| 9,100.0   | 5,811.2               | 13,495.1              | 5,574.0               | 67.3             | 157.6         | 89.50                 | -8,454.7                            | -2,422.1     | 5,198.1                | 4,977.1                 | 221.06                 | 23.515            |                             |  |
| 9,200.0   | 5,811.2               | 13,495.1              | 5,574.0               | 69.0             | 157.6         | 89.50                 | -8,454.7                            | -2,422.1     | 5,101.4                | 4,878.6                 | 222.87                 | 22.890            |                             |  |
| 9,300.0   | 5,811.2               | 13,495.1              | 5,574.0               | 70.7             | 157.6         | 89.50                 | -8,454.7                            | -2,422.1     | 5,004.9                | 4,780.2                 | 224.69                 | 22.275            |                             |  |
| 9,400.0   | 5,811.2               | 13,495.1              | 5,574.0               | 72.5             | 157.6         | 89.50                 | -8,454.7                            | -2,422.1     | 4,908.5                | 4,682.0                 | 226.52                 | 21.670            |                             |  |
| 9,500.0   | 5,811.2               | 13,495.1              | 5,574.0               | 74.2             | 157.6         | 89.50                 | -8,454.7                            | -2,422.1     | 4,812.3                | 4,583.9                 | 228.35                 | 21.074            |                             |  |
| 9,600.0   | 5,811.2               | 13,495.1              | 5,574.0               | 76.0             | 157.6         | 89.50                 | -8,454.7                            | -2,422.1     | 4,716.2                | 4,486.0                 | 230.18                 | 20.489            |                             |  |
| 9,700.0   | 5,811.2               | 13,495.1              | 5,574.0               | 77.7             | 157.6         | 89.50                 | -8,454.7                            | -2,422.1     | 4,620.2                | 4,388.2                 | 232.02                 | 19.913            |                             |  |
| 9,800.0   | 5,811.2               | 13,495.1              | 5,574.0               | 79.5             | 157.6         | 89.50                 | -8,454.7                            | -2,422.1     | 4,524.5                | 4,290.6                 | 233.86                 | 19.347            |                             |  |
| 9,900.0   | 5,811.2               | 13,495.1              | 5,574.0               | 81.3             | 157.6         | 89.50                 | -8,454.7                            | -2,422.1     | 4,428.9                | 4,193.2                 | 235.71                 | 18.790            |                             |  |
| 10,000.0  | 5,811.2               | 13,495.1              | 5,574.0               | 83.1             | 157.6         | 89.50                 | -8,454.7                            | -2,422.1     | 4,333.6                | 4,096.0                 | 237.56                 | 18.242            |                             |  |
| 10,100.0  | 5,811.2               | 13,495.1              | 5,574.0               | 84.9             | 157.6         | 89.50                 | -8,454.7                            | -2,422.1     | 4,238.4                | 3,999.0                 | 239.41                 | 17.703            |                             |  |
| 10,200.0  | 5,811.1               | 13,495.1              | 5,574.0               | 86.7             | 157.6         | 89.50                 | -8,454.7                            | -2,422.1     | 4,143.5                | 3,902.2                 | 241.27                 | 17.174            |                             |  |
| 10,300.0  | 5,811.1               | 13,495.1              | 5,574.0               | 88.5             | 157.6         | 89.50                 | -8,454.7                            | -2,422.1     | 4,048.8                | 3,805.7                 | 243.13                 | 16.653            |                             |  |
| 10,400.0  | 5,811.1               | 13,495.1              | 5,574.0               | 90.3             | 157.6         | 89.50                 | -8,454.7                            | -2,422.1     | 3,954.4                | 3,709.4                 | 244.99                 | 16.141            |                             |  |
| 10,500.0  | 5,811.1               | 13,495.1              | 5,574.0               | 92.1             | 157.6         | 89.50                 | -8,454.7                            | -2,422.1     | 3,860.2                | 3,613.4                 | 246.85                 | 15.638            |                             |  |
| 10,600.0  | 5,811.1               | 13,495.1              | 5,574.0               | 93.9             | 157.6         | 89.50                 | -8,454.7                            | -2,422.1     | 3,766.4                | 3,517.7                 | 248.72                 | 15.143            |                             |  |
| 10,700.0  | 5,811.1               | 13,495.1              | 5,574.0               | 95.7             | 157.6         | 89.50                 | -8,454.7                            | -2,422.1     | 3,672.9                | 3,422.3                 | 250.59                 | 14.657            |                             |  |
| 10,800.0  | 5,811.1               | 13,495.1              | 5,574.0               | 97.5             | 157.6         | 89.50                 | -8,454.7                            | -2,422.1     | 3,579.8                | 3,327.3                 | 252.46                 | 14.179            |                             |  |
| 10,900.0  | 5,811.1               | 13,495.1              | 5,574.0               | 99.4             | 157.6         | 89.50                 | -8,454.7                            | -2,422.1     | 3,487.0                | 3,232.6                 | 254.33                 | 13.710            |                             |  |
| 11,000.0  | 5,811.1               | 13,495.1              | 5,574.0               | 101.2            | 157.6         | 89.50                 | -8,454.7                            | -2,422.1     | 3,394.6                | 3,138.4                 | 256.21                 | 13.249            |                             |  |
| 11,100.0  | 5,811.1               | 13,495.1              | 5,574.0               | 103.0            | 157.6         | 89.50                 | -8,454.7                            | -2,422.1     | 3,302.7                | 3,044.6                 | 258.09                 | 12.797            |                             |  |
| 11,200.0  | 5,811.1               | 13,495.1              | 5,574.0               | 104.9            | 157.6         | 89.50                 | -8,454.7                            | -2,422.1     | 3,211.2                | 2,951.3                 | 259.96                 | 12.353            |                             |  |
| 11,300.0  | 5,811.1               | 13,495.1              | 5,574.0               | 106.7            | 157.6         | 89.50                 | -8,454.7                            | -2,422.1     | 3,120.3                | 2,858.5                 | 261.84                 | 11.917            |                             |  |
| 11,400.0  | 5,811.1               | 13,495.1              | 5,574.0               | 108.6            | 157.6         | 89.50                 | -8,454.7                            | -2,422.1     | 3,030.0                | 2,766.3                 | 263.73                 | 11.489            |                             |  |

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

# Cathedral Energy Services

## Anticollision Report

|                           |                               |                                     |  |
|---------------------------|-------------------------------|-------------------------------------|--|
| <b>Company:</b>           | Whiting Petroleum Corporation | <b>Local Co-ordinate Reference:</b> | Well Razor Federal #12F-1301A          |
| <b>Project:</b>           | Weld County, CO               | <b>TVD Reference:</b>               | WELL @ 4953.6usft (Original Well Elev) |
| <b>Reference Site:</b>    | S12-T10N-R58W                 | <b>MD Reference:</b>                | WELL @ 4953.6usft (Original Well Elev) |
| <b>Site Error:</b>        | 0.0usft                       | <b>North Reference:</b>             | True                                   |
| <b>Reference Well:</b>    | Razor Federal #12F-1301A      | <b>Survey Calculation Method:</b>   | Minimum Curvature                      |
| <b>Well Error:</b>        | 0.0usft                       | <b>Output errors are at</b>         | 2.00 sigma                             |
| <b>Reference Wellbore</b> | HZ                            | <b>Database:</b>                    | USA EDM 5000 Multi Users DB            |
| <b>Reference Design:</b>  | Plan #3                       | <b>Offset TVD Reference:</b>        | Offset Datum                           |

| Offset Design S26-T10N-R58W - Razor Federal #26I-2313A - 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 |                             |  |
| 11,500.0  | 5,811.1               | 13,495.1              | 5,574.0               | 110.4            | 157.6         | 89.50                 | -8,454.7                            | -2,422.1     | 2,940.3                | 2,674.7                 | 265.61                 | 11.070            |                             |  |
| 11,600.0  | 5,811.1               | 13,495.1              | 5,574.0               | 112.3            | 157.6         | 89.50                 | -8,454.7                            | -2,422.1     | 2,851.2                | 2,583.7                 | 267.49                 | 10.659            |                             |  |
| 11,700.0  | 5,811.1               | 13,495.1              | 5,574.0               | 114.1            | 157.6         | 89.50                 | -8,454.7                            | -2,422.1     | 2,763.0                | 2,493.6                 | 269.38                 | 10.257            |                             |  |
| 11,800.0  | 5,811.1               | 13,495.1              | 5,574.0               | 116.0            | 157.6         | 89.50                 | -8,454.7                            | -2,422.1     | 2,675.5                | 2,404.2                 | 271.26                 | 9.863             |                             |  |
| 11,900.0  | 5,811.1               | 13,495.1              | 5,574.0               | 117.8            | 157.6         | 89.50                 | -8,454.7                            | -2,422.1     | 2,588.9                | 2,315.8                 | 273.15                 | 9.478             |                             |  |
| 12,000.0  | 5,811.1               | 13,495.1              | 5,574.0               | 119.7            | 157.6         | 89.50                 | -8,454.7                            | -2,422.1     | 2,503.4                | 2,228.4                 | 275.04                 | 9.102             |                             |  |
| 12,100.0  | 5,811.1               | 13,495.1              | 5,574.0               | 121.6            | 157.6         | 89.50                 | -8,454.7                            | -2,422.1     | 2,419.0                | 2,142.0                 | 276.93                 | 8.735             |                             |  |
| 12,200.0  | 5,811.1               | 13,495.1              | 5,574.0               | 123.4            | 157.6         | 89.50                 | -8,454.7                            | -2,422.1     | 2,335.7                | 2,056.9                 | 278.82                 | 8.377             |                             |  |
| 12,300.0  | 5,811.1               | 13,495.1              | 5,574.0               | 125.3            | 157.6         | 89.50                 | -8,454.7                            | -2,422.1     | 2,253.9                | 1,973.2                 | 280.71                 | 8.029             |                             |  |
| 12,400.0  | 5,811.1               | 13,495.1              | 5,574.0               | 127.2            | 157.6         | 89.50                 | -8,454.7                            | -2,422.1     | 2,173.6                | 1,891.0                 | 282.61                 | 7.691             |                             |  |
| 12,500.0  | 5,811.0               | 13,495.1              | 5,574.0               | 129.0            | 157.6         | 89.50                 | -8,454.7                            | -2,422.1     | 2,095.0                | 1,810.5                 | 284.50                 | 7.364             |                             |  |
| 12,600.0  | 5,811.0               | 13,495.1              | 5,574.0               | 130.9            | 157.6         | 89.50                 | -8,454.7                            | -2,422.1     | 2,018.2                | 1,731.8                 | 286.40                 | 7.047             |                             |  |
| 12,700.0  | 5,811.0               | 13,495.1              | 5,574.0               | 132.8            | 157.6         | 89.50                 | -8,454.7                            | -2,422.1     | 1,943.6                | 1,655.3                 | 288.29                 | 6.742             |                             |  |
| 12,800.0  | 5,811.0               | 13,495.1              | 5,574.0               | 134.6            | 157.6         | 89.50                 | -8,454.7                            | -2,422.1     | 1,871.3                | 1,581.2                 | 290.19                 | 6.449             |                             |  |
| 12,900.0  | 5,811.0               | 13,495.1              | 5,574.0               | 136.5            | 157.6         | 89.50                 | -8,454.7                            | -2,422.1     | 1,801.7                | 1,509.7                 | 292.08                 | 6.169             |                             |  |
| 13,000.0  | 5,811.0               | 13,495.1              | 5,574.0               | 138.4            | 157.6         | 89.50                 | -8,454.7                            | -2,422.1     | 1,735.1                | 1,441.1                 | 293.98                 | 5.902             |                             |  |
| 13,100.0  | 5,811.0               | 13,495.1              | 5,574.0               | 140.3            | 157.6         | 89.50                 | -8,454.7                            | -2,422.1     | 1,671.8                | 1,376.0                 | 295.88                 | 5.650             |                             |  |
| 13,200.0  | 5,811.0               | 13,495.1              | 5,574.0               | 142.1            | 157.6         | 89.50                 | -8,454.7                            | -2,422.1     | 1,612.3                | 1,314.5                 | 297.78                 | 5.414             |                             |  |
| 13,300.0  | 5,811.0               | 13,495.1              | 5,574.0               | 144.0            | 157.6         | 89.50                 | -8,454.7                            | -2,422.1     | 1,556.8                | 1,257.2                 | 299.68                 | 5.195             |                             |  |
| 13,400.0  | 5,811.0               | 13,495.1              | 5,574.0               | 145.9            | 157.6         | 89.50                 | -8,454.7                            | -2,422.1     | 1,506.0                | 1,204.4                 | 301.58                 | 4.994             |                             |  |
| 13,500.0  | 5,811.0               | 13,495.1              | 5,574.0               | 147.8            | 157.6         | 89.50                 | -8,454.7                            | -2,422.1     | 1,460.3                | 1,156.8                 | 303.48                 | 4.812             |                             |  |
| 13,600.0  | 5,811.0               | 13,495.1              | 5,574.0               | 149.7            | 157.6         | 89.50                 | -8,454.7                            | -2,422.1     | 1,420.2                | 1,114.8                 | 305.38                 | 4.650             |                             |  |
| 13,700.0  | 5,811.0               | 13,495.1              | 5,574.0               | 151.6            | 157.6         | 89.50                 | -8,454.7                            | -2,422.1     | 1,386.1                | 1,078.8                 | 307.28                 | 4.511             |                             |  |
| 13,800.0  | 5,811.0               | 13,495.1              | 5,574.0               | 153.4            | 157.6         | 89.50                 | -8,454.7                            | -2,422.1     | 1,358.5                | 1,049.3                 | 309.18                 | 4.394             |                             |  |
| 13,900.0  | 5,811.0               | 13,495.1              | 5,574.0               | 155.3            | 157.6         | 89.50                 | -8,454.7                            | -2,422.1     | 1,337.9                | 1,026.8                 | 311.08                 | 4.301             |                             |  |
| 13,919.8  | 5,811.0               | 13,495.1              | 5,574.0               | 155.7            | 157.6         | 89.50                 | -8,454.7                            | -2,422.1     | 1,334.6                | 1,023.2                 | 311.46                 | 4.285             | CC, ES, SF                  |  |

# Cathedral Energy Services

## Anticollision Report

|                           |                               |                                     |  |
|---------------------------|-------------------------------|-------------------------------------|--|
| <b>Company:</b>           | Whiting Petroleum Corporation | <b>Local Co-ordinate Reference:</b> | Well Razor Federal #12F-1301A          |
| <b>Project:</b>           | Weld County, CO               | <b>TVD Reference:</b>               | WELL @ 4953.6usft (Original Well Elev) |
| <b>Reference Site:</b>    | S12-T10N-R58W                 | <b>MD Reference:</b>                | WELL @ 4953.6usft (Original Well Elev) |
| <b>Site Error:</b>        | 0.0usft                       | <b>North Reference:</b>             | True                                   |
| <b>Reference Well:</b>    | Razor Federal #12F-1301A      | <b>Survey Calculation Method:</b>   | Minimum Curvature                      |
| <b>Well Error:</b>        | 0.0usft                       | <b>Output errors are at</b>         | 2.00 sigma                             |
| <b>Reference Wellbore</b> | HZ                            | <b>Database:</b>                    | USA EDM 5000 Multi Users DB            |
| <b>Reference Design:</b>  | Plan #3                       | <b>Offset TVD Reference:</b>        | Offset Datum                           |

| Offset Design S26-T10N-R58W - Razor Federal #26I-2314B - 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            |          |
| 1,000.0   | 1,000.0               | 13,550.8              | 5,661.0               | 2.1              | 159.0         | -166.10               | -8,451.7                            | -2,092.3     | 9,984.3                | 9,907.0                 | 77.27                  | 129.216           |                    |          |
| 1,100.0   | 1,100.0               | 13,550.8              | 5,661.0               | 2.3              | 159.0         | -30.74                | -8,451.7                            | -2,092.3     | 9,934.4                | 9,882.5                 | 51.89                  | 191.451           |                    |          |
| 1,200.0   | 1,199.8               | 13,550.8              | 5,661.0               | 2.5              | 159.0         | -31.36                | -8,451.7                            | -2,092.3     | 9,882.7                | 9,832.2                 | 50.49                  | 195.740           |                    |          |
| 1,300.0   | 1,299.6               | 13,550.8              | 5,661.0               | 2.7              | 159.0         | -31.36                | -8,451.7                            | -2,092.3     | 9,830.4                | 9,779.7                 | 50.68                  | 193.961           |                    |          |
| 1,400.0   | 1,399.4               | 13,550.8              | 5,661.0               | 2.9              | 159.0         | -31.36                | -8,451.7                            | -2,092.3     | 9,778.9                | 9,728.0                 | 50.88                  | 192.184           |                    |          |
| 1,500.0   | 1,499.1               | 13,550.8              | 5,661.0               | 3.1              | 159.0         | -31.36                | -8,451.7                            | -2,092.3     | 9,728.2                | 9,677.1                 | 51.09                  | 190.415           |                    |          |
| 1,600.0   | 1,598.9               | 13,550.8              | 5,661.0               | 3.4              | 159.0         | -31.36                | -8,451.7                            | -2,092.3     | 9,678.2                | 9,626.9                 | 51.30                  | 188.658           |                    |          |
| 1,700.0   | 1,698.6               | 13,550.8              | 5,661.0               | 3.6              | 159.0         | -31.36                | -8,451.7                            | -2,092.3     | 9,629.0                | 9,577.5                 | 51.51                  | 186.918           |                    |          |
| 1,800.0   | 1,798.4               | 13,550.8              | 5,661.0               | 3.8              | 159.0         | -31.36                | -8,451.7                            | -2,092.3     | 9,580.6                | 9,528.8                 | 51.73                  | 185.196           |                    |          |
| 1,900.0   | 1,898.1               | 13,550.8              | 5,661.0               | 4.1              | 159.0         | -31.36                | -8,451.7                            | -2,092.3     | 9,533.0                | 9,481.0                 | 51.95                  | 183.496           |                    |          |
| 2,000.0   | 1,997.9               | 13,550.8              | 5,661.0               | 4.3              | 159.0         | -31.36                | -8,451.7                            | -2,092.3     | 9,486.2                | 9,434.0                 | 52.17                  | 181.818           |                    |          |
| 2,100.0   | 2,097.6               | 13,550.8              | 5,661.0               | 4.5              | 159.0         | -31.36                | -8,451.7                            | -2,092.3     | 9,440.2                | 9,387.8                 | 52.40                  | 180.163           |                    |          |
| 2,200.0   | 2,197.4               | 13,550.8              | 5,661.0               | 4.8              | 159.0         | -31.36                | -8,451.7                            | -2,092.3     | 9,395.1                | 9,342.5                 | 52.62                  | 178.534           |                    |          |
| 2,300.0   | 2,297.2               | 13,550.8              | 5,661.0               | 5.0              | 159.0         | -31.36                | -8,451.7                            | -2,092.3     | 9,350.8                | 9,298.0                 | 52.85                  | 176.929           |                    |          |
| 2,400.0   | 2,396.9               | 13,550.8              | 5,661.0               | 5.3              | 159.0         | -31.36                | -8,451.7                            | -2,092.3     | 9,307.4                | 9,254.3                 | 53.08                  | 175.351           |                    |          |
| 2,500.0   | 2,496.7               | 13,550.8              | 5,661.0               | 5.5              | 159.0         | -31.36                | -8,451.7                            | -2,092.3     | 9,264.9                | 9,211.6                 | 53.31                  | 173.800           |                    |          |
| 2,600.0   | 2,596.4               | 13,550.8              | 5,661.0               | 5.8              | 159.0         | -31.36                | -8,451.7                            | -2,092.3     | 9,223.2                | 9,169.7                 | 53.54                  | 172.275           |                    |          |
| 2,700.0   | 2,696.2               | 13,550.8              | 5,661.0               | 6.0              | 159.0         | -31.36                | -8,451.7                            | -2,092.3     | 9,182.5                | 9,128.7                 | 53.77                  | 170.778           |                    |          |
| 2,800.0   | 2,795.9               | 13,550.8              | 5,661.0               | 6.3              | 159.0         | -31.36                | -8,451.7                            | -2,092.3     | 9,142.6                | 9,088.6                 | 54.00                  | 169.309           |                    |          |
| 2,900.0   | 2,895.7               | 13,550.8              | 5,661.0               | 6.5              | 159.0         | -31.36                | -8,451.7                            | -2,092.3     | 9,103.7                | 9,049.5                 | 54.23                  | 167.867           |                    |          |
| 3,000.0   | 2,895.5               | 13,550.8              | 5,661.0               | 6.8              | 159.0         | -31.36                | -8,451.7                            | -2,092.3     | 9,065.8                | 9,011.3                 | 54.46                  | 166.453           |                    |          |
| 3,100.0   | 3,095.2               | 13,550.8              | 5,661.0               | 7.1              | 159.0         | -31.36                | -8,451.7                            | -2,092.3     | 9,028.7                | 8,974.0                 | 54.70                  | 165.066           |                    |          |
| 3,200.0   | 3,195.0               | 13,550.8              | 5,661.0               | 7.3              | 159.0         | -31.36                | -8,451.7                            | -2,092.3     | 8,992.7                | 8,937.7                 | 54.93                  | 163.708           |                    |          |
| 3,300.0   | 3,294.7               | 13,550.8              | 5,661.0               | 7.6              | 159.0         | -31.36                | -8,451.7                            | -2,092.3     | 8,957.6                | 8,902.4                 | 55.17                  | 162.377           |                    |          |
| 3,400.0   | 3,394.5               | 13,550.8              | 5,661.0               | 7.8              | 159.0         | -31.36                | -8,451.7                            | -2,092.3     | 8,923.5                | 8,868.1                 | 55.40                  | 161.075           |                    |          |
| 3,500.0   | 3,494.2               | 13,550.8              | 5,661.0               | 8.1              | 159.0         | -31.36                | -8,451.7                            | -2,092.3     | 8,890.3                | 8,834.7                 | 55.63                  | 159.800           |                    |          |
| 3,600.0   | 3,594.0               | 13,550.8              | 5,661.0               | 8.3              | 159.0         | -31.36                | -8,451.7                            | -2,092.3     | 8,858.2                | 8,802.4                 | 55.87                  | 158.554           |                    |          |
| 3,700.0   | 3,693.7               | 13,550.8              | 5,661.0               | 8.6              | 159.0         | -31.36                | -8,451.7                            | -2,092.3     | 8,827.1                | 8,771.0                 | 56.10                  | 157.334           |                    |          |
| 3,800.0   | 3,793.5               | 13,550.8              | 5,661.0               | 8.9              | 159.0         | -31.36                | -8,451.7                            | -2,092.3     | 8,797.1                | 8,740.7                 | 56.34                  | 156.143           |                    |          |
| 3,900.0   | 3,893.3               | 13,550.8              | 5,661.0               | 9.1              | 159.0         | -31.36                | -8,451.7                            | -2,092.3     | 8,768.0                | 8,711.4                 | 56.58                  | 154.980           |                    |          |
| 4,000.0   | 3,993.0               | 13,550.8              | 5,661.0               | 9.4              | 159.0         | -31.36                | -8,451.7                            | -2,092.3     | 8,740.0                | 8,683.2                 | 56.81                  | 153.843           |                    |          |
| 4,100.0   | 4,092.8               | 13,550.8              | 5,661.0               | 9.6              | 159.0         | -31.36                | -8,451.7                            | -2,092.3     | 8,713.1                | 8,656.1                 | 57.05                  | 152.735           |                    |          |
| 4,200.0   | 4,192.5               | 13,550.8              | 5,661.0               | 9.9              | 159.0         | -31.36                | -8,451.7                            | -2,092.3     | 8,687.3                | 8,630.0                 | 57.28                  | 151.653           |                    |          |
| 4,300.0   | 4,292.3               | 13,550.8              | 5,661.0               | 10.2             | 159.0         | -31.36                | -8,451.7                            | -2,092.3     | 8,662.5                | 8,605.0                 | 57.52                  | 150.599           |                    |          |
| 4,400.0   | 4,392.0               | 13,550.8              | 5,661.0               | 10.4             | 159.0         | -31.36                | -8,451.7                            | -2,092.3     | 8,638.8                | 8,581.0                 | 57.76                  | 149.572           |                    |          |
| 4,500.0   | 4,491.8               | 13,550.8              | 5,661.0               | 10.7             | 159.0         | -31.36                | -8,451.7                            | -2,092.3     | 8,616.2                | 8,558.2                 | 57.99                  | 148.571           |                    |          |
| 4,600.0   | 4,591.6               | 13,550.8              | 5,661.0               | 11.0             | 159.0         | -31.36                | -8,451.7                            | -2,092.3     | 8,594.7                | 8,536.4                 | 58.23                  | 147.598           |                    |          |
| 4,700.0   | 4,691.3               | 13,550.8              | 5,661.0               | 11.2             | 159.0         | -31.36                | -8,451.7                            | -2,092.3     | 8,574.3                | 8,515.8                 | 58.47                  | 146.651           |                    |          |
| 4,800.0   | 4,791.1               | 13,550.8              | 5,661.0               | 11.5             | 159.0         | -31.36                | -8,451.7                            | -2,092.3     | 8,555.0                | 8,496.3                 | 58.70                  | 145.730           |                    |          |
| 4,900.0   | 4,890.8               | 13,550.8              | 5,661.0               | 11.7             | 159.0         | -31.36                | -8,451.7                            | -2,092.3     | 8,536.9                | 8,478.0                 | 58.94                  | 144.836           |                    |          |
| 5,000.0   | 4,990.6               | 13,550.8              | 5,661.0               | 12.0             | 159.0         | -31.36                | -8,451.7                            | -2,092.3     | 8,519.9                | 8,460.7                 | 59.18                  | 143.968           |                    |          |
| 5,100.0   | 5,090.3               | 13,550.8              | 5,661.0               | 12.3             | 159.0         | -31.36                | -8,451.7                            | -2,092.3     | 8,504.0                | 8,444.6                 | 59.42                  | 143.126           |                    |          |
| 5,200.0   | 5,190.1               | 13,550.8              | 5,661.0               | 12.5             | 159.0         | -31.36                | -8,451.7                            | -2,092.3     | 8,489.3                | 8,429.7                 | 59.65                  | 142.309           |                    |          |
| 5,300.0   | 5,289.9               | 13,550.8              | 5,661.0               | 12.8             | 159.0         | -31.36                | -8,451.7                            | -2,092.3     | 8,475.8                | 8,415.9                 | 59.89                  | 141.518           |                    |          |
| 5,400.0   | 5,389.2               | 13,550.8              | 5,661.0               | 13.1             | 159.0         | -32.00                | -8,451.7                            | -2,092.3     | 8,460.2                | 8,402.7                 | 57.50                  | 147.140           |                    |          |
| 5,500.0   | 5,485.0               | 13,550.8              | 5,661.0               | 13.5             | 159.0         | -33.83                | -8,451.7                            | -2,092.3     | 8,431.0                | 8,379.8                 | 51.19                  | 164.686           |                    |          |
| 5,600.0   | 5,573.6               | 13,550.8              | 5,661.0               | 14.2             | 159.0         | -36.87                | -8,451.7                            | -2,092.3     | 8,388.0                | 8,342.6                 | 45.42                  | 184.694           |                    |          |
| 5,700.0   | 5,651.8               | 13,550.8              | 5,661.0               | 15.0             | 159.0         | -41.51                | -8,451.7                            | -2,092.3     | 8,332.6                | 8,282.8                 | 49.72                  | 167.584           |                    |          |
| 5,800.0   | 5,716.7               | 13,550.8              | 5,661.0               | 16.1             | 159.0         | -48.35                | -8,451.7                            | -2,092.3     | 8,266.5                | 8,197.6                 | 68.99                  | 119.830           |                    |          |
| 5,900.0   | 5,766.0               | 13,550.8              | 5,661.0               | 17.3             | 159.0         | -58.17                | -8,451.7                            | -2,092.3     | 8,192.1                | 8,095.2                 | 96.94                  | 84.505            |                    |          |
| 6,000.0   | 5,797.8               | 13,550.8              | 5,661.0               | 18.8             | 159.0         | -71.56                | -8,451.7                            | -2,092.3     | 8,111.9                | 7,986.9                 | 124.92                 | 64.934            |                    |          |
| 6,100.0   | 5,811.0               | 13,550.8              | 5,661.0               | 20.4             | 159.0         | -87.80                | -8,451.7                            | -2,092.3     | 8,028.6                | 7,887.8                 | 140.80                 | 57.022            |                    |          |

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

# Cathedral Energy Services

## Anticollision Report

|                           |                               |                                     |  |
|---------------------------|-------------------------------|-------------------------------------|--|
| <b>Company:</b>           | Whiting Petroleum Corporation | <b>Local Co-ordinate Reference:</b> | Well Razor Federal #12F-1301A          |
| <b>Project:</b>           | Weld County, CO               | <b>TVD Reference:</b>               | WELL @ 4953.6usft (Original Well Elev) |
| <b>Reference Site:</b>    | S12-T10N-R58W                 | <b>MD Reference:</b>                | WELL @ 4953.6usft (Original Well Elev) |
| <b>Site Error:</b>        | 0.0usft                       | <b>North Reference:</b>             | True                                   |
| <b>Reference Well:</b>    | Razor Federal #12F-1301A      | <b>Survey Calculation Method:</b>   | Minimum Curvature                      |
| <b>Well Error:</b>        | 0.0usft                       | <b>Output errors are at</b>         | 2.00 sigma                             |
| <b>Reference Wellbore</b> | HZ                            | <b>Database:</b>                    | USA EDM 5000 Multi Users DB            |
| <b>Reference Design:</b>  | Plan #3                       | <b>Offset TVD Reference:</b>        | Offset Datum                           |

| Offset Design S26-T10N-R58W - Razor Federal #26I-2314B - 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) | Centre +E/-W (usft) | Between Centres (usft) | Between Ellipses (usft) | Total Uncertainty Axis | Separation Factor |                             |  |
| 6,200.0   | 5,811.3               | 13,550.8              | 5,661.0               | 21.9             | 159.0         | -91.05                | -8,451.7                            | -2,092.3            | 7,944.0                | 7,796.2                 | 147.76                 | 53.763            |                             |  |
| 6,300.0   | 5,811.3               | 13,550.8              | 5,661.0               | 23.4             | 159.0         | -91.15                | -8,451.7                            | -2,092.3            | 7,857.1                | 7,702.0                 | 155.02                 | 50.683            |                             |  |
| 6,400.0   | 5,811.3               | 13,550.8              | 5,661.0               | 25.0             | 159.0         | -91.28                | -8,451.7                            | -2,092.3            | 7,768.0                | 7,606.0                 | 161.92                 | 47.975            |                             |  |
| 6,500.0   | 5,811.3               | 13,550.8              | 5,661.0               | 26.6             | 159.0         | -91.44                | -8,451.7                            | -2,092.3            | 7,676.8                | 7,508.4                 | 168.40                 | 45.587            |                             |  |
| 6,600.0   | 5,811.3               | 13,550.8              | 5,661.0               | 28.2             | 159.0         | -91.64                | -8,451.7                            | -2,092.3            | 7,583.9                | 7,409.4                 | 174.43                 | 43.477            |                             |  |
| 6,700.0   | 5,811.3               | 13,550.8              | 5,661.0               | 29.8             | 159.0         | -91.92                | -8,451.7                            | -2,092.3            | 7,489.2                | 7,309.3                 | 179.99                 | 41.610            |                             |  |
| 6,800.0   | 5,811.3               | 13,550.8              | 5,661.0               | 31.4             | 159.0         | -92.30                | -8,451.7                            | -2,092.3            | 7,393.2                | 7,208.2                 | 185.03                 | 39.958            |                             |  |
| 6,900.0   | 5,811.3               | 13,550.8              | 5,661.0               | 33.0             | 159.0         | -92.87                | -8,451.7                            | -2,092.3            | 7,295.9                | 7,106.4                 | 189.51                 | 38.498            |                             |  |
| 7,000.0   | 5,811.3               | 13,550.8              | 5,661.0               | 34.6             | 159.0         | -93.82                | -8,451.7                            | -2,092.3            | 7,197.5                | 7,004.2                 | 193.38                 | 37.219            |                             |  |
| 7,100.0   | 5,811.3               | 13,550.8              | 5,661.0               | 36.2             | 159.0         | -95.69                | -8,451.7                            | -2,092.3            | 7,098.4                | 6,902.0                 | 196.43                 | 36.137            |                             |  |
| 7,200.0   | 5,811.3               | 13,550.8              | 5,661.0               | 37.7             | 159.0         | -100.97               | -8,451.7                            | -2,092.3            | 6,998.8                | 6,801.6                 | 197.16                 | 35.498            |                             |  |
| 7,300.0   | 5,811.3               | 13,550.8              | 5,661.0               | 39.2             | 159.0         | -161.57               | -8,451.7                            | -2,092.3            | 6,898.8                | 6,803.7                 | 95.16                  | 72.500            |                             |  |
| 7,400.0   | 5,811.3               | 13,550.8              | 5,661.0               | 40.7             | 159.0         | 102.74                | -8,451.7                            | -2,092.3            | 6,798.9                | 6,609.3                 | 189.59                 | 35.861            |                             |  |
| 7,500.0   | 5,811.3               | 13,550.8              | 5,661.0               | 42.1             | 159.0         | 96.28                 | -8,451.7                            | -2,092.3            | 6,699.2                | 6,504.6                 | 194.55                 | 34.434            |                             |  |
| 7,600.0   | 5,811.3               | 13,550.8              | 5,661.0               | 43.6             | 159.0         | 94.36                 | -8,451.7                            | -2,092.3            | 6,600.0                | 6,403.7                 | 196.36                 | 33.612            |                             |  |
| 7,700.0   | 5,811.3               | 13,550.8              | 5,661.0               | 45.0             | 159.0         | 94.36                 | -8,451.7                            | -2,092.3            | 6,501.2                | 6,303.2                 | 197.96                 | 32.842            |                             |  |
| 7,800.0   | 5,811.3               | 13,550.8              | 5,661.0               | 46.4             | 159.0         | 94.36                 | -8,451.7                            | -2,092.3            | 6,402.4                | 6,202.8                 | 199.58                 | 32.079            |                             |  |
| 7,900.0   | 5,811.2               | 13,550.8              | 5,661.0               | 47.9             | 159.0         | 94.36                 | -8,451.7                            | -2,092.3            | 6,303.6                | 6,102.4                 | 201.23                 | 31.325            |                             |  |
| 8,000.0   | 5,811.2               | 13,550.8              | 5,661.0               | 49.4             | 159.0         | 94.36                 | -8,451.7                            | -2,092.3            | 6,204.9                | 6,002.0                 | 202.90                 | 30.581            |                             |  |
| 8,100.0   | 5,811.2               | 13,550.8              | 5,661.0               | 50.9             | 159.0         | 94.36                 | -8,451.7                            | -2,092.3            | 6,106.2                | 5,901.6                 | 204.59                 | 29.846            |                             |  |
| 8,200.0   | 5,811.2               | 13,550.8              | 5,661.0               | 52.5             | 159.0         | 94.36                 | -8,451.7                            | -2,092.3            | 6,007.5                | 5,801.2                 | 206.30                 | 29.121            |                             |  |
| 8,300.0   | 5,811.2               | 13,550.8              | 5,661.0               | 54.0             | 159.0         | 94.36                 | -8,451.7                            | -2,092.3            | 5,908.9                | 5,700.9                 | 208.02                 | 28.405            |                             |  |
| 8,400.0   | 5,811.2               | 13,550.8              | 5,661.0               | 55.6             | 159.0         | 94.36                 | -8,451.7                            | -2,092.3            | 5,810.4                | 5,600.6                 | 209.76                 | 27.700            |                             |  |
| 8,500.0   | 5,811.2               | 13,550.8              | 5,661.0               | 57.2             | 159.0         | 94.36                 | -8,451.7                            | -2,092.3            | 5,711.8                | 5,500.3                 | 211.51                 | 27.006            |                             |  |
| 8,600.0   | 5,811.2               | 13,550.8              | 5,661.0               | 58.9             | 159.0         | 94.36                 | -8,451.7                            | -2,092.3            | 5,613.4                | 5,400.1                 | 213.27                 | 26.321            |                             |  |
| 8,700.0   | 5,811.2               | 13,550.8              | 5,661.0               | 60.5             | 159.0         | 94.36                 | -8,451.7                            | -2,092.3            | 5,515.0                | 5,300.0                 | 215.04                 | 25.647            |                             |  |
| 8,800.0   | 5,811.2               | 13,550.8              | 5,661.0               | 62.2             | 159.0         | 94.36                 | -8,451.7                            | -2,092.3            | 5,416.6                | 5,199.8                 | 216.81                 | 24.983            |                             |  |
| 8,900.0   | 5,811.2               | 13,550.8              | 5,661.0               | 63.9             | 159.0         | 94.36                 | -8,451.7                            | -2,092.3            | 5,318.4                | 5,099.8                 | 218.60                 | 24.329            |                             |  |
| 9,000.0   | 5,811.2               | 13,550.8              | 5,661.0               | 65.6             | 159.0         | 94.36                 | -8,451.7                            | -2,092.3            | 5,220.2                | 4,999.8                 | 220.40                 | 23.685            |                             |  |
| 9,100.0   | 5,811.2               | 13,550.8              | 5,661.0               | 67.3             | 159.0         | 94.36                 | -8,451.7                            | -2,092.3            | 5,122.0                | 4,899.8                 | 222.20                 | 23.051            |                             |  |
| 9,200.0   | 5,811.2               | 13,550.8              | 5,661.0               | 69.0             | 159.0         | 94.36                 | -8,451.7                            | -2,092.3            | 5,023.9                | 4,799.9                 | 224.01                 | 22.427            |                             |  |
| 9,300.0   | 5,811.2               | 13,550.8              | 5,661.0               | 70.7             | 159.0         | 94.36                 | -8,451.7                            | -2,092.3            | 4,925.9                | 4,700.1                 | 225.83                 | 21.813            |                             |  |
| 9,400.0   | 5,811.2               | 13,550.8              | 5,661.0               | 72.5             | 159.0         | 94.36                 | -8,451.7                            | -2,092.3            | 4,828.0                | 4,600.4                 | 227.65                 | 21.209            |                             |  |
| 9,500.0   | 5,811.2               | 13,550.8              | 5,661.0               | 74.2             | 159.0         | 94.36                 | -8,451.7                            | -2,092.3            | 4,730.2                | 4,500.7                 | 229.47                 | 20.613            |                             |  |
| 9,600.0   | 5,811.2               | 13,550.8              | 5,661.0               | 76.0             | 159.0         | 94.36                 | -8,451.7                            | -2,092.3            | 4,632.5                | 4,401.2                 | 231.30                 | 20.028            |                             |  |
| 9,700.0   | 5,811.2               | 13,550.8              | 5,661.0               | 77.7             | 159.0         | 94.36                 | -8,451.7                            | -2,092.3            | 4,534.8                | 4,301.7                 | 233.14                 | 19.451            |                             |  |
| 9,800.0   | 5,811.2               | 13,550.8              | 5,661.0               | 79.5             | 159.0         | 94.36                 | -8,451.7                            | -2,092.3            | 4,437.3                | 4,202.3                 | 234.98                 | 18.884            |                             |  |
| 9,900.0   | 5,811.2               | 13,550.8              | 5,661.0               | 81.3             | 159.0         | 94.36                 | -8,451.7                            | -2,092.3            | 4,339.9                | 4,103.1                 | 236.82                 | 18.326            |                             |  |
| 10,000.0  | 5,811.2               | 13,550.8              | 5,661.0               | 83.1             | 159.0         | 94.36                 | -8,451.7                            | -2,092.3            | 4,242.6                | 4,003.9                 | 238.66                 | 17.777            |                             |  |
| 10,100.0  | 5,811.2               | 13,550.8              | 5,661.0               | 84.9             | 159.0         | 94.36                 | -8,451.7                            | -2,092.3            | 4,145.4                | 3,904.9                 | 240.51                 | 17.236            |                             |  |
| 10,200.0  | 5,811.1               | 13,550.8              | 5,661.0               | 86.7             | 159.0         | 94.36                 | -8,451.7                            | -2,092.3            | 4,048.4                | 3,806.0                 | 242.37                 | 16.704            |                             |  |
| 10,300.0  | 5,811.1               | 13,550.8              | 5,661.0               | 88.5             | 159.0         | 94.36                 | -8,451.7                            | -2,092.3            | 3,951.5                | 3,707.3                 | 244.22                 | 16.180            |                             |  |
| 10,400.0  | 5,811.1               | 13,550.8              | 5,661.0               | 90.3             | 159.0         | 94.36                 | -8,451.7                            | -2,092.3            | 3,854.8                | 3,608.7                 | 246.08                 | 15.665            |                             |  |
| 10,500.0  | 5,811.1               | 13,550.8              | 5,661.0               | 92.1             | 159.0         | 94.36                 | -8,451.7                            | -2,092.3            | 3,758.3                | 3,510.3                 | 247.94                 | 15.158            |                             |  |
| 10,600.0  | 5,811.1               | 13,550.8              | 5,661.0               | 93.9             | 159.0         | 94.36                 | -8,451.7                            | -2,092.3            | 3,661.9                | 3,412.1                 | 249.80                 | 14.659            |                             |  |
| 10,700.0  | 5,811.1               | 13,550.8              | 5,661.0               | 95.7             | 159.0         | 94.36                 | -8,451.7                            | -2,092.3            | 3,565.7                | 3,314.1                 | 251.67                 | 14.169            |                             |  |
| 10,800.0  | 5,811.1               | 13,550.8              | 5,661.0               | 97.5             | 159.0         | 94.36                 | -8,451.7                            | -2,092.3            | 3,469.8                | 3,216.3                 | 253.53                 | 13.686            |                             |  |
| 10,900.0  | 5,811.1               | 13,550.8              | 5,661.0               | 99.4             | 159.0         | 94.36                 | -8,451.7                            | -2,092.3            | 3,374.1                | 3,118.7                 | 255.40                 | 13.211            |                             |  |
| 11,000.0  | 5,811.1               | 13,550.8              | 5,661.0               | 101.2            | 159.0         | 94.36                 | -8,451.7                            | -2,092.3            | 3,278.6                | 3,021.4                 | 257.27                 | 12.744            |                             |  |
| 11,100.0  | 5,811.1               | 13,550.8              | 5,661.0               | 103.0            | 159.0         | 94.36                 | -8,451.7                            | -2,092.3            | 3,183.4                | 2,924.3                 | 259.14                 | 12.284            |                             |  |
| 11,200.0  | 5,811.1               | 13,550.8              | 5,661.0               | 104.9            | 159.0         | 94.36                 | -8,451.7                            | -2,092.3            | 3,088.6                | 2,827.6                 | 261.02                 | 11.833            |                             |  |
| 11,300.0  | 5,811.1               | 13,550.8              | 5,661.0               | 106.7            | 159.0         | 94.36                 | -8,451.7                            | -2,092.3            | 2,994.0                | 2,731.1                 | 262.89                 | 11.389            |                             |  |

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

# Cathedral Energy Services

## Anticollision Report

|                           |                               |                                     |  |
|---------------------------|-------------------------------|-------------------------------------|--|
| <b>Company:</b>           | Whiting Petroleum Corporation | <b>Local Co-ordinate Reference:</b> | Well Razor Federal #12F-1301A          |
| <b>Project:</b>           | Weld County, CO               | <b>TVD Reference:</b>               | WELL @ 4953.6usft (Original Well Elev) |
| <b>Reference Site:</b>    | S12-T10N-R58W                 | <b>MD Reference:</b>                | WELL @ 4953.6usft (Original Well Elev) |
| <b>Site Error:</b>        | 0.0usft                       | <b>North Reference:</b>             | True                                   |
| <b>Reference Well:</b>    | Razor Federal #12F-1301A      | <b>Survey Calculation Method:</b>   | Minimum Curvature                      |
| <b>Well Error:</b>        | 0.0usft                       | <b>Output errors are at</b>         | 2.00 sigma                             |
| <b>Reference Wellbore</b> | HZ                            | <b>Database:</b>                    | USA EDM 5000 Multi Users DB            |
| <b>Reference Design:</b>  | Plan #3                       | <b>Offset TVD Reference:</b>        | Offset Datum                           |

| Offset Design S26-T10N-R58W - Razor Federal #26I-2314B - 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) | Centre +E/-W (usft) | Between Centres (usft) | Between Ellipses (usft) | Total Uncertainty Axis | Separation Factor |                             |         |
| 11,400.0  | 5,811.1               | 13,550.8              | 5,661.0               | 108.6            | 159.0         | 94.36                 | -8,451.7                            | -2,092.3            | 2,899.9                | 2,635.1                 | 264.77                 | 10.952            |                             |         |
| 11,500.0  | 5,811.1               | 13,550.8              | 5,661.0               | 110.4            | 159.0         | 94.36                 | -8,451.7                            | -2,092.3            | 2,806.1                | 2,539.5                 | 266.65                 | 10.524            |                             |         |
| 11,600.0  | 5,811.1               | 13,550.8              | 5,661.0               | 112.3            | 159.0         | 94.36                 | -8,451.7                            | -2,092.3            | 2,712.8                | 2,444.3                 | 268.53                 | 10.102            |                             |         |
| 11,700.0  | 5,811.1               | 13,550.8              | 5,661.0               | 114.1            | 159.0         | 94.36                 | -8,451.7                            | -2,092.3            | 2,620.0                | 2,349.5                 | 270.41                 | 9.689             |                             |         |
| 11,800.0  | 5,811.1               | 13,550.8              | 5,661.0               | 116.0            | 159.0         | 94.36                 | -8,451.7                            | -2,092.3            | 2,527.7                | 2,255.4                 | 272.29                 | 9.283             |                             |         |
| 11,900.0  | 5,811.1               | 13,550.8              | 5,661.0               | 117.8            | 159.0         | 94.36                 | -8,451.7                            | -2,092.3            | 2,436.0                | 2,161.8                 | 274.18                 | 8.885             |                             |         |
| 12,000.0  | 5,811.1               | 13,550.8              | 5,661.0               | 119.7            | 159.0         | 94.36                 | -8,451.7                            | -2,092.3            | 2,345.0                | 2,068.9                 | 276.06                 | 8.495             |                             |         |
| 12,100.0  | 5,811.1               | 13,550.8              | 5,661.0               | 121.6            | 159.0         | 94.36                 | -8,451.7                            | -2,092.3            | 2,254.8                | 1,976.8                 | 277.95                 | 8.112             |                             |         |
| 12,200.0  | 5,811.1               | 13,550.8              | 5,661.0               | 123.4            | 159.0         | 94.36                 | -8,451.7                            | -2,092.3            | 2,165.4                | 1,885.6                 | 279.83                 | 7.738             |                             |         |
| 12,300.0  | 5,811.1               | 13,550.8              | 5,661.0               | 125.3            | 159.0         | 94.36                 | -8,451.7                            | -2,092.3            | 2,077.0                | 1,795.3                 | 281.72                 | 7.373             |                             |         |
| 12,400.0  | 5,811.1               | 13,550.8              | 5,661.0               | 127.2            | 159.0         | 94.36                 | -8,451.7                            | -2,092.3            | 1,989.7                | 1,706.1                 | 283.61                 | 7.016             |                             |         |
| 12,500.0  | 5,811.0               | 13,550.8              | 5,661.0               | 129.0            | 159.0         | 94.36                 | -8,451.7                            | -2,092.3            | 1,903.7                | 1,618.2                 | 285.50                 | 6.668             |                             |         |
| 12,600.0  | 5,811.0               | 13,550.8              | 5,661.0               | 130.9            | 159.0         | 94.36                 | -8,451.7                            | -2,092.3            | 1,819.0                | 1,531.6                 | 287.39                 | 6.330             |                             |         |
| 12,700.0  | 5,811.0               | 13,550.8              | 5,661.0               | 132.8            | 159.0         | 94.36                 | -8,451.7                            | -2,092.3            | 1,736.0                | 1,446.8                 | 289.28                 | 6.001             |                             |         |
| 12,800.0  | 5,811.0               | 13,550.8              | 5,661.0               | 134.6            | 159.0         | 94.36                 | -8,451.7                            | -2,092.3            | 1,654.9                | 1,363.8                 | 291.17                 | 5.684             |                             |         |
| 12,900.0  | 5,811.0               | 13,550.8              | 5,661.0               | 136.5            | 159.0         | 94.36                 | -8,451.7                            | -2,092.3            | 1,576.0                | 1,282.9                 | 293.06                 | 5.378             |                             |         |
| 13,000.0  | 5,811.0               | 13,550.8              | 5,661.0               | 138.4            | 159.0         | 94.36                 | -8,451.7                            | -2,092.3            | 1,499.6                | 1,204.6                 | 294.96                 | 5.084             |                             |         |
| 13,100.0  | 5,811.0               | 13,550.8              | 5,661.0               | 140.3            | 159.0         | 94.36                 | -8,451.7                            | -2,092.3            | 1,426.1                | 1,129.2                 | 296.85                 | 4.804             |                             |         |
| 13,200.0  | 5,811.0               | 13,550.8              | 5,661.0               | 142.1            | 159.0         | 94.36                 | -8,451.7                            | -2,092.3            | 1,356.0                | 1,057.2                 | 298.74                 | 4.539             |                             |         |
| 13,300.0  | 5,811.0               | 13,550.8              | 5,661.0               | 144.0            | 159.0         | 94.36                 | -8,451.7                            | -2,092.3            | 1,289.8                | 989.2                   | 300.64                 | 4.290             |                             |         |
| 13,400.0  | 5,811.0               | 13,550.8              | 5,661.0               | 145.9            | 159.0         | 94.36                 | -8,451.7                            | -2,092.3            | 1,228.3                | 925.7                   | 302.53                 | 4.060             |                             |         |
| 13,500.0  | 5,811.0               | 13,550.8              | 5,661.0               | 147.8            | 159.0         | 94.36                 | -8,451.7                            | -2,092.3            | 1,172.0                | 867.6                   | 304.43                 | 3.850             |                             |         |
| 13,600.0  | 5,811.0               | 13,550.8              | 5,661.0               | 149.7            | 159.0         | 94.36                 | -8,451.7                            | -2,092.3            | 1,121.9                | 815.5                   | 306.33                 | 3.662             |                             |         |
| 13,700.0  | 5,811.0               | 13,550.8              | 5,661.0               | 151.6            | 159.0         | 94.36                 | -8,451.7                            | -2,092.3            | 1,078.7                | 770.4                   | 308.22                 | 3.500             |                             |         |
| 13,800.0  | 5,811.0               | 13,550.8              | 5,661.0               | 153.4            | 159.0         | 94.36                 | -8,451.7                            | -2,092.3            | 1,043.3                | 733.2                   | 310.12                 | 3.364             |                             |         |
| 13,900.0  | 5,811.0               | 13,550.8              | 5,661.0               | 155.3            | 159.0         | 94.36                 | -8,451.7                            | -2,092.3            | 1,016.6                | 704.6                   | 312.02                 | 3.258             |                             |         |
| 13,919.8  | 5,811.0               | 13,550.8              | 5,661.0               | 155.7            | 159.0         | 94.36                 | -8,451.7                            | -2,092.3            | 1,012.4                | 700.0                   | 312.40                 | 3.241             | CC, ES, SF                  |         |

# Cathedral Energy Services

## Anticollision Report

|                           |                               |                                     |  |
|---------------------------|-------------------------------|-------------------------------------|--|
| <b>Company:</b>           | Whiting Petroleum Corporation | <b>Local Co-ordinate Reference:</b> | Well Razor Federal #12F-1301A          |
| <b>Project:</b>           | Weld County, CO               | <b>TVD Reference:</b>               | WELL @ 4953.6usft (Original Well Elev) |
| <b>Reference Site:</b>    | S12-T10N-R58W                 | <b>MD Reference:</b>                | WELL @ 4953.6usft (Original Well Elev) |
| <b>Site Error:</b>        | 0.0usft                       | <b>North Reference:</b>             | True                                   |
| <b>Reference Well:</b>    | Razor Federal #12F-1301A      | <b>Survey Calculation Method:</b>   | Minimum Curvature                      |
| <b>Well Error:</b>        | 0.0usft                       | <b>Output errors are at</b>         | 2.00 sigma                             |
| <b>Reference Wellbore</b> | HZ                            | <b>Database:</b>                    | USA EDM 5000 Multi Users DB            |
| <b>Reference Design:</b>  | Plan #3                       | <b>Offset TVD Reference:</b>        | Offset Datum                           |

| Offset Design S26-T10N-R58W - Razor Federal #26I-2315A - 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            |          |
| 1,700.0   | 1,698.6               | 12,867.8              | 5,574.0               | 3.6              | 148.6         | -34.16                | -8,949.6                            | -1,758.7     | 9,968.2                | 9,929.4                 | 38.87                  | 256.479           |                    |          |
| 1,800.0   | 1,798.4               | 12,867.8              | 5,574.0               | 3.8              | 148.6         | -34.16                | -8,949.6                            | -1,758.7     | 9,922.3                | 9,883.2                 | 39.08                  | 253.868           |                    |          |
| 1,900.0   | 1,898.1               | 12,867.8              | 5,574.0               | 4.1              | 148.6         | -34.16                | -8,949.6                            | -1,758.7     | 9,877.1                | 9,837.8                 | 39.31                  | 251.290           |                    |          |
| 2,000.0   | 1,997.9               | 12,867.8              | 5,574.0               | 4.3              | 148.6         | -34.16                | -8,949.6                            | -1,758.7     | 9,832.7                | 9,793.2                 | 39.53                  | 248.748           |                    |          |
| 2,100.0   | 2,097.6               | 12,867.8              | 5,574.0               | 4.5              | 148.6         | -34.16                | -8,949.6                            | -1,758.7     | 9,789.2                | 9,749.4                 | 39.75                  | 246.243           |                    |          |
| 2,200.0   | 2,197.4               | 12,867.8              | 5,574.0               | 4.8              | 148.6         | -34.16                | -8,949.6                            | -1,758.7     | 9,746.5                | 9,706.5                 | 39.98                  | 243.777           |                    |          |
| 2,300.0   | 2,297.2               | 12,867.8              | 5,574.0               | 5.0              | 148.6         | -34.16                | -8,949.6                            | -1,758.7     | 9,704.6                | 9,664.4                 | 40.21                  | 241.352           |                    |          |
| 2,400.0   | 2,396.9               | 12,867.8              | 5,574.0               | 5.3              | 148.6         | -34.16                | -8,949.6                            | -1,758.7     | 9,663.6                | 9,623.2                 | 40.44                  | 238.968           |                    |          |
| 2,500.0   | 2,496.7               | 12,867.8              | 5,574.0               | 5.5              | 148.6         | -34.16                | -8,949.6                            | -1,758.7     | 9,623.5                | 9,582.8                 | 40.67                  | 236.627           |                    |          |
| 2,600.0   | 2,596.4               | 12,867.8              | 5,574.0               | 5.8              | 148.6         | -34.16                | -8,949.6                            | -1,758.7     | 9,584.2                | 9,543.3                 | 40.90                  | 234.328           |                    |          |
| 2,700.0   | 2,696.2               | 12,867.8              | 5,574.0               | 6.0              | 148.6         | -34.16                | -8,949.6                            | -1,758.7     | 9,545.8                | 9,504.7                 | 41.13                  | 232.072           |                    |          |
| 2,800.0   | 2,795.9               | 12,867.8              | 5,574.0               | 6.3              | 148.6         | -34.16                | -8,949.6                            | -1,758.7     | 9,508.3                | 9,466.9                 | 41.37                  | 229.859           |                    |          |
| 2,900.0   | 2,895.7               | 12,867.8              | 5,574.0               | 6.5              | 148.6         | -34.16                | -8,949.6                            | -1,758.7     | 9,471.7                | 9,430.1                 | 41.60                  | 227.689           |                    |          |
| 3,000.0   | 2,895.5               | 12,867.8              | 5,574.0               | 6.8              | 148.6         | -34.16                | -8,949.6                            | -1,758.7     | 9,436.0                | 9,394.2                 | 41.83                  | 225.562           |                    |          |
| 3,100.0   | 3,095.2               | 12,867.8              | 5,574.0               | 7.1              | 148.6         | -34.16                | -8,949.6                            | -1,758.7     | 9,401.3                | 9,359.2                 | 42.07                  | 223.479           |                    |          |
| 3,200.0   | 3,195.0               | 12,867.8              | 5,574.0               | 7.3              | 148.6         | -34.16                | -8,949.6                            | -1,758.7     | 9,367.5                | 9,325.2                 | 42.30                  | 221.438           |                    |          |
| 3,300.0   | 3,294.7               | 12,867.8              | 5,574.0               | 7.6              | 148.6         | -34.16                | -8,949.6                            | -1,758.7     | 9,334.7                | 9,292.1                 | 42.54                  | 219.440           |                    |          |
| 3,400.0   | 3,394.5               | 12,867.8              | 5,574.0               | 7.8              | 148.6         | -34.16                | -8,949.6                            | -1,758.7     | 9,302.8                | 9,260.0                 | 42.77                  | 217.485           |                    |          |
| 3,500.0   | 3,494.2               | 12,867.8              | 5,574.0               | 8.1              | 148.6         | -34.16                | -8,949.6                            | -1,758.7     | 9,271.9                | 9,228.8                 | 43.01                  | 215.571           |                    |          |
| 3,600.0   | 3,594.0               | 12,867.8              | 5,574.0               | 8.3              | 148.6         | -34.16                | -8,949.6                            | -1,758.7     | 9,241.9                | 9,198.7                 | 43.25                  | 213.700           |                    |          |
| 3,700.0   | 3,693.7               | 12,867.8              | 5,574.0               | 8.6              | 148.6         | -34.16                | -8,949.6                            | -1,758.7     | 9,213.0                | 9,169.5                 | 43.48                  | 211.871           |                    |          |
| 3,800.0   | 3,793.5               | 12,867.8              | 5,574.0               | 8.9              | 148.6         | -34.16                | -8,949.6                            | -1,758.7     | 9,185.0                | 9,141.3                 | 43.72                  | 210.083           |                    |          |
| 3,900.0   | 3,893.3               | 12,867.8              | 5,574.0               | 9.1              | 148.6         | -34.16                | -8,949.6                            | -1,758.7     | 9,158.0                | 9,114.1                 | 43.96                  | 208.336           |                    |          |
| 4,000.0   | 3,993.0               | 12,867.8              | 5,574.0               | 9.4              | 148.6         | -34.16                | -8,949.6                            | -1,758.7     | 9,132.1                | 9,087.9                 | 44.20                  | 206.630           |                    |          |
| 4,100.0   | 4,092.8               | 12,867.8              | 5,574.0               | 9.6              | 148.6         | -34.16                | -8,949.6                            | -1,758.7     | 9,107.2                | 9,062.8                 | 44.43                  | 204.964           |                    |          |
| 4,200.0   | 4,192.5               | 12,867.8              | 5,574.0               | 9.9              | 148.6         | -34.16                | -8,949.6                            | -1,758.7     | 9,083.3                | 9,038.6                 | 44.67                  | 203.338           |                    |          |
| 4,300.0   | 4,292.3               | 12,867.8              | 5,574.0               | 10.2             | 148.6         | -34.16                | -8,949.6                            | -1,758.7     | 9,060.5                | 9,015.6                 | 44.91                  | 201.752           |                    |          |
| 4,400.0   | 4,392.0               | 12,867.8              | 5,574.0               | 10.4             | 148.6         | -34.16                | -8,949.6                            | -1,758.7     | 9,038.7                | 8,993.5                 | 45.15                  | 200.205           |                    |          |
| 4,500.0   | 4,491.8               | 12,867.8              | 5,574.0               | 10.7             | 148.6         | -34.16                | -8,949.6                            | -1,758.7     | 9,018.0                | 8,972.6                 | 45.39                  | 198.697           |                    |          |
| 4,600.0   | 4,591.6               | 12,867.8              | 5,574.0               | 11.0             | 148.6         | -34.16                | -8,949.6                            | -1,758.7     | 8,998.3                | 8,952.7                 | 45.62                  | 197.228           |                    |          |
| 4,700.0   | 4,691.3               | 12,867.8              | 5,574.0               | 11.2             | 148.6         | -34.16                | -8,949.6                            | -1,758.7     | 8,979.7                | 8,933.8                 | 45.86                  | 195.796           |                    |          |
| 4,800.0   | 4,791.1               | 12,867.8              | 5,574.0               | 11.5             | 148.6         | -34.16                | -8,949.6                            | -1,758.7     | 8,962.2                | 8,916.1                 | 46.10                  | 194.402           |                    |          |
| 4,900.0   | 4,890.8               | 12,867.8              | 5,574.0               | 11.7             | 148.6         | -34.16                | -8,949.6                            | -1,758.7     | 8,945.7                | 8,899.4                 | 46.34                  | 193.046           |                    |          |
| 5,000.0   | 4,990.6               | 12,867.8              | 5,574.0               | 12.0             | 148.6         | -34.16                | -8,949.6                            | -1,758.7     | 8,930.4                | 8,883.8                 | 46.58                  | 191.726           |                    |          |
| 5,100.0   | 5,090.3               | 12,867.8              | 5,574.0               | 12.3             | 148.6         | -34.16                | -8,949.6                            | -1,758.7     | 8,916.1                | 8,869.3                 | 46.82                  | 190.443           |                    |          |
| 5,200.0   | 5,190.1               | 12,867.8              | 5,574.0               | 12.5             | 148.6         | -34.16                | -8,949.6                            | -1,758.7     | 8,903.0                | 8,855.9                 | 47.06                  | 189.196           |                    |          |
| 5,300.0   | 5,289.9               | 12,867.8              | 5,574.0               | 12.8             | 148.6         | -34.16                | -8,949.6                            | -1,758.7     | 8,890.9                | 8,843.6                 | 47.30                  | 187.984           |                    |          |
| 5,400.0   | 5,389.2               | 12,867.8              | 5,574.0               | 13.1             | 148.6         | -34.79                | -8,949.6                            | -1,758.7     | 8,876.9                | 8,831.6                 | 45.27                  | 196.085           |                    |          |
| 5,500.0   | 5,485.0               | 12,867.8              | 5,574.0               | 13.5             | 148.6         | -36.61                | -8,949.6                            | -1,758.7     | 8,849.6                | 8,808.7                 | 40.88                  | 216.463           |                    |          |
| 5,600.0   | 5,573.6               | 12,867.8              | 5,574.0               | 14.2             | 148.6         | -39.65                | -8,949.6                            | -1,758.7     | 8,808.9                | 8,768.4                 | 40.45                  | 217.767           |                    |          |
| 5,700.0   | 5,651.8               | 12,867.8              | 5,574.0               | 15.0             | 148.6         | -44.24                | -8,949.6                            | -1,758.7     | 8,756.0                | 8,704.7                 | 51.26                  | 170.826           |                    |          |
| 5,800.0   | 5,716.7               | 12,867.8              | 5,574.0               | 16.1             | 148.6         | -50.88                | -8,949.6                            | -1,758.7     | 8,692.8                | 8,621.0                 | 71.75                  | 121.157           |                    |          |
| 5,900.0   | 5,766.0               | 12,867.8              | 5,574.0               | 17.3             | 148.6         | -60.16                | -8,949.6                            | -1,758.7     | 8,621.2                | 8,524.1                 | 97.17                  | 88.722            |                    |          |
| 6,000.0   | 5,797.8               | 12,867.8              | 5,574.0               | 18.8             | 148.6         | -72.42                | -8,949.6                            | -1,758.7     | 8,543.9                | 8,422.6                 | 121.34                 | 70.412            |                    |          |
| 6,100.0   | 5,811.0               | 12,867.8              | 5,574.0               | 20.4             | 148.6         | -87.01                | -8,949.6                            | -1,758.7     | 8,463.6                | 8,328.3                 | 135.27                 | 62.569            |                    |          |
| 6,200.0   | 5,811.3               | 12,867.8              | 5,574.0               | 21.9             | 148.6         | -89.85                | -8,949.6                            | -1,758.7     | 8,381.7                | 8,239.9                 | 141.85                 | 59.088            |                    |          |
| 6,300.0   | 5,811.3               | 12,867.8              | 5,574.0               | 23.4             | 148.6         | -89.84                | -8,949.6                            | -1,758.7     | 8,297.4                | 8,148.9                 | 148.56                 | 55.854            |                    |          |
| 6,400.0   | 5,811.3               | 12,867.8              | 5,574.0               | 25.0             | 148.6         | -89.83                | -8,949.6                            | -1,758.7     | 8,210.7                | 8,055.8                 | 154.91                 | 53.003            |                    |          |
| 6,500.0   | 5,811.3               | 12,867.8              | 5,574.0               | 26.6             | 148.6         | -89.81                | -8,949.6                            | -1,758.7     | 8,121.8                | 7,960.9                 | 160.87                 | 50.486            |                    |          |
| 6,600.0   | 5,811.3               | 12,867.8              | 5,574.0               | 28.2             | 148.6         | -89.79                | -8,949.6                            | -1,758.7     | 8,030.8                | 7,864.4                 | 166.41                 | 48.260            |                    |          |
| 6,700.0   | 5,811.3               | 12,867.8              | 5,574.0               | 29.8             | 148.6         | -89.76                | -8,949.6                            | -1,758.7     | 7,938.0                | 7,766.5                 | 171.49                 | 46.289            |                    |          |
| 6,800.0   | 5,811.3               | 12,867.8              | 5,574.0               | 31.4             | 148.6         | -89.72                | -8,949.6                            | -1,758.7     | 7,843.5                | 7,667.4                 | 176.09                 | 44.543            |                    |          |

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



# Cathedral Energy Services

## Anticollision Report

|                           |                               |                                     |  |
|---------------------------|-------------------------------|-------------------------------------|--|
| <b>Company:</b>           | Whiting Petroleum Corporation | <b>Local Co-ordinate Reference:</b> | Well Razor Federal #12F-1301A          |
| <b>Project:</b>           | Weld County, CO               | <b>TVD Reference:</b>               | WELL @ 4953.6usft (Original Well Elev) |
| <b>Reference Site:</b>    | S12-T10N-R58W                 | <b>MD Reference:</b>                | WELL @ 4953.6usft (Original Well Elev) |
| <b>Site Error:</b>        | 0.0usft                       | <b>North Reference:</b>             | True                                   |
| <b>Reference Well:</b>    | Razor Federal #12F-1301A      | <b>Survey Calculation Method:</b>   | Minimum Curvature                      |
| <b>Well Error:</b>        | 0.0usft                       | <b>Output errors are at</b>         | 2.00 sigma                             |
| <b>Reference Wellbore</b> | HZ                            | <b>Database:</b>                    | USA EDM 5000 Multi Users DB            |
| <b>Reference Design:</b>  | Plan #3                       | <b>Offset TVD Reference:</b>        | Offset Datum                           |

| Offset Design S26-T10N-R58W - Razor Federal #26I-2315A - 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 |                             |  |
| 6,900.0   | 5,811.3               | 12,867.8              | 5,574.0               | 33.0             | 148.6         | -89.66                | -8,949.6                            | -1,758.7     | 7,747.5                | 7,567.3                 | 180.19                 | 42.996            |                             |  |
| 7,000.0   | 5,811.3               | 12,867.8              | 5,574.0               | 34.6             | 148.6         | -89.58                | -8,949.6                            | -1,758.7     | 7,650.2                | 7,466.4                 | 183.78                 | 41.627            |                             |  |
| 7,100.0   | 5,811.3               | 12,867.8              | 5,574.0               | 36.2             | 148.6         | -89.45                | -8,949.6                            | -1,758.7     | 7,551.9                | 7,365.1                 | 186.83                 | 40.420            |                             |  |
| 7,200.0   | 5,811.3               | 12,867.8              | 5,574.0               | 37.7             | 148.6         | -89.18                | -8,949.6                            | -1,758.7     | 7,452.9                | 7,263.5                 | 189.34                 | 39.361            |                             |  |
| 7,300.0   | 5,811.3               | 12,867.8              | 5,574.0               | 39.2             | 148.6         | -88.45                | -8,949.6                            | -1,758.7     | 7,353.2                | 7,162.0                 | 191.26                 | 38.446            |                             |  |
| 7,400.0   | 5,811.3               | 12,867.8              | 5,574.0               | 40.7             | 148.6         | -76.28                | -8,949.6                            | -1,758.7     | 7,253.3                | 7,065.7                 | 187.60                 | 38.664            |                             |  |
| 7,500.0   | 5,811.3               | 12,867.8              | 5,574.0               | 42.1             | 148.6         | 87.99                 | -8,949.6                            | -1,758.7     | 7,153.3                | 6,967.6                 | 185.71                 | 38.518            |                             |  |
| 7,600.0   | 5,811.3               | 12,867.8              | 5,574.0               | 43.6             | 148.6         | 88.99                 | -8,949.6                            | -1,758.7     | 7,053.6                | 6,866.8                 | 186.78                 | 37.765            |                             |  |
| 7,700.0   | 5,811.3               | 12,867.8              | 5,574.0               | 45.0             | 148.6         | 88.99                 | -8,949.6                            | -1,758.7     | 6,954.0                | 6,765.7                 | 188.38                 | 36.915            |                             |  |
| 7,800.0   | 5,811.3               | 12,867.8              | 5,574.0               | 46.4             | 148.6         | 88.99                 | -8,949.6                            | -1,758.7     | 6,854.5                | 6,664.5                 | 190.01                 | 36.075            |                             |  |
| 7,900.0   | 5,811.2               | 12,867.8              | 5,574.0               | 47.9             | 148.6         | 88.99                 | -8,949.6                            | -1,758.7     | 6,755.0                | 6,563.3                 | 191.66                 | 35.244            |                             |  |
| 8,000.0   | 5,811.2               | 12,867.8              | 5,574.0               | 49.4             | 148.6         | 88.99                 | -8,949.6                            | -1,758.7     | 6,655.4                | 6,462.1                 | 193.33                 | 34.424            |                             |  |
| 8,100.0   | 5,811.2               | 12,867.8              | 5,574.0               | 50.9             | 148.6         | 88.99                 | -8,949.6                            | -1,758.7     | 6,555.9                | 6,360.9                 | 195.03                 | 33.615            |                             |  |
| 8,200.0   | 5,811.2               | 12,867.8              | 5,574.0               | 52.5             | 148.6         | 88.99                 | -8,949.6                            | -1,758.7     | 6,456.4                | 6,259.7                 | 196.74                 | 32.817            |                             |  |
| 8,300.0   | 5,811.2               | 12,867.8              | 5,574.0               | 54.0             | 148.6         | 88.99                 | -8,949.6                            | -1,758.7     | 6,357.0                | 6,158.5                 | 198.46                 | 32.031            |                             |  |
| 8,400.0   | 5,811.2               | 12,867.8              | 5,574.0               | 55.6             | 148.6         | 88.99                 | -8,949.6                            | -1,758.7     | 6,257.5                | 6,057.3                 | 200.20                 | 31.255            |                             |  |
| 8,500.0   | 5,811.2               | 12,867.8              | 5,574.0               | 57.2             | 148.6         | 88.99                 | -8,949.6                            | -1,758.7     | 6,158.1                | 5,956.1                 | 201.96                 | 30.492            |                             |  |
| 8,600.0   | 5,811.2               | 12,867.8              | 5,574.0               | 58.9             | 148.6         | 88.99                 | -8,949.6                            | -1,758.7     | 6,058.6                | 5,854.9                 | 203.72                 | 29.740            |                             |  |
| 8,700.0   | 5,811.2               | 12,867.8              | 5,574.0               | 60.5             | 148.6         | 88.99                 | -8,949.6                            | -1,758.7     | 5,959.2                | 5,753.7                 | 205.49                 | 28.999            |                             |  |
| 8,800.0   | 5,811.2               | 12,867.8              | 5,574.0               | 62.2             | 148.6         | 88.99                 | -8,949.6                            | -1,758.7     | 5,859.8                | 5,652.6                 | 207.28                 | 28.270            |                             |  |
| 8,900.0   | 5,811.2               | 12,867.8              | 5,574.0               | 63.9             | 148.6         | 88.99                 | -8,949.6                            | -1,758.7     | 5,760.5                | 5,551.4                 | 209.07                 | 27.553            |                             |  |
| 9,000.0   | 5,811.2               | 12,867.8              | 5,574.0               | 65.6             | 148.6         | 88.99                 | -8,949.6                            | -1,758.7     | 5,661.1                | 5,450.3                 | 210.87                 | 26.847            |                             |  |
| 9,100.0   | 5,811.2               | 12,867.8              | 5,574.0               | 67.3             | 148.6         | 88.99                 | -8,949.6                            | -1,758.7     | 5,561.8                | 5,349.1                 | 212.68                 | 26.152            |                             |  |
| 9,200.0   | 5,811.2               | 12,867.8              | 5,574.0               | 69.0             | 148.6         | 88.99                 | -8,949.6                            | -1,758.7     | 5,462.5                | 5,248.0                 | 214.49                 | 25.468            |                             |  |
| 9,300.0   | 5,811.2               | 12,867.8              | 5,574.0               | 70.7             | 148.6         | 88.99                 | -8,949.6                            | -1,758.7     | 5,363.3                | 5,147.0                 | 216.31                 | 24.795            |                             |  |
| 9,400.0   | 5,811.2               | 12,867.8              | 5,574.0               | 72.5             | 148.6         | 88.99                 | -8,949.6                            | -1,758.7     | 5,264.0                | 5,045.9                 | 218.13                 | 24.132            |                             |  |
| 9,500.0   | 5,811.2               | 12,867.8              | 5,574.0               | 74.2             | 148.6         | 88.99                 | -8,949.6                            | -1,758.7     | 5,164.8                | 4,944.9                 | 219.96                 | 23.481            |                             |  |
| 9,600.0   | 5,811.2               | 12,867.8              | 5,574.0               | 76.0             | 148.6         | 88.99                 | -8,949.6                            | -1,758.7     | 5,065.6                | 4,843.8                 | 221.80                 | 22.839            |                             |  |
| 9,700.0   | 5,811.2               | 12,867.8              | 5,574.0               | 77.7             | 148.6         | 88.99                 | -8,949.6                            | -1,758.7     | 4,966.5                | 4,742.9                 | 223.63                 | 22.208            |                             |  |
| 9,800.0   | 5,811.2               | 12,867.8              | 5,574.0               | 79.5             | 148.6         | 88.99                 | -8,949.6                            | -1,758.7     | 4,867.4                | 4,641.9                 | 225.48                 | 21.587            |                             |  |
| 9,900.0   | 5,811.2               | 12,867.8              | 5,574.0               | 81.3             | 148.6         | 88.99                 | -8,949.6                            | -1,758.7     | 4,768.3                | 4,541.0                 | 227.32                 | 20.976            |                             |  |
| 10,000.0  | 5,811.2               | 12,867.8              | 5,574.0               | 83.1             | 148.6         | 88.99                 | -8,949.6                            | -1,758.7     | 4,669.3                | 4,440.1                 | 229.17                 | 20.375            |                             |  |
| 10,100.0  | 5,811.2               | 12,867.8              | 5,574.0               | 84.9             | 148.6         | 88.99                 | -8,949.6                            | -1,758.7     | 4,570.3                | 4,339.3                 | 231.03                 | 19.783            |                             |  |
| 10,200.0  | 5,811.1               | 12,867.8              | 5,574.0               | 86.7             | 148.6         | 88.99                 | -8,949.6                            | -1,758.7     | 4,471.4                | 4,238.5                 | 232.88                 | 19.200            |                             |  |
| 10,300.0  | 5,811.1               | 12,867.8              | 5,574.0               | 88.5             | 148.6         | 88.99                 | -8,949.6                            | -1,758.7     | 4,372.5                | 4,137.7                 | 234.74                 | 18.627            |                             |  |
| 10,400.0  | 5,811.1               | 12,867.8              | 5,574.0               | 90.3             | 148.6         | 88.99                 | -8,949.6                            | -1,758.7     | 4,273.6                | 4,037.0                 | 236.60                 | 18.062            |                             |  |
| 10,500.0  | 5,811.1               | 12,867.8              | 5,574.0               | 92.1             | 148.6         | 88.99                 | -8,949.6                            | -1,758.7     | 4,174.8                | 3,936.4                 | 238.47                 | 17.507            |                             |  |
| 10,600.0  | 5,811.1               | 12,867.8              | 5,574.0               | 93.9             | 148.6         | 88.99                 | -8,949.6                            | -1,758.7     | 4,076.1                | 3,835.8                 | 240.33                 | 16.960            |                             |  |
| 10,700.0  | 5,811.1               | 12,867.8              | 5,574.0               | 95.7             | 148.6         | 88.99                 | -8,949.6                            | -1,758.7     | 3,977.4                | 3,735.2                 | 242.20                 | 16.422            |                             |  |
| 10,800.0  | 5,811.1               | 12,867.8              | 5,574.0               | 97.5             | 148.6         | 88.99                 | -8,949.6                            | -1,758.7     | 3,878.8                | 3,634.7                 | 244.07                 | 15.892            |                             |  |
| 10,900.0  | 5,811.1               | 12,867.8              | 5,574.0               | 99.4             | 148.6         | 88.99                 | -8,949.6                            | -1,758.7     | 3,780.3                | 3,534.3                 | 245.95                 | 15.370            |                             |  |
| 11,000.0  | 5,811.1               | 12,867.8              | 5,574.0               | 101.2            | 148.6         | 88.99                 | -8,949.6                            | -1,758.7     | 3,681.8                | 3,434.0                 | 247.82                 | 14.857            |                             |  |
| 11,100.0  | 5,811.1               | 12,867.8              | 5,574.0               | 103.0            | 148.6         | 88.99                 | -8,949.6                            | -1,758.7     | 3,583.5                | 3,333.8                 | 249.70                 | 14.351            |                             |  |
| 11,200.0  | 5,811.1               | 12,867.8              | 5,574.0               | 104.9            | 148.6         | 88.99                 | -8,949.6                            | -1,758.7     | 3,485.2                | 3,233.6                 | 251.58                 | 13.854            |                             |  |
| 11,300.0  | 5,811.1               | 12,867.8              | 5,574.0               | 106.7            | 148.6         | 88.99                 | -8,949.6                            | -1,758.7     | 3,387.1                | 3,133.6                 | 253.46                 | 13.363            |                             |  |
| 11,400.0  | 5,811.1               | 12,867.8              | 5,574.0               | 108.6            | 148.6         | 88.99                 | -8,949.6                            | -1,758.7     | 3,289.0                | 3,033.7                 | 255.34                 | 12.881            |                             |  |
| 11,500.0  | 5,811.1               | 12,867.8              | 5,574.0               | 110.4            | 148.6         | 88.99                 | -8,949.6                            | -1,758.7     | 3,191.1                | 2,933.8                 | 257.22                 | 12.406            |                             |  |
| 11,600.0  | 5,811.1               | 12,867.8              | 5,574.0               | 112.3            | 148.6         | 88.99                 | -8,949.6                            | -1,758.7     | 3,093.3                | 2,834.2                 | 259.10                 | 11.938            |                             |  |
| 11,700.0  | 5,811.1               | 12,867.8              | 5,574.0               | 114.1            | 148.6         | 88.99                 | -8,949.6                            | -1,758.7     | 2,995.6                | 2,734.6                 | 260.99                 | 11.478            |                             |  |
| 11,800.0  | 5,811.1               | 12,867.8              | 5,574.0               | 116.0            | 148.6         | 88.99                 | -8,949.6                            | -1,758.7     | 2,898.1                | 2,635.2                 | 262.88                 | 11.025            |                             |  |
| 11,900.0  | 5,811.1               | 12,867.8              | 5,574.0               | 117.8            | 148.6         | 88.99                 | -8,949.6                            | -1,758.7     | 2,800.8                | 2,536.0                 | 264.76                 | 10.578            |                             |  |
| 12,000.0  | 5,811.1               | 12,867.8              | 5,574.0               | 119.7            | 148.6         | 88.99                 | -8,949.6                            | -1,758.7     | 2,703.7                | 2,437.0                 | 266.65                 | 10.139            |                             |  |

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



# Cathedral Energy Services

## Anticollision Report

|                           |                               |                                     |  |
|---------------------------|-------------------------------|-------------------------------------|--|
| <b>Company:</b>           | Whiting Petroleum Corporation | <b>Local Co-ordinate Reference:</b> | Well Razor Federal #12F-1301A          |
| <b>Project:</b>           | Weld County, CO               | <b>TVD Reference:</b>               | WELL @ 4953.6usft (Original Well Elev) |
| <b>Reference Site:</b>    | S12-T10N-R58W                 | <b>MD Reference:</b>                | WELL @ 4953.6usft (Original Well Elev) |
| <b>Site Error:</b>        | 0.0usft                       | <b>North Reference:</b>             | True                                   |
| <b>Reference Well:</b>    | Razor Federal #12F-1301A      | <b>Survey Calculation Method:</b>   | Minimum Curvature                      |
| <b>Well Error:</b>        | 0.0usft                       | <b>Output errors are at</b>         | 2.00 sigma                             |
| <b>Reference Wellbore</b> | HZ                            | <b>Database:</b>                    | USA EDM 5000 Multi Users DB            |
| <b>Reference Design:</b>  | Plan #3                       | <b>Offset TVD Reference:</b>        | Offset Datum                           |

| Offset Design S26-T10N-R58W - Razor Federal #26I-2315A - 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  |            |
| 12,100.0  | 5,811.1               | 12,867.8              | 5,574.0               | 121.6            | 148.6         | 88.99                 | -8,949.6                            | -1,758.7     | 2,606.7                | 2,338.2                 | 268.54                 | 9.707              |            |
| 12,200.0  | 5,811.1               | 12,867.8              | 5,574.0               | 123.4            | 148.6         | 88.99                 | -8,949.6                            | -1,758.7     | 2,510.1                | 2,239.6                 | 270.43                 | 9.282              |            |
| 12,300.0  | 5,811.1               | 12,867.8              | 5,574.0               | 125.3            | 148.6         | 88.99                 | -8,949.6                            | -1,758.7     | 2,413.7                | 2,141.4                 | 272.32                 | 8.863              |            |
| 12,400.0  | 5,811.1               | 12,867.8              | 5,574.0               | 127.2            | 148.6         | 88.99                 | -8,949.6                            | -1,758.7     | 2,317.6                | 2,043.4                 | 274.22                 | 8.452              |            |
| 12,500.0  | 5,811.0               | 12,867.8              | 5,574.0               | 129.0            | 148.6         | 88.99                 | -8,949.6                            | -1,758.7     | 2,221.8                | 1,945.7                 | 276.11                 | 8.047              |            |
| 12,600.0  | 5,811.0               | 12,867.8              | 5,574.0               | 130.9            | 148.6         | 88.99                 | -8,949.6                            | -1,758.7     | 2,126.5                | 1,848.5                 | 278.00                 | 7.649              |            |
| 12,700.0  | 5,811.0               | 12,867.8              | 5,574.0               | 132.8            | 148.6         | 88.99                 | -8,949.6                            | -1,758.7     | 2,031.6                | 1,751.7                 | 279.90                 | 7.258              |            |
| 12,800.0  | 5,811.0               | 12,867.8              | 5,574.0               | 134.6            | 148.6         | 88.99                 | -8,949.6                            | -1,758.7     | 1,937.2                | 1,655.4                 | 281.79                 | 6.874              |            |
| 12,900.0  | 5,811.0               | 12,867.8              | 5,574.0               | 136.5            | 148.6         | 88.99                 | -8,949.6                            | -1,758.7     | 1,843.4                | 1,559.7                 | 283.69                 | 6.498              |            |
| 13,000.0  | 5,811.0               | 12,867.8              | 5,574.0               | 138.4            | 148.6         | 88.99                 | -8,949.6                            | -1,758.7     | 1,750.3                | 1,464.7                 | 285.59                 | 6.129              |            |
| 13,100.0  | 5,811.0               | 12,867.8              | 5,574.0               | 140.3            | 148.6         | 88.99                 | -8,949.6                            | -1,758.7     | 1,658.0                | 1,370.5                 | 287.49                 | 5.767              |            |
| 13,200.0  | 5,811.0               | 12,867.8              | 5,574.0               | 142.1            | 148.6         | 88.99                 | -8,949.6                            | -1,758.7     | 1,566.6                | 1,277.2                 | 289.39                 | 5.414              |            |
| 13,300.0  | 5,811.0               | 12,867.8              | 5,574.0               | 144.0            | 148.6         | 88.99                 | -8,949.6                            | -1,758.7     | 1,476.4                | 1,185.1                 | 291.28                 | 5.068              |            |
| 13,400.0  | 5,811.0               | 12,867.8              | 5,574.0               | 145.9            | 148.6         | 88.99                 | -8,949.6                            | -1,758.7     | 1,387.4                | 1,094.3                 | 293.18                 | 4.732              |            |
| 13,500.0  | 5,811.0               | 12,867.8              | 5,574.0               | 147.8            | 148.6         | 88.99                 | -8,949.6                            | -1,758.7     | 1,300.1                | 1,005.1                 | 295.08                 | 4.406              |            |
| 13,600.0  | 5,811.0               | 12,867.8              | 5,574.0               | 149.7            | 148.6         | 88.99                 | -8,949.6                            | -1,758.7     | 1,214.8                | 917.8                   | 296.99                 | 4.090              |            |
| 13,700.0  | 5,811.0               | 12,867.8              | 5,574.0               | 151.6            | 148.6         | 88.99                 | -8,949.6                            | -1,758.7     | 1,131.9                | 833.0                   | 298.89                 | 3.787              |            |
| 13,800.0  | 5,811.0               | 12,867.8              | 5,574.0               | 153.4            | 148.6         | 88.99                 | -8,949.6                            | -1,758.7     | 1,051.9                | 751.1                   | 300.79                 | 3.497              |            |
| 13,900.0  | 5,811.0               | 12,867.8              | 5,574.0               | 155.3            | 148.6         | 88.99                 | -8,949.6                            | -1,758.7     | 975.6                  | 672.9                   | 302.69                 | 3.223              |            |
| 13,919.8  | 5,811.0               | 12,867.8              | 5,574.0               | 155.7            | 148.6         | 88.99                 | -8,949.6                            | -1,758.7     | 961.0                  | 658.0                   | 303.07                 | 3.171              | CC, ES, SF |

# Cathedral Energy Services

## Anticollision Report

|                           |                               |                                     |  |
|---------------------------|-------------------------------|-------------------------------------|--|
| <b>Company:</b>           | Whiting Petroleum Corporation | <b>Local Co-ordinate Reference:</b> | Well Razor Federal #12F-1301A          |
| <b>Project:</b>           | Weld County, CO               | <b>TVD Reference:</b>               | WELL @ 4953.6usft (Original Well Elev) |
| <b>Reference Site:</b>    | S12-T10N-R58W                 | <b>MD Reference:</b>                | WELL @ 4953.6usft (Original Well Elev) |
| <b>Site Error:</b>        | 0.0usft                       | <b>North Reference:</b>             | True                                   |
| <b>Reference Well:</b>    | Razor Federal #12F-1301A      | <b>Survey Calculation Method:</b>   | Minimum Curvature                      |
| <b>Well Error:</b>        | 0.0usft                       | <b>Output errors are at</b>         | 2.00 sigma                             |
| <b>Reference Wellbore</b> | HZ                            | <b>Database:</b>                    | USA EDM 5000 Multi Users DB            |
| <b>Reference Design:</b>  | Plan #3                       | <b>Offset TVD Reference:</b>        | Offset Datum                           |

| Offset Design S26-T10N-R58W - Razor Federal #26I-2316B - HZ - Plan #2 |                       |                       |                       |                  |               |                       |                                     |              |                        |                         |                        |                   | Offset Site Error: | 0.0 usft |
|---|-----------------------|-----------------------|-----------------------|------------------|---------------|-----------------------|-------------------------------------|--------------|------------------------|-------------------------|------------------------|-------------------|--------------------|----------|
| Survey Program: O-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            |          |
| 1,600.0   | 1,598.9               | 13,066.1              | 5,661.0               | 3.4              | 149.2         | -36.31                | -8,947.6                            | -1,428.1     | 9,998.2                | 9,968.2                 | 30.02                  | 333.083           |                    |          |
| 1,700.0   | 1,698.6               | 13,066.1              | 5,661.0               | 3.6              | 149.2         | -36.31                | -8,947.6                            | -1,428.1     | 9,950.7                | 9,920.5                 | 30.23                  | 329.127           |                    |          |
| 1,800.0   | 1,798.4               | 13,066.1              | 5,661.0               | 3.8              | 149.2         | -36.31                | -8,947.6                            | -1,428.1     | 9,903.9                | 9,873.5                 | 30.45                  | 325.219           |                    |          |
| 1,900.0   | 1,898.1               | 13,066.1              | 5,661.0               | 4.1              | 149.2         | -36.31                | -8,947.6                            | -1,428.1     | 9,858.0                | 9,827.3                 | 30.68                  | 321.365           |                    |          |
| 2,000.0   | 1,997.9               | 13,066.1              | 5,661.0               | 4.3              | 149.2         | -36.31                | -8,947.6                            | -1,428.1     | 9,812.8                | 9,781.9                 | 30.90                  | 317.569           |                    |          |
| 2,100.0   | 2,097.6               | 13,066.1              | 5,661.0               | 4.5              | 149.2         | -36.31                | -8,947.6                            | -1,428.1     | 9,768.4                | 9,737.3                 | 31.13                  | 313.835           |                    |          |
| 2,200.0   | 2,197.4               | 13,066.1              | 5,661.0               | 4.8              | 149.2         | -36.31                | -8,947.6                            | -1,428.1     | 9,724.9                | 9,693.6                 | 31.35                  | 310.165           |                    |          |
| 2,300.0   | 2,297.2               | 13,066.1              | 5,661.0               | 5.0              | 149.2         | -36.31                | -8,947.6                            | -1,428.1     | 9,682.2                | 9,650.6                 | 31.58                  | 306.562           |                    |          |
| 2,400.0   | 2,396.9               | 13,066.1              | 5,661.0               | 5.3              | 149.2         | -36.31                | -8,947.6                            | -1,428.1     | 9,640.4                | 9,608.6                 | 31.81                  | 303.025           |                    |          |
| 2,500.0   | 2,496.7               | 13,066.1              | 5,661.0               | 5.5              | 149.2         | -36.31                | -8,947.6                            | -1,428.1     | 9,599.4                | 9,567.4                 | 32.05                  | 299.556           |                    |          |
| 2,600.0   | 2,596.4               | 13,066.1              | 5,661.0               | 5.8              | 149.2         | -36.31                | -8,947.6                            | -1,428.1     | 9,559.3                | 9,527.0                 | 32.28                  | 296.155           |                    |          |
| 2,700.0   | 2,696.2               | 13,066.1              | 5,661.0               | 6.0              | 149.2         | -36.31                | -8,947.6                            | -1,428.1     | 9,520.1                | 9,487.5                 | 32.51                  | 292.823           |                    |          |
| 2,800.0   | 2,795.9               | 13,066.1              | 5,661.0               | 6.3              | 149.2         | -36.31                | -8,947.6                            | -1,428.1     | 9,481.7                | 9,449.0                 | 32.75                  | 289.559           |                    |          |
| 2,900.0   | 2,895.7               | 13,066.1              | 5,661.0               | 6.5              | 149.2         | -36.31                | -8,947.6                            | -1,428.1     | 9,444.3                | 9,411.3                 | 32.98                  | 286.363           |                    |          |
| 3,000.0   | 2,895.5               | 13,066.1              | 5,661.0               | 6.8              | 149.2         | -36.31                | -8,947.6                            | -1,428.1     | 9,407.8                | 9,374.6                 | 33.22                  | 283.235           |                    |          |
| 3,100.0   | 3,095.2               | 13,066.1              | 5,661.0               | 7.1              | 149.2         | -36.31                | -8,947.6                            | -1,428.1     | 9,372.2                | 9,338.7                 | 33.45                  | 280.175           |                    |          |
| 3,200.0   | 3,195.0               | 13,066.1              | 5,661.0               | 7.3              | 149.2         | -36.31                | -8,947.6                            | -1,428.1     | 9,337.5                | 9,303.8                 | 33.69                  | 277.181           |                    |          |
| 3,300.0   | 3,294.7               | 13,066.1              | 5,661.0               | 7.6              | 149.2         | -36.31                | -8,947.6                            | -1,428.1     | 9,303.8                | 9,269.9                 | 33.92                  | 274.254           |                    |          |
| 3,400.0   | 3,394.5               | 13,066.1              | 5,661.0               | 7.8              | 149.2         | -36.31                | -8,947.6                            | -1,428.1     | 9,271.0                | 9,236.9                 | 34.16                  | 271.392           |                    |          |
| 3,500.0   | 3,494.2               | 13,066.1              | 5,661.0               | 8.1              | 149.2         | -36.31                | -8,947.6                            | -1,428.1     | 9,239.2                | 9,204.8                 | 34.40                  | 268.595           |                    |          |
| 3,600.0   | 3,594.0               | 13,066.1              | 5,661.0               | 8.3              | 149.2         | -36.31                | -8,947.6                            | -1,428.1     | 9,208.4                | 9,173.8                 | 34.64                  | 265.862           |                    |          |
| 3,700.0   | 3,693.7               | 13,066.1              | 5,661.0               | 8.6              | 149.2         | -36.31                | -8,947.6                            | -1,428.1     | 9,178.6                | 9,143.7                 | 34.87                  | 263.192           |                    |          |
| 3,800.0   | 3,793.5               | 13,066.1              | 5,661.0               | 8.9              | 149.2         | -36.31                | -8,947.6                            | -1,428.1     | 9,149.8                | 9,114.7                 | 35.11                  | 260.585           |                    |          |
| 3,900.0   | 3,893.3               | 13,066.1              | 5,661.0               | 9.1              | 149.2         | -36.31                | -8,947.6                            | -1,428.1     | 9,121.9                | 9,086.6                 | 35.35                  | 258.040           |                    |          |
| 4,000.0   | 3,993.0               | 13,066.1              | 5,661.0               | 9.4              | 149.2         | -36.31                | -8,947.6                            | -1,428.1     | 9,095.1                | 9,059.5                 | 35.59                  | 255.556           |                    |          |
| 4,100.0   | 4,092.8               | 13,066.1              | 5,661.0               | 9.6              | 149.2         | -36.31                | -8,947.6                            | -1,428.1     | 9,069.3                | 9,033.5                 | 35.83                  | 253.133           |                    |          |
| 4,200.0   | 4,192.5               | 13,066.1              | 5,661.0               | 9.9              | 149.2         | -36.31                | -8,947.6                            | -1,428.1     | 9,044.6                | 9,008.5                 | 36.07                  | 250.768           |                    |          |
| 4,300.0   | 4,292.3               | 13,066.1              | 5,661.0               | 10.2             | 149.2         | -36.31                | -8,947.6                            | -1,428.1     | 9,020.8                | 8,984.5                 | 36.31                  | 248.463           |                    |          |
| 4,400.0   | 4,392.0               | 13,066.1              | 5,661.0               | 10.4             | 149.2         | -36.31                | -8,947.6                            | -1,428.1     | 8,998.2                | 8,961.6                 | 36.55                  | 246.215           |                    |          |
| 4,500.0   | 4,491.8               | 13,066.1              | 5,661.0               | 10.7             | 149.2         | -36.31                | -8,947.6                            | -1,428.1     | 8,976.6                | 8,939.8                 | 36.79                  | 244.024           |                    |          |
| 4,600.0   | 4,591.6               | 13,066.1              | 5,661.0               | 11.0             | 149.2         | -36.31                | -8,947.6                            | -1,428.1     | 8,956.0                | 8,919.0                 | 37.03                  | 241.889           |                    |          |
| 4,700.0   | 4,691.3               | 13,066.1              | 5,661.0               | 11.2             | 149.2         | -36.31                | -8,947.6                            | -1,428.1     | 8,936.5                | 8,899.3                 | 37.27                  | 239.810           |                    |          |
| 4,800.0   | 4,791.1               | 13,066.1              | 5,661.0               | 11.5             | 149.2         | -36.31                | -8,947.6                            | -1,428.1     | 8,918.1                | 8,880.6                 | 37.51                  | 237.785           |                    |          |
| 4,900.0   | 4,890.8               | 13,066.1              | 5,661.0               | 11.7             | 149.2         | -36.31                | -8,947.6                            | -1,428.1     | 8,900.8                | 8,863.1                 | 37.75                  | 235.814           |                    |          |
| 5,000.0   | 4,990.6               | 13,066.1              | 5,661.0               | 12.0             | 149.2         | -36.31                | -8,947.6                            | -1,428.1     | 8,884.6                | 8,846.6                 | 37.99                  | 233.897           |                    |          |
| 5,100.0   | 5,090.3               | 13,066.1              | 5,661.0               | 12.3             | 149.2         | -36.31                | -8,947.6                            | -1,428.1     | 8,869.5                | 8,831.3                 | 38.23                  | 232.031           |                    |          |
| 5,200.0   | 5,190.1               | 13,066.1              | 5,661.0               | 12.5             | 149.2         | -36.31                | -8,947.6                            | -1,428.1     | 8,855.5                | 8,817.0                 | 38.47                  | 230.217           |                    |          |
| 5,300.0   | 5,289.9               | 13,066.1              | 5,661.0               | 12.8             | 149.2         | -36.31                | -8,947.6                            | -1,428.1     | 8,842.6                | 8,803.9                 | 38.71                  | 228.453           |                    |          |
| 5,400.0   | 5,389.2               | 13,066.1              | 5,661.0               | 13.1             | 149.2         | -37.00                | -8,947.6                            | -1,428.1     | 8,827.7                | 8,790.6                 | 37.16                  | 237.543           |                    |          |
| 5,500.0   | 5,485.0               | 13,066.1              | 5,661.0               | 13.5             | 149.2         | -38.95                | -8,947.6                            | -1,428.1     | 8,800.1                | 8,763.5                 | 36.56                  | 240.675           |                    |          |
| 5,600.0   | 5,573.6               | 13,066.1              | 5,661.0               | 14.2             | 149.2         | -42.14                | -8,947.6                            | -1,428.1     | 8,759.5                | 8,715.7                 | 43.75                  | 200.197           |                    |          |
| 5,700.0   | 5,651.8               | 13,066.1              | 5,661.0               | 15.0             | 149.2         | -46.88                | -8,947.6                            | -1,428.1     | 8,707.2                | 8,647.7                 | 59.51                  | 146.323           |                    |          |
| 5,800.0   | 5,716.7               | 13,066.1              | 5,661.0               | 16.1             | 149.2         | -53.61                | -8,947.6                            | -1,428.1     | 8,644.9                | 8,563.8                 | 81.17                  | 106.504           |                    |          |
| 5,900.0   | 5,766.0               | 13,066.1              | 5,661.0               | 17.3             | 149.2         | -62.79                | -8,947.6                            | -1,428.1     | 8,574.9                | 8,469.2                 | 105.66                 | 81.158            |                    |          |
| 6,000.0   | 5,797.8               | 13,066.1              | 5,661.0               | 18.8             | 149.2         | -74.56                | -8,947.6                            | -1,428.1     | 8,499.4                | 8,371.8                 | 127.59                 | 66.612            |                    |          |
| 6,100.0   | 5,811.0               | 13,066.1              | 5,661.0               | 20.4             | 149.2         | -88.19                | -8,947.6                            | -1,428.1     | 8,421.2                | 8,281.7                 | 139.42                 | 60.402            |                    |          |
| 6,200.0   | 5,811.3               | 13,066.1              | 5,661.0               | 21.9             | 149.2         | -90.88                | -8,947.6                            | -1,428.1     | 8,341.6                | 8,196.1                 | 145.53                 | 57.319            |                    |          |
| 6,300.0   | 5,811.3               | 13,066.1              | 5,661.0               | 23.4             | 149.2         | -90.94                | -8,947.6                            | -1,428.1     | 8,259.5                | 8,107.6                 | 151.92                 | 54.366            |                    |          |
| 6,400.0   | 5,811.3               | 13,066.1              | 5,661.0               | 25.0             | 149.2         | -91.03                | -8,947.6                            | -1,428.1     | 8,174.9                | 8,016.9                 | 157.96                 | 51.754            |                    |          |
| 6,500.0   | 5,811.3               | 13,066.1              | 5,661.0               | 26.6             | 149.2         | -91.13                | -8,947.6                            | -1,428.1     | 8,087.9                | 7,924.3                 | 163.59                 | 49.441            |                    |          |
| 6,600.0   | 5,811.3               | 13,066.1              | 5,661.0               | 28.2             | 149.2         | -91.25                | -8,947.6                            | -1,428.1     | 7,998.7                | 7,829.9                 | 168.78                 | 47.390            |                    |          |
| 6,700.0   | 5,811.3               | 13,066.1              | 5,661.0               | 29.8             | 149.2         | -91.41                | -8,947.6                            | -1,428.1     | 7,907.4                | 7,733.9                 | 173.52                 | 45.572            |                    |          |

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

# Cathedral Energy Services

## Anticollision Report

|                           |                               |                                     |  |
|---------------------------|-------------------------------|-------------------------------------|--|
| <b>Company:</b>           | Whiting Petroleum Corporation | <b>Local Co-ordinate Reference:</b> | Well Razor Federal #12F-1301A          |
| <b>Project:</b>           | Weld County, CO               | <b>TVD Reference:</b>               | WELL @ 4953.6usft (Original Well Elev) |
| <b>Reference Site:</b>    | S12-T10N-R58W                 | <b>MD Reference:</b>                | WELL @ 4953.6usft (Original Well Elev) |
| <b>Site Error:</b>        | 0.0usft                       | <b>North Reference:</b>             | True                                   |
| <b>Reference Well:</b>    | Razor Federal #12F-1301A      | <b>Survey Calculation Method:</b>   | Minimum Curvature                      |
| <b>Well Error:</b>        | 0.0usft                       | <b>Output errors are at</b>         | 2.00 sigma                             |
| <b>Reference Wellbore</b> | HZ                            | <b>Database:</b>                    | USA EDM 5000 Multi Users DB            |
| <b>Reference Design:</b>  | Plan #3                       | <b>Offset TVD Reference:</b>        | Offset Datum                           |

| Offset Design S26-T10N-R58W - Razor Federal #26I-2316B - 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 |                    |          |
| 6,800.0   | 5,811.3               | 13,066.1              | 5,661.0               | 31.4             | 149.2         | -91.61                | -8,947.6                            | -1,428.1     | 7,814.4                | 7,636.6                 | 177.76                 | 43.959            |                    |          |
| 6,900.0   | 5,811.3               | 13,066.1              | 5,661.0               | 33.0             | 149.2         | -91.88                | -8,947.6                            | -1,428.1     | 7,719.7                | 7,538.2                 | 181.50                 | 42.533            |                    |          |
| 7,000.0   | 5,811.3               | 13,066.1              | 5,661.0               | 34.6             | 149.2         | -92.26                | -8,947.6                            | -1,428.1     | 7,623.5                | 7,438.8                 | 184.71                 | 41.274            |                    |          |
| 7,100.0   | 5,811.3               | 13,066.1              | 5,661.0               | 36.2             | 149.2         | -92.83                | -8,947.6                            | -1,428.1     | 7,526.1                | 7,338.8                 | 187.35                 | 40.171            |                    |          |
| 7,200.0   | 5,811.3               | 13,066.1              | 5,661.0               | 37.7             | 149.2         | -93.78                | -8,947.6                            | -1,428.1     | 7,427.7                | 7,238.4                 | 189.38                 | 39.221            |                    |          |
| 7,300.0   | 5,811.3               | 13,066.1              | 5,661.0               | 39.2             | 149.2         | -95.69                | -8,947.6                            | -1,428.1     | 7,328.6                | 7,138.0                 | 190.58                 | 38.454            |                    |          |
| 7,400.0   | 5,811.3               | 13,066.1              | 5,661.0               | 40.7             | 149.2         | -101.33               | -8,947.6                            | -1,428.1     | 7,228.9                | 7,039.6                 | 189.33                 | 38.182            |                    |          |
| 7,500.0   | 5,811.3               | 13,066.1              | 5,661.0               | 42.1             | 149.2         | -179.57               | -8,947.6                            | -1,428.1     | 7,129.0                | 7,060.0                 | 68.99                  | 103.328           |                    |          |
| 7,600.0   | 5,811.3               | 13,066.1              | 5,661.0               | 43.6             | 149.2         | 103.09                | -8,947.6                            | -1,428.1     | 7,029.0                | 6,846.1                 | 182.86                 | 38.439            |                    |          |
| 7,700.0   | 5,811.3               | 13,066.1              | 5,661.0               | 45.0             | 149.2         | 103.09                | -8,947.6                            | -1,428.1     | 6,929.1                | 6,744.7                 | 184.43                 | 37.571            |                    |          |
| 7,800.0   | 5,811.3               | 13,066.1              | 5,661.0               | 46.4             | 149.2         | 103.09                | -8,947.6                            | -1,428.1     | 6,829.2                | 6,643.2                 | 186.02                 | 36.712            |                    |          |
| 7,900.0   | 5,811.2               | 13,066.1              | 5,661.0               | 47.9             | 149.2         | 103.09                | -8,947.6                            | -1,428.1     | 6,729.4                | 6,541.7                 | 187.64                 | 35.863            |                    |          |
| 8,000.0   | 5,811.2               | 13,066.1              | 5,661.0               | 49.4             | 149.2         | 103.09                | -8,947.6                            | -1,428.1     | 6,629.5                | 6,440.2                 | 189.28                 | 35.024            |                    |          |
| 8,100.0   | 5,811.2               | 13,066.1              | 5,661.0               | 50.9             | 149.2         | 103.09                | -8,947.6                            | -1,428.1     | 6,529.6                | 6,338.7                 | 190.94                 | 34.197            |                    |          |
| 8,200.0   | 5,811.2               | 13,066.1              | 5,661.0               | 52.5             | 149.2         | 103.09                | -8,947.6                            | -1,428.1     | 6,429.7                | 6,237.1                 | 192.61                 | 33.381            |                    |          |
| 8,300.0   | 5,811.2               | 13,066.1              | 5,661.0               | 54.0             | 149.2         | 103.09                | -8,947.6                            | -1,428.1     | 6,329.9                | 6,135.6                 | 194.31                 | 32.577            |                    |          |
| 8,400.0   | 5,811.2               | 13,066.1              | 5,661.0               | 55.6             | 149.2         | 103.09                | -8,947.6                            | -1,428.1     | 6,230.0                | 6,034.0                 | 196.01                 | 31.784            |                    |          |
| 8,500.0   | 5,811.2               | 13,066.1              | 5,661.0               | 57.2             | 149.2         | 103.09                | -8,947.6                            | -1,428.1     | 6,130.2                | 5,932.4                 | 197.72                 | 31.004            |                    |          |
| 8,600.0   | 5,811.2               | 13,066.1              | 5,661.0               | 58.9             | 149.2         | 103.09                | -8,947.6                            | -1,428.1     | 6,030.3                | 5,830.9                 | 199.45                 | 30.235            |                    |          |
| 8,700.0   | 5,811.2               | 13,066.1              | 5,661.0               | 60.5             | 149.2         | 103.09                | -8,947.6                            | -1,428.1     | 5,930.5                | 5,729.3                 | 201.19                 | 29.477            |                    |          |
| 8,800.0   | 5,811.2               | 13,066.1              | 5,661.0               | 62.2             | 149.2         | 103.09                | -8,947.6                            | -1,428.1     | 5,830.6                | 5,627.7                 | 202.93                 | 28.732            |                    |          |
| 8,900.0   | 5,811.2               | 13,066.1              | 5,661.0               | 63.9             | 149.2         | 103.09                | -8,947.6                            | -1,428.1     | 5,730.8                | 5,526.1                 | 204.69                 | 27.998            |                    |          |
| 9,000.0   | 5,811.2               | 13,066.1              | 5,661.0               | 65.6             | 149.2         | 103.09                | -8,947.6                            | -1,428.1     | 5,631.0                | 5,424.5                 | 206.45                 | 27.275            |                    |          |
| 9,100.0   | 5,811.2               | 13,066.1              | 5,661.0               | 67.3             | 149.2         | 103.09                | -8,947.6                            | -1,428.1     | 5,531.1                | 5,322.9                 | 208.22                 | 26.564            |                    |          |
| 9,200.0   | 5,811.2               | 13,066.1              | 5,661.0               | 69.0             | 149.2         | 103.09                | -8,947.6                            | -1,428.1     | 5,431.3                | 5,221.3                 | 209.99                 | 25.864            |                    |          |
| 9,300.0   | 5,811.2               | 13,066.1              | 5,661.0               | 70.7             | 149.2         | 103.09                | -8,947.6                            | -1,428.1     | 5,331.5                | 5,119.7                 | 211.77                 | 25.176            |                    |          |
| 9,400.0   | 5,811.2               | 13,066.1              | 5,661.0               | 72.5             | 149.2         | 103.09                | -8,947.6                            | -1,428.1     | 5,231.7                | 5,018.2                 | 213.56                 | 24.498            |                    |          |
| 9,500.0   | 5,811.2               | 13,066.1              | 5,661.0               | 74.2             | 149.2         | 103.09                | -8,947.6                            | -1,428.1     | 5,131.9                | 4,916.6                 | 215.35                 | 23.831            |                    |          |
| 9,600.0   | 5,811.2               | 13,066.1              | 5,661.0               | 76.0             | 149.2         | 103.09                | -8,947.6                            | -1,428.1     | 5,032.1                | 4,815.0                 | 217.14                 | 23.174            |                    |          |
| 9,700.0   | 5,811.2               | 13,066.1              | 5,661.0               | 77.7             | 149.2         | 103.09                | -8,947.6                            | -1,428.1     | 4,932.4                | 4,713.4                 | 218.94                 | 22.528            |                    |          |
| 9,800.0   | 5,811.2               | 13,066.1              | 5,661.0               | 79.5             | 149.2         | 103.09                | -8,947.6                            | -1,428.1     | 4,832.6                | 4,611.9                 | 220.75                 | 21.892            |                    |          |
| 9,900.0   | 5,811.2               | 13,066.1              | 5,661.0               | 81.3             | 149.2         | 103.09                | -8,947.6                            | -1,428.1     | 4,732.8                | 4,510.3                 | 222.55                 | 21.266            |                    |          |
| 10,000.0  | 5,811.2               | 13,066.1              | 5,661.0               | 83.1             | 149.2         | 103.09                | -8,947.6                            | -1,428.1     | 4,633.1                | 4,408.7                 | 224.36                 | 20.650            |                    |          |
| 10,100.0  | 5,811.2               | 13,066.1              | 5,661.0               | 84.9             | 149.2         | 103.09                | -8,947.6                            | -1,428.1     | 4,533.4                | 4,307.2                 | 226.18                 | 20.043            |                    |          |
| 10,200.0  | 5,811.1               | 13,066.1              | 5,661.0               | 86.7             | 149.2         | 103.09                | -8,947.6                            | -1,428.1     | 4,433.6                | 4,205.6                 | 227.99                 | 19.446            |                    |          |
| 10,300.0  | 5,811.1               | 13,066.1              | 5,661.0               | 88.5             | 149.2         | 103.09                | -8,947.6                            | -1,428.1     | 4,333.9                | 4,104.1                 | 229.81                 | 18.858            |                    |          |
| 10,400.0  | 5,811.1               | 13,066.1              | 5,661.0               | 90.3             | 149.2         | 103.09                | -8,947.6                            | -1,428.1     | 4,234.2                | 4,002.6                 | 231.64                 | 18.280            |                    |          |
| 10,500.0  | 5,811.1               | 13,066.1              | 5,661.0               | 92.1             | 149.2         | 103.09                | -8,947.6                            | -1,428.1     | 4,134.5                | 3,901.1                 | 233.46                 | 17.710            |                    |          |
| 10,600.0  | 5,811.1               | 13,066.1              | 5,661.0               | 93.9             | 149.2         | 103.09                | -8,947.6                            | -1,428.1     | 4,034.9                | 3,799.6                 | 235.29                 | 17.149            |                    |          |
| 10,700.0  | 5,811.1               | 13,066.1              | 5,661.0               | 95.7             | 149.2         | 103.09                | -8,947.6                            | -1,428.1     | 3,935.2                | 3,698.1                 | 237.12                 | 16.596            |                    |          |
| 10,800.0  | 5,811.1               | 13,066.1              | 5,661.0               | 97.5             | 149.2         | 103.09                | -8,947.6                            | -1,428.1     | 3,835.6                | 3,596.6                 | 238.95                 | 16.052            |                    |          |
| 10,900.0  | 5,811.1               | 13,066.1              | 5,661.0               | 99.4             | 149.2         | 103.09                | -8,947.6                            | -1,428.1     | 3,736.0                | 3,495.2                 | 240.78                 | 15.516            |                    |          |
| 11,000.0  | 5,811.1               | 13,066.1              | 5,661.0               | 101.2            | 149.2         | 103.09                | -8,947.6                            | -1,428.1     | 3,636.4                | 3,393.8                 | 242.61                 | 14.988            |                    |          |
| 11,100.0  | 5,811.1               | 13,066.1              | 5,661.0               | 103.0            | 149.2         | 103.09                | -8,947.6                            | -1,428.1     | 3,536.8                | 3,292.4                 | 244.45                 | 14.468            |                    |          |
| 11,200.0  | 5,811.1               | 13,066.1              | 5,661.0               | 104.9            | 149.2         | 103.09                | -8,947.6                            | -1,428.1     | 3,437.3                | 3,191.0                 | 246.29                 | 13.956            |                    |          |
| 11,300.0  | 5,811.1               | 13,066.1              | 5,661.0               | 106.7            | 149.2         | 103.09                | -8,947.6                            | -1,428.1     | 3,337.8                | 3,089.6                 | 248.13                 | 13.452            |                    |          |
| 11,400.0  | 5,811.1               | 13,066.1              | 5,661.0               | 108.6            | 149.2         | 103.09                | -8,947.6                            | -1,428.1     | 3,238.3                | 2,988.3                 | 249.97                 | 12.955            |                    |          |
| 11,500.0  | 5,811.1               | 13,066.1              | 5,661.0               | 110.4            | 149.2         | 103.09                | -8,947.6                            | -1,428.1     | 3,138.8                | 2,887.0                 | 251.81                 | 12.465            |                    |          |
| 11,600.0  | 5,811.1               | 13,066.1              | 5,661.0               | 112.3            | 149.2         | 103.09                | -8,947.6                            | -1,428.1     | 3,039.4                | 2,785.8                 | 253.65                 | 11.983            |                    |          |
| 11,700.0  | 5,811.1               | 13,066.1              | 5,661.0               | 114.1            | 149.2         | 103.09                | -8,947.6                            | -1,428.1     | 2,940.0                | 2,684.5                 | 255.50                 | 11.507            |                    |          |
| 11,800.0  | 5,811.1               | 13,066.1              | 5,661.0               | 116.0            | 149.2         | 103.09                | -8,947.6                            | -1,428.1     | 2,840.7                | 2,583.4                 | 257.34                 | 11.039            |                    |          |
| 11,900.0  | 5,811.1               | 13,066.1              | 5,661.0               | 117.8            | 149.2         | 103.09                | -8,947.6                            | -1,428.1     | 2,741.4                | 2,482.2                 | 259.19                 | 10.577            |                    |          |

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

# Cathedral Energy Services

## Anticollision Report

|                           |                               |                                     |  |
|---------------------------|-------------------------------|-------------------------------------|--|
| <b>Company:</b>           | Whiting Petroleum Corporation | <b>Local Co-ordinate Reference:</b> | Well Razor Federal #12F-1301A          |
| <b>Project:</b>           | Weld County, CO               | <b>TVD Reference:</b>               | WELL @ 4953.6usft (Original Well Elev) |
| <b>Reference Site:</b>    | S12-T10N-R58W                 | <b>MD Reference:</b>                | WELL @ 4953.6usft (Original Well Elev) |
| <b>Site Error:</b>        | 0.0usft                       | <b>North Reference:</b>             | True                                   |
| <b>Reference Well:</b>    | Razor Federal #12F-1301A      | <b>Survey Calculation Method:</b>   | Minimum Curvature                      |
| <b>Well Error:</b>        | 0.0usft                       | <b>Output errors are at</b>         | 2.00 sigma                             |
| <b>Reference Wellbore</b> | HZ                            | <b>Database:</b>                    | USA EDM 5000 Multi Users DB            |
| <b>Reference Design:</b>  | Plan #3                       | <b>Offset TVD Reference:</b>        | Offset Datum                           |

| Offset Design S26-T10N-R58W - Razor Federal #26I-2316B - 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 |                             |  |
| 12,000.0  | 5,811.1               | 13,066.1              | 5,661.0               | 119.7            | 149.2         | 103.09                | -8,947.6                            | -1,428.1     | 2,642.2                | 2,381.1                 | 261.04                 | 10.122            |                             |  |
| 12,100.0  | 5,811.1               | 13,066.1              | 5,661.0               | 121.6            | 149.2         | 103.09                | -8,947.6                            | -1,428.1     | 2,543.0                | 2,280.1                 | 262.89                 | 9.673             |                             |  |
| 12,200.0  | 5,811.1               | 13,066.1              | 5,661.0               | 123.4            | 149.2         | 103.09                | -8,947.6                            | -1,428.1     | 2,443.9                | 2,179.2                 | 264.74                 | 9.231             |                             |  |
| 12,300.0  | 5,811.1               | 13,066.1              | 5,661.0               | 125.3            | 149.2         | 103.09                | -8,947.6                            | -1,428.1     | 2,344.9                | 2,078.3                 | 266.59                 | 8.796             |                             |  |
| 12,400.0  | 5,811.1               | 13,066.1              | 5,661.0               | 127.2            | 149.2         | 103.09                | -8,947.6                            | -1,428.1     | 2,245.9                | 1,977.5                 | 268.44                 | 8.367             |                             |  |
| 12,500.0  | 5,811.0               | 13,066.1              | 5,661.0               | 129.0            | 149.2         | 103.09                | -8,947.6                            | -1,428.1     | 2,147.1                | 1,876.8                 | 270.29                 | 7.944             |                             |  |
| 12,600.0  | 5,811.0               | 13,066.1              | 5,661.0               | 130.9            | 149.2         | 103.09                | -8,947.6                            | -1,428.1     | 2,048.4                | 1,776.2                 | 272.15                 | 7.527             |                             |  |
| 12,700.0  | 5,811.0               | 13,066.1              | 5,661.0               | 132.8            | 149.2         | 103.09                | -8,947.6                            | -1,428.1     | 1,949.8                | 1,675.8                 | 274.00                 | 7.116             |                             |  |
| 12,800.0  | 5,811.0               | 13,066.1              | 5,661.0               | 134.6            | 149.2         | 103.09                | -8,947.6                            | -1,428.1     | 1,851.3                | 1,575.4                 | 275.85                 | 6.711             |                             |  |
| 12,900.0  | 5,811.0               | 13,066.1              | 5,661.0               | 136.5            | 149.2         | 103.09                | -8,947.6                            | -1,428.1     | 1,753.0                | 1,475.3                 | 277.71                 | 6.312             |                             |  |
| 13,000.0  | 5,811.0               | 13,066.1              | 5,661.0               | 138.4            | 149.2         | 103.09                | -8,947.6                            | -1,428.1     | 1,655.0                | 1,375.4                 | 279.57                 | 5.920             |                             |  |
| 13,100.0  | 5,811.0               | 13,066.1              | 5,661.0               | 140.3            | 149.2         | 103.09                | -8,947.6                            | -1,428.1     | 1,557.1                | 1,275.7                 | 281.42                 | 5.533             |                             |  |
| 13,200.0  | 5,811.0               | 13,066.1              | 5,661.0               | 142.1            | 149.2         | 103.09                | -8,947.6                            | -1,428.1     | 1,459.6                | 1,176.3                 | 283.28                 | 5.152             |                             |  |
| 13,300.0  | 5,811.0               | 13,066.1              | 5,661.0               | 144.0            | 149.2         | 103.09                | -8,947.6                            | -1,428.1     | 1,362.4                | 1,077.3                 | 285.14                 | 4.778             |                             |  |
| 13,400.0  | 5,811.0               | 13,066.1              | 5,661.0               | 145.9            | 149.2         | 103.09                | -8,947.6                            | -1,428.1     | 1,265.7                | 978.7                   | 287.00                 | 4.410             |                             |  |
| 13,500.0  | 5,811.0               | 13,066.1              | 5,661.0               | 147.8            | 149.2         | 103.09                | -8,947.6                            | -1,428.1     | 1,169.5                | 880.7                   | 288.86                 | 4.049             |                             |  |
| 13,600.0  | 5,811.0               | 13,066.1              | 5,661.0               | 149.7            | 149.2         | 103.09                | -8,947.6                            | -1,428.1     | 1,074.0                | 783.3                   | 290.72                 | 3.694             |                             |  |
| 13,700.0  | 5,811.0               | 13,066.1              | 5,661.0               | 151.6            | 149.2         | 103.09                | -8,947.6                            | -1,428.1     | 979.4                  | 686.9                   | 292.58                 | 3.348             |                             |  |
| 13,800.0  | 5,811.0               | 13,066.1              | 5,661.0               | 153.4            | 149.2         | 103.09                | -8,947.6                            | -1,428.1     | 886.1                  | 591.6                   | 294.44                 | 3.009             |                             |  |
| 13,900.0  | 5,811.0               | 13,066.1              | 5,661.0               | 155.3            | 149.2         | 103.09                | -8,947.6                            | -1,428.1     | 794.3                  | 498.0                   | 296.30                 | 2.681             |                             |  |
| 13,919.8  | 5,811.0               | 13,066.1              | 5,661.0               | 155.7            | 149.2         | 103.09                | -8,947.6                            | -1,428.1     | 776.3                  | 479.6                   | 296.67                 | 2.617             | CC, ES, SF                  |  |

# Cathedral Energy Services

## Anticollision Report

|                           |                               |                                     |  |
|---------------------------|-------------------------------|-------------------------------------|--|
| <b>Company:</b>           | Whiting Petroleum Corporation | <b>Local Co-ordinate Reference:</b> | Well Razor Federal #12F-1301A          |
| <b>Project:</b>           | Weld County, CO               | <b>TVD Reference:</b>               | WELL @ 4953.6usft (Original Well Elev) |
| <b>Reference Site:</b>    | S12-T10N-R58W                 | <b>MD Reference:</b>                | WELL @ 4953.6usft (Original Well Elev) |
| <b>Site Error:</b>        | 0.0usft                       | <b>North Reference:</b>             | True                                   |
| <b>Reference Well:</b>    | Razor Federal #12F-1301A      | <b>Survey Calculation Method:</b>   | Minimum Curvature                      |
| <b>Well Error:</b>        | 0.0usft                       | <b>Output errors are at</b>         | 2.00 sigma                             |
| <b>Reference Wellbore</b> | HZ                            | <b>Database:</b>                    | USA EDM 5000 Multi Users DB            |
| <b>Reference Design:</b>  | Plan #3                       | <b>Offset TVD Reference:</b>        | Offset Datum                           |

Reference Depths are relative to WELL @ 4953.6usft (Original Well Ele  
Offset Depths are relative to Offset Datum  
Central Meridian is 105° 30' 0.00 W °

Coordinates are relative to: Razor Federal #12F-1301A  
Coordinate System is US State Plane 1983, Colorado Northern Zone  
Grid Convergence at Surface is: 1.09°

