

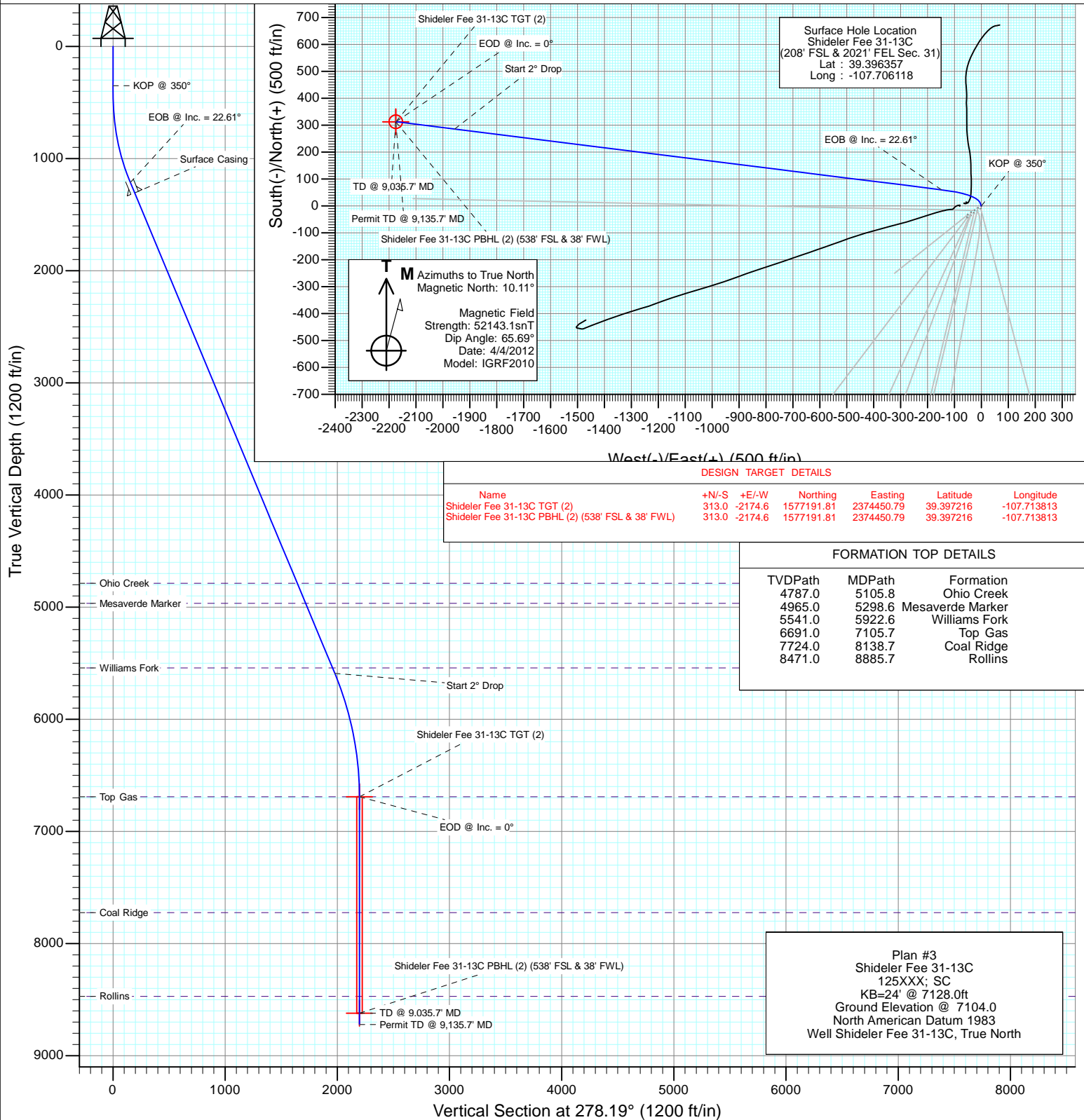


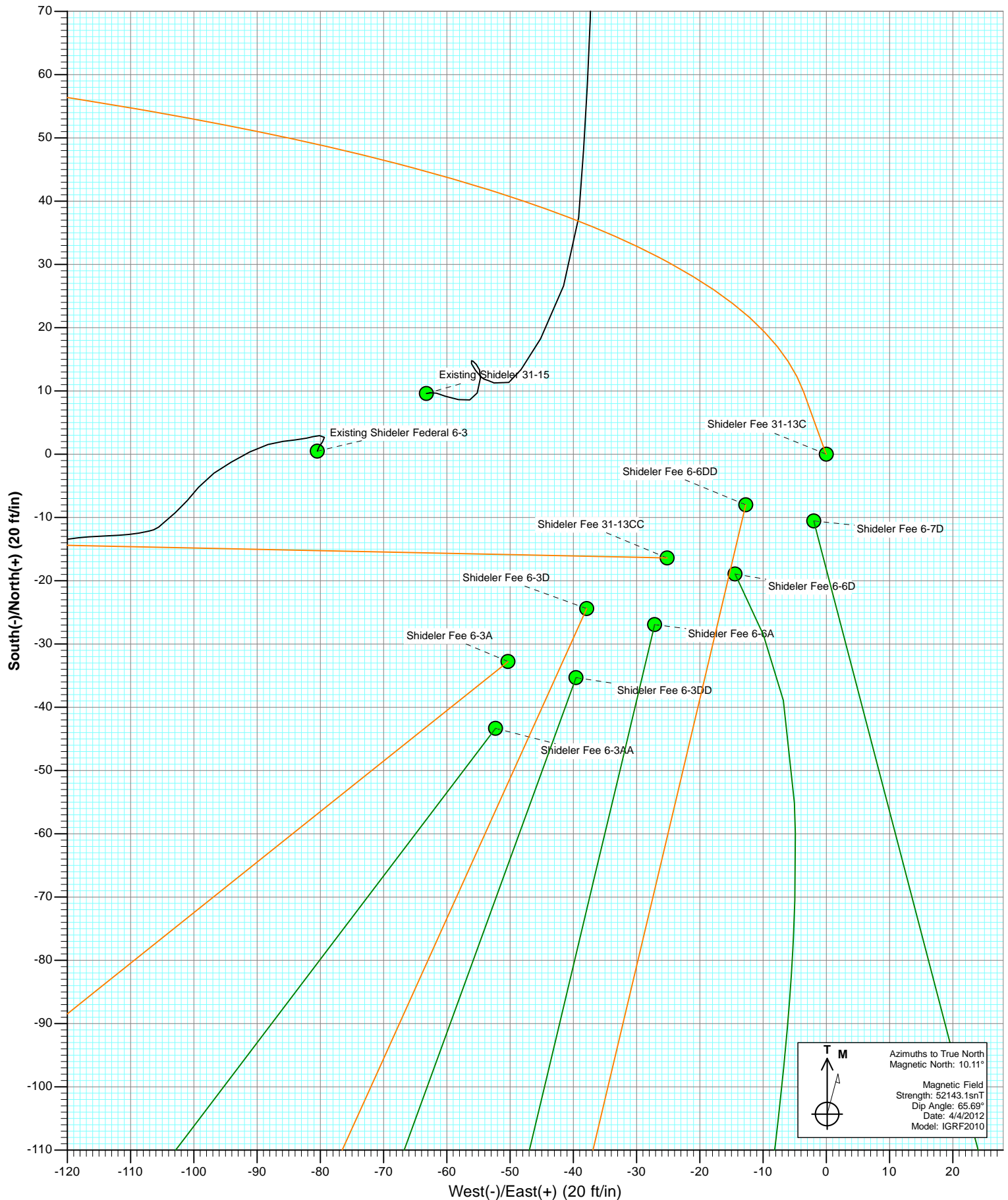
Project: Mamm Creek
Site: O31E Pad
Well: Shideler Fee 31-13C
Wellbore: OH
Design: Plan #3

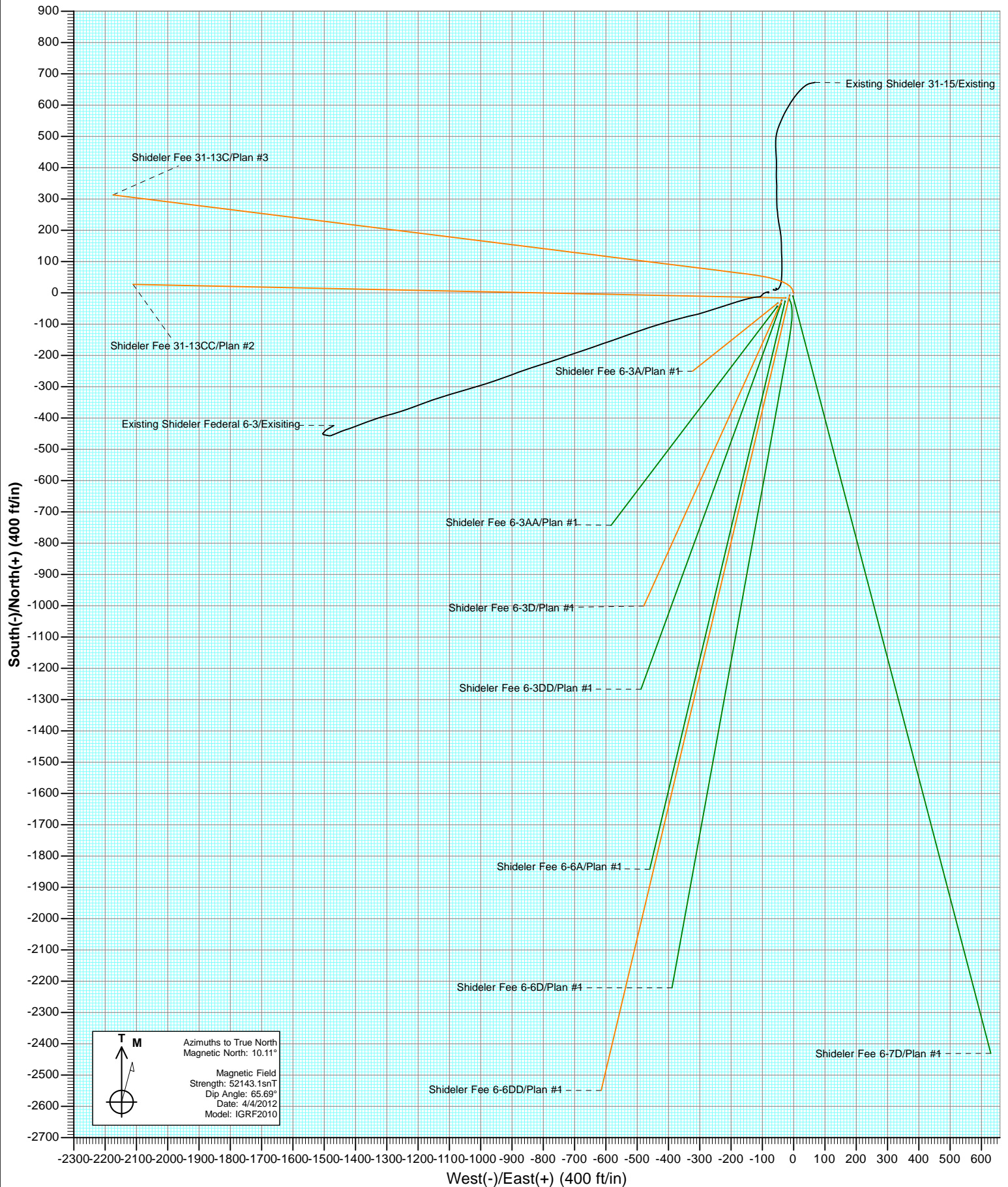


SECTION DETAILS

| Sec | MD | Inc | Azi | TVD | +N/-S | +E/-W | Dleg | TFace | VSec | Target |
|-----|--------|-------|--------|--------|-------|---------|------|--------|--------|---|
| 1 | 0.0 | 0.00 | 0.00 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.0 | |
| 2 | 350.0 | 0.00 | 0.00 | 350.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.0 | |
| 3 | 550.0 | 6.00 | 340.00 | 549.6 | 9.8 | -3.6 | 3.00 | 340.00 | 4.9 | |
| 4 | 1234.7 | 22.61 | 277.11 | 1213.3 | 60.3 | -147.9 | 3.00 | -77.21 | 155.0 | |
| 5 | 5975.5 | 22.61 | 277.11 | 5589.8 | 285.8 | -1956.2 | 0.00 | 0.00 | 1976.9 | |
| 6 | 7105.7 | 0.00 | 0.00 | 6691.0 | 313.0 | -2174.6 | 2.00 | 180.00 | 2197.0 | Shideler Fee 31-13C TGT (2) |
| 7 | 9035.7 | 0.00 | 0.00 | 8621.0 | 313.0 | -2174.6 | 0.00 | 0.00 | 2197.0 | Shideler Fee 31-13C PBHL (2) (538' FSL & 38' FWL) |
| 8 | 9135.7 | 0.00 | 0.00 | 8721.0 | 313.0 | -2174.6 | 0.00 | 0.00 | 2197.0 | |







Cathedral Energy Services

Planning Report

| | | | |
|------------------|-----------------------------|-------------------------------------|--------------------------|
| Database: | USA EDM 5000 Multi Users DB | Local Co-ordinate Reference: | Well Shideler Fee 31-13C |
| Company: | EnCana Oil & Gas (USA) Inc | TVD Reference: | KB=24' @ 7128.0ft |
| Project: | Mamm Creek | MD Reference: | KB=24' @ 7128.0ft |
| Site: | O31E Pad | North Reference: | True |
| Well: | Shideler Fee 31-13C | Survey Calculation Method: | Minimum Curvature |
| Wellbore: | OH | | |
| Design: | Plan #3 | | |

| | | | |
|--------------------|---------------------------|----------------------|----------------|
| Project | Mamm Creek | | |
| Map System: | US State Plane 1983 | System Datum: | Mean Sea Level |
| Geo Datum: | North American Datum 1983 | | |
| Map Zone: | Colorado Central Zone | | |

| Site | | O31E Pad | | | |
|-----------------------|----------|--------------|-----------------|-------------------|-------------|
| Site Position: | | Northing: | 1,577,012.73 ft | Latitude: | 39.396873 |
| From: | Lat/Long | Easting: | 2,376,675.10 ft | Longitude: | -107.705929 |
| Position Uncertainty: | 0.0 ft | Slot Radius: | 13.200 in | Grid Convergence: | -1.39 ° |

| Well | | Shideler Fee 31-13C | | | | |
|----------------------|-------|---------------------|---------------------|-----------------|---------------|-------------|
| Well Position | +N/-S | 0.0 ft | Northing: | 1,576,826.11 ft | Latitude: | 39.396357 |
| | +E/-W | 0.0 ft | Easting: | 2,376,617.14 ft | Longitude: | -107.706118 |
| Position Uncertainty | | 0.0 ft | Wellhead Elevation: | ft | Ground Level: | 7,104.0 ft |

| | | | | | |
|------------------|-------------------|--------------------|--------------------|------------------|-----------------------|
| Wellbore | OH | | | | |
| Magnetics | Model Name | Sample Date | Declination | Dip Angle | Field Strength |
| | | | (°) | (°) | (nT) |
| | IGRF2010 | 4/4/2012 | 10.10 | 65.69 | 52,143 |

| | | | | |
|--------------------------|-------------------------|--------------|----------------------|------------------|
| Design | Plan #3 | | | |
| Audit Notes: | | | | |
| Version: | Phase: | PLAN | Tie On Depth: | 0.0 |
| Vertical Section: | Depth From (TVD) | +N/-S | +E/-W | Direction |
| | (ft) | (ft) | (ft) | (°) |
| | 0.0 | 0.0 | 0.0 | 278.19 |

| Plan Sections | | | | | | | | | | |
|----------------------|-----------------|-------------|---------------------|------------|------------|-----------------------|----------------------|---------------------|---------|---------------------|
| Measured Depth (ft) | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N/-S (ft) | +E/-W (ft) | Dogleg Rate (°/100ft) | Build Rate (°/100ft) | Turn Rate (°/100ft) | TFO (°) | Target |
| 0.0 | 0.00 | 0.00 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 350.0 | 0.00 | 0.00 | 350.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 550.0 | 6.00 | 340.00 | 549.6 | 9.8 | -3.6 | 3.00 | 3.00 | 0.00 | 340.00 | |
| 1,234.7 | 22.61 | 277.11 | 1,213.3 | 60.3 | -147.9 | 3.00 | 2.43 | -9.19 | -77.21 | |
| 5,975.5 | 22.61 | 277.11 | 5,589.8 | 285.8 | -1,956.2 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 7,105.7 | 0.00 | 0.00 | 6,691.0 | 313.0 | -2,174.6 | 2.00 | -2.00 | 0.00 | 180.00 | Shideler Fee 31-13C |
| 9,035.7 | 0.00 | 0.00 | 8,621.0 | 313.0 | -2,174.6 | 0.00 | 0.00 | 0.00 | 0.00 | Shideler Fee 31-13C |
| 9,135.7 | 0.00 | 0.00 | 8,721.0 | 313.0 | -2,174.6 | 0.00 | 0.00 | 0.00 | 0.00 | |

Cathedral Energy Services

Planning Report

| | | | |
|------------------|-----------------------------|-------------------------------------|--------------------------|
| Database: | USA EDM 5000 Multi Users DB | Local Co-ordinate Reference: | Well Shideler Fee 31-13C |
| Company: | EnCana Oil & Gas (USA) Inc | TVD Reference: | KB=24' @ 7128.0ft |
| Project: | Mamm Creek | MD Reference: | KB=24' @ 7128.0ft |
| Site: | O31E Pad | North Reference: | True |
| Well: | Shideler Fee 31-13C | Survey Calculation Method: | Minimum Curvature |
| Wellbore: | OH | | |
| Design: | Plan #3 | | |

Planned Survey

| Measured Depth (ft) | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N/-S (ft) | +E/-W (ft) | Vertical Section (ft) | Dogleg Rate (°/100ft) | Build Rate (°/100ft) | 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 | |
| 350.0 | 0.00 | 0.00 | 350.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | KOP @ 350° |
| 400.0 | 1.50 | 340.00 | 400.0 | 0.6 | -0.2 | 0.3 | 3.00 | 3.00 | |
| 500.0 | 4.50 | 340.00 | 499.8 | 5.5 | -2.0 | 2.8 | 3.00 | 3.00 | |
| 550.0 | 6.00 | 340.00 | 549.6 | 9.8 | -3.6 | 4.9 | 3.00 | 3.00 | |
| 600.0 | 6.50 | 326.96 | 599.3 | 14.7 | -6.0 | 8.0 | 3.00 | 1.00 | |
| 700.0 | 8.25 | 307.80 | 698.5 | 23.8 | -14.8 | 18.0 | 3.00 | 1.76 | |
| 800.0 | 10.58 | 296.12 | 797.2 | 32.2 | -28.7 | 33.0 | 3.00 | 2.33 | |
| 900.0 | 13.18 | 288.80 | 895.0 | 40.0 | -47.7 | 52.9 | 3.00 | 2.60 | |
| 1,000.0 | 15.92 | 283.91 | 991.8 | 46.9 | -71.8 | 77.8 | 3.00 | 2.74 | |
| 1,100.0 | 18.74 | 280.44 | 1,087.3 | 53.2 | -101.0 | 107.5 | 3.00 | 2.82 | |
| 1,200.0 | 21.60 | 277.86 | 1,181.1 | 58.6 | -135.0 | 142.0 | 3.00 | 2.87 | |
| 1,234.7 | 22.61 | 277.11 | 1,213.3 | 60.3 | -148.0 | 155.0 | 3.00 | 2.89 | EOB @ Inc. = 22.61° |
| 1,300.0 | 22.61 | 277.11 | 1,273.6 | 63.4 | -172.9 | 180.1 | 0.00 | 0.00 | |
| 1,334.7 | 22.61 | 277.11 | 1,305.6 | 65.0 | -186.1 | 193.5 | 0.00 | 0.00 | Surface Casing |
| 1,400.0 | 22.61 | 277.11 | 1,365.9 | 68.1 | -211.0 | 218.6 | 0.00 | 0.00 | |
| 1,500.0 | 22.61 | 277.11 | 1,458.2 | 72.9 | -249.1 | 257.0 | 0.00 | 0.00 | |
| 1,600.0 | 22.61 | 277.11 | 1,550.5 | 77.7 | -287.3 | 295.4 | 0.00 | 0.00 | |
| 1,700.0 | 22.61 | 277.11 | 1,642.8 | 82.4 | -325.4 | 333.9 | 0.00 | 0.00 | |
| 1,800.0 | 22.61 | 277.11 | 1,735.2 | 87.2 | -363.6 | 372.3 | 0.00 | 0.00 | |
| 1,900.0 | 22.61 | 277.11 | 1,827.5 | 91.9 | -401.7 | 410.7 | 0.00 | 0.00 | |
| 2,000.0 | 22.61 | 277.11 | 1,919.8 | 96.7 | -439.9 | 449.1 | 0.00 | 0.00 | |
| 2,100.0 | 22.61 | 277.11 | 2,012.1 | 101.4 | -478.0 | 487.6 | 0.00 | 0.00 | |
| 2,200.0 | 22.61 | 277.11 | 2,104.4 | 106.2 | -516.1 | 526.0 | 0.00 | 0.00 | |
| 2,300.0 | 22.61 | 277.11 | 2,196.7 | 110.9 | -554.3 | 564.4 | 0.00 | 0.00 | |
| 2,400.0 | 22.61 | 277.11 | 2,289.1 | 115.7 | -592.4 | 602.9 | 0.00 | 0.00 | |
| 2,500.0 | 22.61 | 277.11 | 2,381.4 | 120.5 | -630.6 | 641.3 | 0.00 | 0.00 | |
| 2,600.0 | 22.61 | 277.11 | 2,473.7 | 125.2 | -668.7 | 679.7 | 0.00 | 0.00 | |
| 2,700.0 | 22.61 | 277.11 | 2,566.0 | 130.0 | -706.9 | 718.2 | 0.00 | 0.00 | |
| 2,800.0 | 22.61 | 277.11 | 2,658.3 | 134.7 | -745.0 | 756.6 | 0.00 | 0.00 | |
| 2,900.0 | 22.61 | 277.11 | 2,750.6 | 139.5 | -783.1 | 795.0 | 0.00 | 0.00 | |
| 3,000.0 | 22.61 | 277.11 | 2,843.0 | 144.2 | -821.3 | 833.5 | 0.00 | 0.00 | |
| 3,100.0 | 22.61 | 277.11 | 2,935.3 | 149.0 | -859.4 | 871.9 | 0.00 | 0.00 | |
| 3,200.0 | 22.61 | 277.11 | 3,027.6 | 153.8 | -897.6 | 910.3 | 0.00 | 0.00 | |
| 3,300.0 | 22.61 | 277.11 | 3,119.9 | 158.5 | -935.7 | 948.7 | 0.00 | 0.00 | |
| 3,400.0 | 22.61 | 277.11 | 3,212.2 | 163.3 | -973.8 | 987.2 | 0.00 | 0.00 | |
| 3,500.0 | 22.61 | 277.11 | 3,304.6 | 168.0 | -1,012.0 | 1,025.6 | 0.00 | 0.00 | |
| 3,600.0 | 22.61 | 277.11 | 3,396.9 | 172.8 | -1,050.1 | 1,064.0 | 0.00 | 0.00 | |
| 3,700.0 | 22.61 | 277.11 | 3,489.2 | 177.5 | -1,088.3 | 1,102.5 | 0.00 | 0.00 | |
| 3,800.0 | 22.61 | 277.11 | 3,581.5 | 182.3 | -1,126.4 | 1,140.9 | 0.00 | 0.00 | |
| 3,900.0 | 22.61 | 277.11 | 3,673.8 | 187.0 | -1,164.6 | 1,179.3 | 0.00 | 0.00 | |
| 4,000.0 | 22.61 | 277.11 | 3,766.1 | 191.8 | -1,202.7 | 1,217.8 | 0.00 | 0.00 | |
| 4,100.0 | 22.61 | 277.11 | 3,858.5 | 196.6 | -1,240.8 | 1,256.2 | 0.00 | 0.00 | |
| 4,200.0 | 22.61 | 277.11 | 3,950.8 | 201.3 | -1,279.0 | 1,294.6 | 0.00 | 0.00 | |
| 4,300.0 | 22.61 | 277.11 | 4,043.1 | 206.1 | -1,317.1 | 1,333.1 | 0.00 | 0.00 | |
| 4,400.0 | 22.61 | 277.11 | 4,135.4 | 210.8 | -1,355.3 | 1,371.5 | 0.00 | 0.00 | |
| 4,500.0 | 22.61 | 277.11 | 4,227.7 | 215.6 | -1,393.4 | 1,409.9 | 0.00 | 0.00 | |
| 4,600.0 | 22.61 | 277.11 | 4,320.0 | 220.3 | -1,431.6 | 1,448.3 | 0.00 | 0.00 | |
| 4,700.0 | 22.61 | 277.11 | 4,412.4 | 225.1 | -1,469.7 | 1,486.8 | 0.00 | 0.00 | |

Cathedral Energy Services

Planning Report

| | | | |
|------------------|-----------------------------|-------------------------------------|--------------------------|
| Database: | USA EDM 5000 Multi Users DB | Local Co-ordinate Reference: | Well Shideler Fee 31-13C |
| Company: | EnCana Oil & Gas (USA) Inc | TVD Reference: | KB=24' @ 7128.0ft |
| Project: | Mamm Creek | MD Reference: | KB=24' @ 7128.0ft |
| Site: | O31E Pad | North Reference: | True |
| Well: | Shideler Fee 31-13C | Survey Calculation Method: | Minimum Curvature |
| Wellbore: | OH | | |
| Design: | Plan #3 | | |

Planned Survey

| Measured Depth (ft) | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N/-S (ft) | +E/-W (ft) | Vertical Section (ft) | Dogleg Rate (°/100ft) | Build Rate (°/100ft) | Comments / Formations |
|---------------------|-----------------|-------------|---------------------|------------|------------|-----------------------|-----------------------|----------------------|---------------------------|
| 4,800.0 | 22.61 | 277.11 | 4,504.7 | 229.9 | -1,507.8 | 1,525.2 | 0.00 | 0.00 | |
| 4,900.0 | 22.61 | 277.11 | 4,597.0 | 234.6 | -1,546.0 | 1,563.6 | 0.00 | 0.00 | |
| 5,000.0 | 22.61 | 277.11 | 4,689.3 | 239.4 | -1,584.1 | 1,602.1 | 0.00 | 0.00 | |
| 5,100.0 | 22.61 | 277.11 | 4,781.6 | 244.1 | -1,622.3 | 1,640.5 | 0.00 | 0.00 | |
| 5,105.8 | 22.61 | 277.11 | 4,787.0 | 244.4 | -1,624.5 | 1,642.7 | 0.00 | 0.00 | Ohio Creek |
| 5,200.0 | 22.61 | 277.11 | 4,874.0 | 248.9 | -1,660.4 | 1,678.9 | 0.00 | 0.00 | |
| 5,298.6 | 22.61 | 277.11 | 4,965.0 | 253.6 | -1,698.0 | 1,716.8 | 0.00 | 0.00 | Mesaverde Marker |
| 5,300.0 | 22.61 | 277.11 | 4,966.3 | 253.6 | -1,698.6 | 1,717.4 | 0.00 | 0.00 | |
| 5,400.0 | 22.61 | 277.11 | 5,058.6 | 258.4 | -1,736.7 | 1,755.8 | 0.00 | 0.00 | |
| 5,500.0 | 22.61 | 277.11 | 5,150.9 | 263.1 | -1,774.8 | 1,794.2 | 0.00 | 0.00 | |
| 5,600.0 | 22.61 | 277.11 | 5,243.2 | 267.9 | -1,813.0 | 1,832.7 | 0.00 | 0.00 | |
| 5,700.0 | 22.61 | 277.11 | 5,335.5 | 272.7 | -1,851.1 | 1,871.1 | 0.00 | 0.00 | |
| 5,800.0 | 22.61 | 277.11 | 5,427.9 | 277.4 | -1,889.3 | 1,909.5 | 0.00 | 0.00 | |
| 5,900.0 | 22.61 | 277.11 | 5,520.2 | 282.2 | -1,927.4 | 1,947.9 | 0.00 | 0.00 | |
| 5,922.6 | 22.61 | 277.11 | 5,541.0 | 283.2 | -1,936.0 | 1,956.6 | 0.00 | 0.00 | Williams Fork |
| 5,975.5 | 22.61 | 277.11 | 5,589.9 | 285.8 | -1,956.2 | 1,977.0 | 0.00 | 0.00 | Start 2° Drop |
| 6,000.0 | 22.11 | 277.11 | 5,612.5 | 286.9 | -1,965.5 | 1,986.3 | 2.00 | -2.00 | |
| 6,100.0 | 20.11 | 277.11 | 5,705.8 | 291.4 | -2,001.2 | 2,022.3 | 2.00 | -2.00 | |
| 6,200.0 | 18.11 | 277.11 | 5,800.3 | 295.4 | -2,033.7 | 2,055.0 | 2.00 | -2.00 | |
| 6,300.0 | 16.11 | 277.11 | 5,895.9 | 299.1 | -2,062.9 | 2,084.5 | 2.00 | -2.00 | |
| 6,400.0 | 14.11 | 277.11 | 5,992.4 | 302.3 | -2,088.8 | 2,110.5 | 2.00 | -2.00 | |
| 6,500.0 | 12.11 | 277.11 | 6,089.8 | 305.1 | -2,111.3 | 2,133.2 | 2.00 | -2.00 | |
| 6,600.0 | 10.11 | 277.11 | 6,187.9 | 307.5 | -2,130.4 | 2,152.5 | 2.00 | -2.00 | |
| 6,700.0 | 8.11 | 277.11 | 6,286.6 | 309.4 | -2,146.1 | 2,168.3 | 2.00 | -2.00 | |
| 6,800.0 | 6.11 | 277.11 | 6,385.9 | 311.0 | -2,158.4 | 2,180.7 | 2.00 | -2.00 | |
| 6,900.0 | 4.11 | 277.11 | 6,485.5 | 312.1 | -2,167.3 | 2,189.6 | 2.00 | -2.00 | |
| 7,000.0 | 2.11 | 277.11 | 6,585.3 | 312.7 | -2,172.6 | 2,195.0 | 2.00 | -2.00 | |
| 7,105.7 | 0.00 | 0.00 | 6,691.0 | 313.0 | -2,174.6 | 2,197.0 | 2.00 | -2.00 | EOD @ Inc. = 0° - Top Gas |
| 7,200.0 | 0.00 | 0.00 | 6,785.3 | 313.0 | -2,174.6 | 2,197.0 | 0.00 | 0.00 | |
| 7,300.0 | 0.00 | 0.00 | 6,885.3 | 313.0 | -2,174.6 | 2,197.0 | 0.00 | 0.00 | |
| 7,400.0 | 0.00 | 0.00 | 6,985.3 | 313.0 | -2,174.6 | 2,197.0 | 0.00 | 0.00 | |
| 7,500.0 | 0.00 | 0.00 | 7,085.3 | 313.0 | -2,174.6 | 2,197.0 | 0.00 | 0.00 | |
| 7,600.0 | 0.00 | 0.00 | 7,185.3 | 313.0 | -2,174.6 | 2,197.0 | 0.00 | 0.00 | |
| 7,700.0 | 0.00 | 0.00 | 7,285.3 | 313.0 | -2,174.6 | 2,197.0 | 0.00 | 0.00 | |
| 7,800.0 | 0.00 | 0.00 | 7,385.3 | 313.0 | -2,174.6 | 2,197.0 | 0.00 | 0.00 | |
| 7,900.0 | 0.00 | 0.00 | 7,485.3 | 313.0 | -2,174.6 | 2,197.0 | 0.00 | 0.00 | |
| 8,000.0 | 0.00 | 0.00 | 7,585.3 | 313.0 | -2,174.6 | 2,197.0 | 0.00 | 0.00 | |
| 8,100.0 | 0.00 | 0.00 | 7,685.3 | 313.0 | -2,174.6 | 2,197.0 | 0.00 | 0.00 | |
| 8,138.7 | 0.00 | 0.00 | 7,724.0 | 313.0 | -2,174.6 | 2,197.0 | 0.00 | 0.00 | Coal Ridge |
| 8,200.0 | 0.00 | 0.00 | 7,785.3 | 313.0 | -2,174.6 | 2,197.0 | 0.00 | 0.00 | |
| 8,300.0 | 0.00 | 0.00 | 7,885.3 | 313.0 | -2,174.6 | 2,197.0 | 0.00 | 0.00 | |
| 8,400.0 | 0.00 | 0.00 | 7,985.3 | 313.0 | -2,174.6 | 2,197.0 | 0.00 | 0.00 | |
| 8,500.0 | 0.00 | 0.00 | 8,085.3 | 313.0 | -2,174.6 | 2,197.0 | 0.00 | 0.00 | |
| 8,600.0 | 0.00 | 0.00 | 8,185.3 | 313.0 | -2,174.6 | 2,197.0 | 0.00 | 0.00 | |
| 8,700.0 | 0.00 | 0.00 | 8,285.3 | 313.0 | -2,174.6 | 2,197.0 | 0.00 | 0.00 | |
| 8,800.0 | 0.00 | 0.00 | 8,385.3 | 313.0 | -2,174.6 | 2,197.0 | 0.00 | 0.00 | |
| 8,885.7 | 0.00 | 0.00 | 8,471.0 | 313.0 | -2,174.6 | 2,197.0 | 0.00 | 0.00 | Rollins |
| 8,900.0 | 0.00 | 0.00 | 8,485.3 | 313.0 | -2,174.6 | 2,197.0 | 0.00 | 0.00 | |
| 9,000.0 | 0.00 | 0.00 | 8,585.3 | 313.0 | -2,174.6 | 2,197.0 | 0.00 | 0.00 | |
| 9,035.7 | 0.00 | 0.00 | 8,621.0 | 313.0 | -2,174.6 | 2,197.0 | 0.00 | 0.00 | TD @ 9,035.7' MD |
| 9,100.0 | 0.00 | 0.00 | 8,685.3 | 313.0 | -2,174.6 | 2,197.0 | 0.00 | 0.00 | |
| 9,135.7 | 0.00 | 0.00 | 8,721.0 | 313.0 | -2,174.6 | 2,197.0 | 0.00 | 0.00 | Permit TD @ 9,135.7' MD |

Cathedral Energy Services

Planning Report

| | | | |
|------------------|-----------------------------|-------------------------------------|--------------------------|
| Database: | USA EDM 5000 Multi Users DB | Local Co-ordinate Reference: | Well Shideler Fee 31-13C |
| Company: | EnCana Oil & Gas (USA) Inc | TVD Reference: | KB=24' @ 7128.0ft |
| Project: | Mamm Creek | MD Reference: | KB=24' @ 7128.0ft |
| Site: | O31E Pad | North Reference: | True |
| Well: | Shideler Fee 31-13C | Survey Calculation Method: | Minimum Curvature |
| Wellbore: | OH | | |
| Design: | Plan #3 | | |

| Targets | | | | | | | | | |
|---|-----------|----------|---------|-------|----------|--------------|--------------|-----------|-------------|
| Target Name | | | | | | | | | |
| - hit/miss target | Dip Angle | Dip Dir. | TVD | +N/-S | +E/-W | Northing | Easting | Latitude | Longitude |
| - Shape | (°) | (°) | (ft) | (ft) | (ft) | (ft) | (ft) | | |
| Shideler Fee 31-13C PB - plan hits target center - Circle (radius 25.0) | 0.00 | 0.00 | 8,621.0 | 313.0 | -2,174.6 | 1,577,191.81 | 2,374,450.79 | 39.397216 | -107.713813 |
| Shideler Fee 31-13C PB - plan hits target center - Circle (radius 25.0) | 0.00 | 0.00 | 8,623.0 | 313.0 | -2,174.6 | 1,577,191.81 | 2,374,450.79 | 39.397216 | -107.713813 |
| Shideler Fee 31-13C TG - plan hits target center - Point | 0.00 | 0.00 | 6,693.0 | 313.0 | -2,174.6 | 1,577,191.81 | 2,374,450.79 | 39.397216 | -107.713813 |
| Shideler Fee 31-13C TG - plan hits target center - Point | 0.00 | 0.00 | 6,691.0 | 313.0 | -2,174.6 | 1,577,191.81 | 2,374,450.79 | 39.397216 | -107.713813 |

| Casing Points | | | | |
|---------------------|---------------------|----------------|----------------------|--------------------|
| Measured Depth (ft) | Vertical Depth (ft) | Name | Casing Diameter (in) | Hole Diameter (in) |
| 1,334.7 | 1,305.6 | Surface Casing | | |

| Formations | | | | | |
|---------------------|---------------------|------------------|-----------|---------|-------------------|
| Measured Depth (ft) | Vertical Depth (ft) | Name | Lithology | Dip (°) | Dip Direction (°) |
| 5,105.8 | 4,787.0 | Ohio Creek | | | |
| 5,298.6 | 4,965.0 | Mesaverde Marker | | | |
| 5,922.6 | 5,541.0 | Williams Fork | | | |
| 7,105.7 | 6,691.0 | Top Gas | | | |
| 8,138.7 | 7,724.0 | Coal Ridge | | | |
| 8,885.7 | 8,471.0 | Rollins | | | |

| Plan Annotations | | | | |
|---------------------|---------------------|-------------------|------------|-------------------------|
| Measured Depth (ft) | Vertical Depth (ft) | Local Coordinates | | Comment |
| | | +N/-S (ft) | +E/-W (ft) | |
| 350.0 | 350.0 | 0.0 | 0.0 | KOP @ 350° |
| 1,234.7 | 1,213.3 | 9.8 | -3.6 | EOB @ Inc. = 22.61° |
| 5,975.5 | 5,589.8 | 60.3 | -147.9 | Start 2° Drop |
| 7,105.7 | 6,691.0 | 285.8 | -1,956.2 | EOD @ Inc. = 0° |
| 9,035.7 | 8,621.0 | 313.0 | -2,174.6 | TD @ 9,035.7' MD |
| 9,135.7 | 8,721.0 | 313.0 | -2,174.6 | Permit TD @ 9,135.7' MD |