

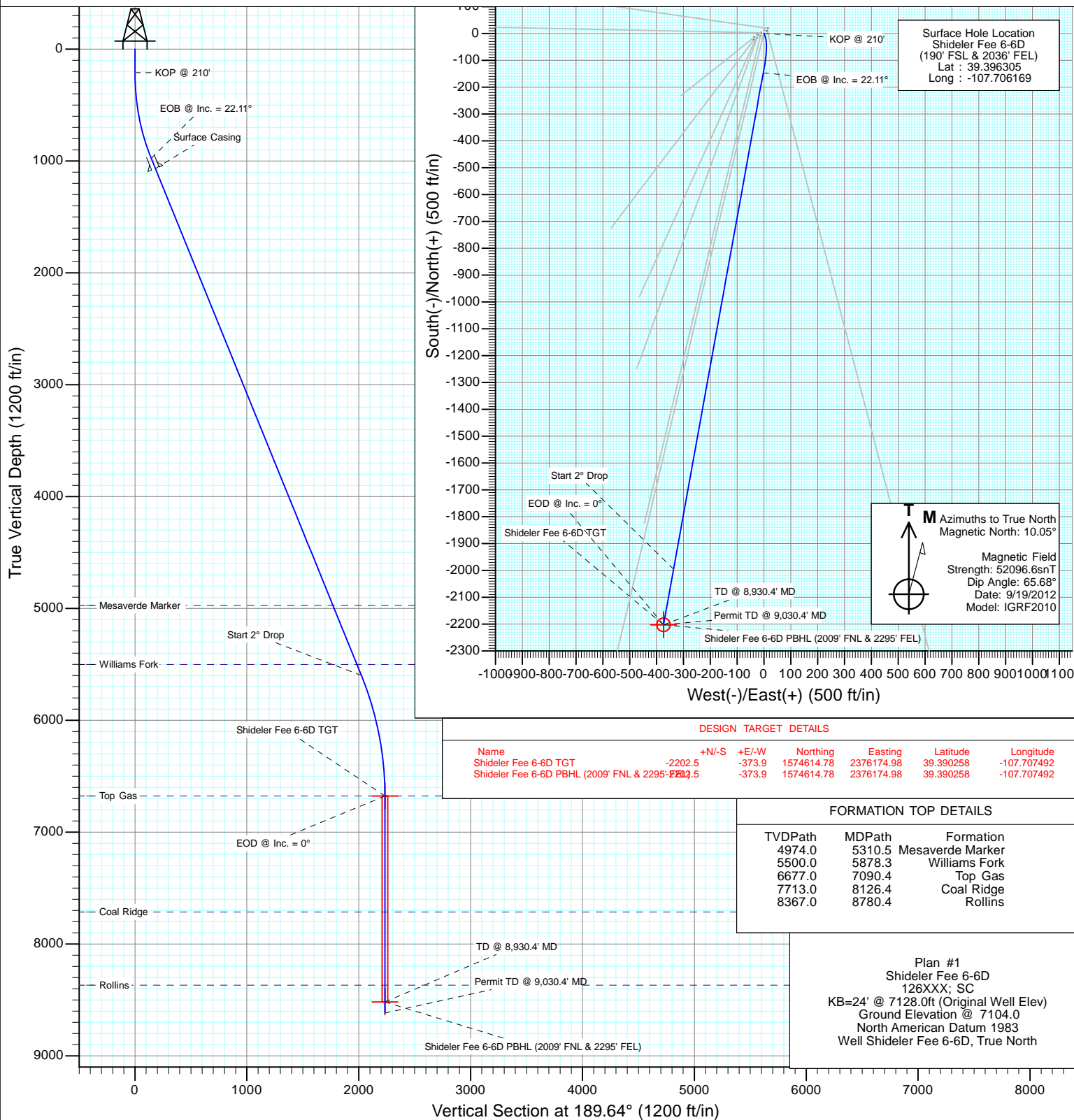


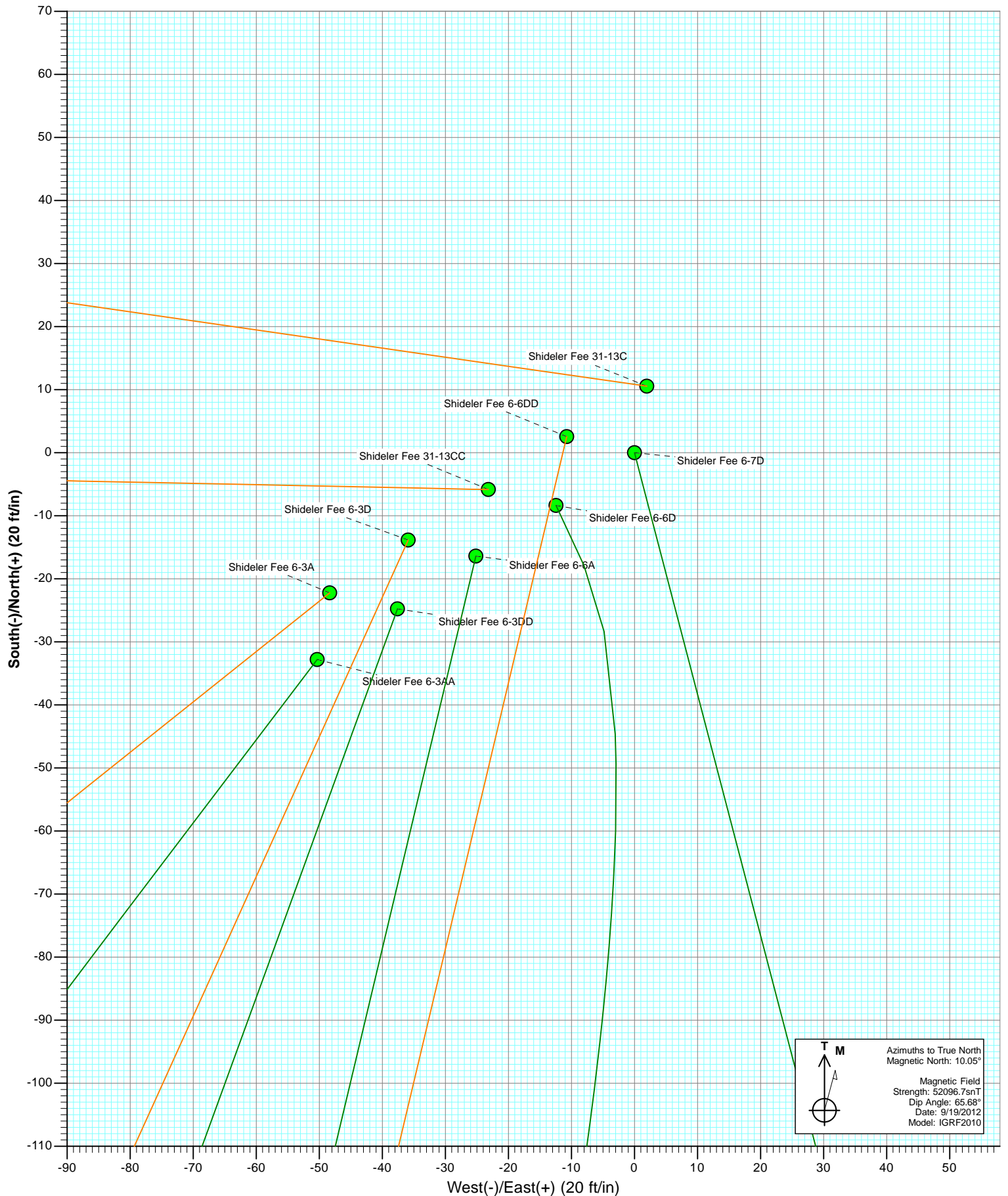
Project: Mamm Creek
Site: O31E Pad
Well: Shideler Fee 6-6D
Wellbore: DD
Design: Plan #1

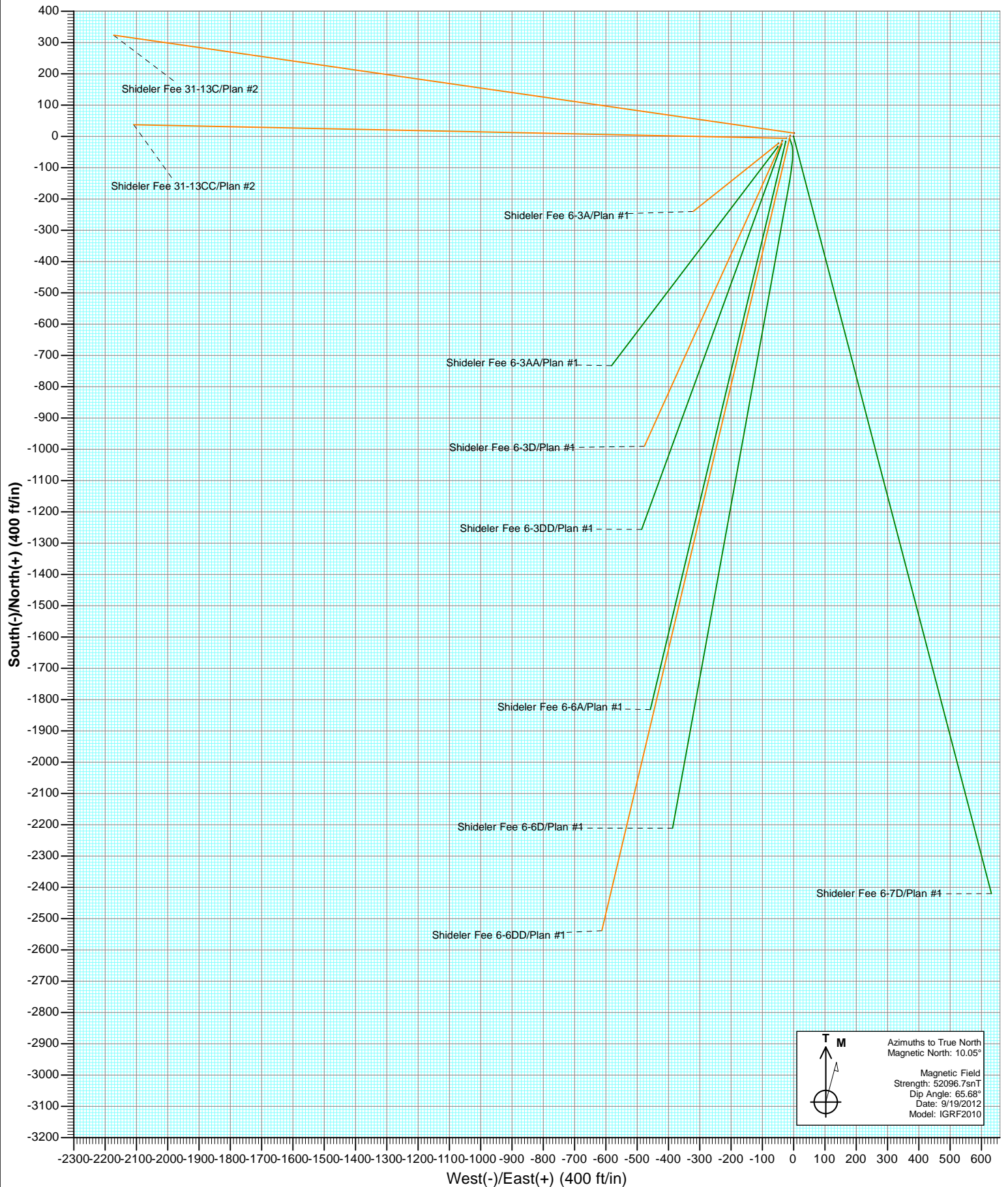


SECTION DETAILS

| Sec | MD | Inc | Azi | TVD | +N/-S | +E/-W | Dleg | TFace | VSect | Target |
|-----|--------|-------|--------|--------|---------|--------|------|--------|--------|--|
| 1 | 0.0 | 0.00 | 0.00 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.0 | |
| 2 | 210.0 | 0.00 | 0.00 | 210.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.0 | |
| 3 | 410.0 | 6.00 | 155.00 | 409.6 | -9.5 | 4.4 | 3.00 | 155.00 | 8.6 | |
| 4 | 994.7 | 22.11 | 190.25 | 975.7 | -146.6 | -2.3 | 3.00 | 46.12 | 144.9 | |
| 5 | 5984.7 | 22.11 | 190.25 | 5598.5 | -1995.1 | -336.4 | 0.00 | 0.00 | 2023.3 | |
| 6 | 7090.4 | 0.00 | 0.00 | 6677.0 | -2202.5 | -373.9 | 2.00 | 180.00 | 2234.0 | Shideler Fee 6-6D TGT |
| 7 | 8930.4 | 0.00 | 0.00 | 8517.0 | -2202.5 | -373.9 | 0.00 | 0.00 | 2234.0 | Shideler Fee 6-6D PBHL (2009' FNL & 2295' FEL) |
| 8 | 9030.4 | 0.00 | 0.00 | 8617.0 | -2202.5 | -373.9 | 0.00 | 0.00 | 2234.0 | |







Cathedral Energy Services

Planning Report

| | | | |
|------------------|-----------------------------|-------------------------------------|--|
| Database: | USA EDM 5000 Multi Users DB | Local Co-ordinate Reference: | Well Shideler Fee 6-6D |
| Company: | EnCana Oil & Gas (USA) Inc | TVD Reference: | KB=24' @ 7128.0ft (Original Well Elev) |
| Project: | Mamm Creek | MD Reference: | KB=24' @ 7128.0ft (Original Well Elev) |
| Site: | O31E Pad | North Reference: | True |
| Well: | Shideler Fee 6-6D | Survey Calculation Method: | Minimum Curvature |
| Wellbore: | DD | | |
| Design: | Plan #1 | | |

| | | | |
|--------------------|---------------------------|----------------------|----------------|
| 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 6-6D | | | | | |
|----------------------|-------------------|--------|---------------------|-----------------|---------------|-------------|
| Well Position | +N/-S | 0.0 ft | Northing: | 1,576,807.54 ft | Latitude: | 39.396305 |
| | +E/-W | 0.0 ft | Easting: | 2,376,602.27 ft | Longitude: | -107.706169 |
| Position Uncertainty | | 0.0 ft | Wellhead Elevation: | ft | Ground Level: | 7,104.0 ft |

| | | | | | |
|------------------|-------------------|--------------------|--------------------|------------------|-----------------------|
| Wellbore | DD | | | | |
| Magnetics | Model Name | Sample Date | Declination | Dip Angle | Field Strength |
| | | | (°) | (°) | (nT) |
| | IGRF2010 | 9/19/2012 | 10.05 | 65.68 | 52,097 |

| | | | | |
|--------------------------|-------------------------|--------------|----------------------|------------------|
| Design | Plan #1 | | | |
| 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 | 189.64 |

| 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 | |
| 210.0 | 0.00 | 0.00 | 210.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 410.0 | 6.00 | 155.00 | 409.6 | -9.5 | 4.4 | 3.00 | 3.00 | 0.00 | 155.00 | |
| 994.7 | 22.11 | 190.25 | 975.7 | -146.6 | -2.3 | 3.00 | 2.76 | 6.03 | 46.12 | |
| 5,984.7 | 22.11 | 190.25 | 5,598.5 | -1,995.1 | -336.4 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 7,090.4 | 0.00 | 0.00 | 6,677.0 | -2,202.5 | -373.9 | 2.00 | -2.00 | 0.00 | 180.00 | Shideler Fee 6-6D TG |
| 8,930.4 | 0.00 | 0.00 | 8,517.0 | -2,202.5 | -373.9 | 0.00 | 0.00 | 0.00 | 0.00 | Shideler Fee 6-6D PB |
| 9,030.4 | 0.00 | 0.00 | 8,617.0 | -2,202.5 | -373.9 | 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 6-6D |
| Company: | EnCana Oil & Gas (USA) Inc | TVD Reference: | KB=24' @ 7128.0ft (Original Well Elev) |
| Project: | Mamm Creek | MD Reference: | KB=24' @ 7128.0ft (Original Well Elev) |
| Site: | O31E Pad | North Reference: | True |
| Well: | Shideler Fee 6-6D | Survey Calculation Method: | Minimum Curvature |
| Wellbore: | DD | | |
| Design: | Plan #1 | | |

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 | |
| 210.0 | 0.00 | 0.00 | 210.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | KOP @ 210' |
| 300.0 | 2.70 | 155.00 | 300.0 | -1.9 | 0.9 | 1.7 | 3.00 | 3.00 | |
| 400.0 | 5.70 | 155.00 | 399.7 | -8.6 | 4.0 | 7.8 | 3.00 | 3.00 | |
| 410.0 | 6.00 | 155.00 | 409.6 | -9.5 | 4.4 | 8.6 | 3.00 | 3.00 | |
| 500.0 | 8.11 | 168.93 | 499.0 | -20.0 | 7.6 | 18.4 | 3.00 | 2.34 | |
| 600.0 | 10.76 | 177.54 | 597.6 | -36.2 | 9.4 | 34.1 | 3.00 | 2.66 | |
| 700.0 | 13.56 | 182.71 | 695.3 | -57.3 | 9.2 | 54.9 | 3.00 | 2.80 | |
| 800.0 | 16.43 | 186.12 | 791.9 | -83.1 | 7.2 | 80.7 | 3.00 | 2.87 | |
| 900.0 | 19.34 | 188.53 | 887.1 | -113.5 | 3.2 | 111.4 | 3.00 | 2.91 | |
| 994.7 | 22.11 | 190.25 | 975.7 | -146.5 | -2.3 | 144.9 | 3.00 | 2.93 | EOB @ Inc. = 22.11° |
| 1,000.0 | 22.11 | 190.25 | 980.6 | -148.5 | -2.6 | 146.9 | 0.02 | 0.02 | |
| 1,094.7 | 22.11 | 190.25 | 1,068.3 | -183.6 | -9.0 | 182.5 | 0.00 | 0.00 | Surface Casing |
| 1,100.0 | 22.11 | 190.25 | 1,073.2 | -185.6 | -9.3 | 184.5 | 0.00 | 0.00 | |
| 1,200.0 | 22.11 | 190.25 | 1,165.9 | -222.6 | -16.0 | 222.1 | 0.00 | 0.00 | |
| 1,300.0 | 22.11 | 190.25 | 1,258.5 | -259.6 | -22.7 | 259.8 | 0.00 | 0.00 | |
| 1,400.0 | 22.11 | 190.25 | 1,351.1 | -296.7 | -29.4 | 297.4 | 0.00 | 0.00 | |
| 1,500.0 | 22.11 | 190.25 | 1,443.8 | -333.7 | -36.1 | 335.1 | 0.00 | 0.00 | |
| 1,600.0 | 22.11 | 190.25 | 1,536.4 | -370.8 | -42.8 | 372.7 | 0.00 | 0.00 | |
| 1,700.0 | 22.11 | 190.25 | 1,629.1 | -407.8 | -49.5 | 410.4 | 0.00 | 0.00 | |
| 1,800.0 | 22.11 | 190.25 | 1,721.7 | -444.9 | -56.2 | 448.0 | 0.00 | 0.00 | |
| 1,900.0 | 22.11 | 190.25 | 1,814.4 | -481.9 | -62.9 | 485.7 | 0.00 | 0.00 | |
| 2,000.0 | 22.11 | 190.25 | 1,907.0 | -519.0 | -69.6 | 523.3 | 0.00 | 0.00 | |
| 2,100.0 | 22.11 | 190.25 | 1,999.6 | -556.0 | -76.3 | 560.9 | 0.00 | 0.00 | |
| 2,200.0 | 22.11 | 190.25 | 2,092.3 | -593.1 | -83.0 | 598.6 | 0.00 | 0.00 | |
| 2,300.0 | 22.11 | 190.25 | 2,184.9 | -630.1 | -89.7 | 636.2 | 0.00 | 0.00 | |
| 2,400.0 | 22.11 | 190.25 | 2,277.6 | -667.1 | -96.4 | 673.9 | 0.00 | 0.00 | |
| 2,500.0 | 22.11 | 190.25 | 2,370.2 | -704.2 | -103.1 | 711.5 | 0.00 | 0.00 | |
| 2,600.0 | 22.11 | 190.25 | 2,462.9 | -741.2 | -109.8 | 749.2 | 0.00 | 0.00 | |
| 2,700.0 | 22.11 | 190.25 | 2,555.5 | -778.3 | -116.5 | 786.8 | 0.00 | 0.00 | |
| 2,800.0 | 22.11 | 190.25 | 2,648.1 | -815.3 | -123.2 | 824.4 | 0.00 | 0.00 | |
| 2,900.0 | 22.11 | 190.25 | 2,740.8 | -852.4 | -129.9 | 862.1 | 0.00 | 0.00 | |
| 3,000.0 | 22.11 | 190.25 | 2,833.4 | -889.4 | -136.6 | 899.7 | 0.00 | 0.00 | |
| 3,100.0 | 22.11 | 190.25 | 2,926.1 | -926.5 | -143.3 | 937.4 | 0.00 | 0.00 | |
| 3,200.0 | 22.11 | 190.25 | 3,018.7 | -963.5 | -150.0 | 975.0 | 0.00 | 0.00 | |
| 3,300.0 | 22.11 | 190.25 | 3,111.4 | -1,000.6 | -156.7 | 1,012.7 | 0.00 | 0.00 | |
| 3,400.0 | 22.11 | 190.25 | 3,204.0 | -1,037.6 | -163.4 | 1,050.3 | 0.00 | 0.00 | |
| 3,500.0 | 22.11 | 190.25 | 3,296.7 | -1,074.6 | -170.0 | 1,087.9 | 0.00 | 0.00 | |
| 3,600.0 | 22.11 | 190.25 | 3,389.3 | -1,111.7 | -176.7 | 1,125.6 | 0.00 | 0.00 | |
| 3,700.0 | 22.11 | 190.25 | 3,481.9 | -1,148.7 | -183.4 | 1,163.2 | 0.00 | 0.00 | |
| 3,800.0 | 22.11 | 190.25 | 3,574.6 | -1,185.8 | -190.1 | 1,200.9 | 0.00 | 0.00 | |
| 3,900.0 | 22.11 | 190.25 | 3,667.2 | -1,222.8 | -196.8 | 1,238.5 | 0.00 | 0.00 | |
| 4,000.0 | 22.11 | 190.25 | 3,759.9 | -1,259.9 | -203.5 | 1,276.2 | 0.00 | 0.00 | |
| 4,100.0 | 22.11 | 190.25 | 3,852.5 | -1,296.9 | -210.2 | 1,313.8 | 0.00 | 0.00 | |
| 4,200.0 | 22.11 | 190.25 | 3,945.2 | -1,334.0 | -216.9 | 1,351.5 | 0.00 | 0.00 | |
| 4,300.0 | 22.11 | 190.25 | 4,037.8 | -1,371.0 | -223.6 | 1,389.1 | 0.00 | 0.00 | |
| 4,400.0 | 22.11 | 190.25 | 4,130.4 | -1,408.1 | -230.3 | 1,426.7 | 0.00 | 0.00 | |
| 4,500.0 | 22.11 | 190.25 | 4,223.1 | -1,445.1 | -237.0 | 1,464.4 | 0.00 | 0.00 | |
| 4,600.0 | 22.11 | 190.25 | 4,315.7 | -1,482.1 | -243.7 | 1,502.0 | 0.00 | 0.00 | |
| 4,700.0 | 22.11 | 190.25 | 4,408.4 | -1,519.2 | -250.4 | 1,539.7 | 0.00 | 0.00 | |

Cathedral Energy Services

Planning Report

| | | | |
|------------------|-----------------------------|-------------------------------------|--|
| Database: | USA EDM 5000 Multi Users DB | Local Co-ordinate Reference: | Well Shideler Fee 6-6D |
| Company: | EnCana Oil & Gas (USA) Inc | TVD Reference: | KB=24' @ 7128.0ft (Original Well Elev) |
| Project: | Mamm Creek | MD Reference: | KB=24' @ 7128.0ft (Original Well Elev) |
| Site: | O31E Pad | North Reference: | True |
| Well: | Shideler Fee 6-6D | Survey Calculation Method: | Minimum Curvature |
| Wellbore: | DD | | |
| Design: | Plan #1 | | |

| 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 | 22.11 | 190.25 | 4,501.0 | -1,556.2 | -257.1 | 1,577.3 | 0.00 | 0.00 | |
| 4,900.0 | 22.11 | 190.25 | 4,593.7 | -1,593.3 | -263.8 | 1,615.0 | 0.00 | 0.00 | |
| 5,000.0 | 22.11 | 190.25 | 4,686.3 | -1,630.3 | -270.5 | 1,652.6 | 0.00 | 0.00 | |
| 5,100.0 | 22.11 | 190.25 | 4,778.9 | -1,667.4 | -277.2 | 1,690.2 | 0.00 | 0.00 | |
| 5,200.0 | 22.11 | 190.25 | 4,871.6 | -1,704.4 | -283.9 | 1,727.9 | 0.00 | 0.00 | |
| 5,300.0 | 22.11 | 190.25 | 4,964.2 | -1,741.5 | -290.6 | 1,765.5 | 0.00 | 0.00 | |
| 5,310.5 | 22.11 | 190.25 | 4,974.0 | -1,745.4 | -291.3 | 1,769.5 | 0.00 | 0.00 | Mesaverde Marker |
| 5,400.0 | 22.11 | 190.25 | 5,056.9 | -1,778.5 | -297.3 | 1,803.2 | 0.00 | 0.00 | |
| 5,500.0 | 22.11 | 190.25 | 5,149.5 | -1,815.6 | -304.0 | 1,840.8 | 0.00 | 0.00 | |
| 5,600.0 | 22.11 | 190.25 | 5,242.2 | -1,852.6 | -310.7 | 1,878.5 | 0.00 | 0.00 | |
| 5,700.0 | 22.11 | 190.25 | 5,334.8 | -1,889.6 | -317.4 | 1,916.1 | 0.00 | 0.00 | |
| 5,800.0 | 22.11 | 190.25 | 5,427.5 | -1,926.7 | -324.1 | 1,953.7 | 0.00 | 0.00 | |
| 5,878.3 | 22.11 | 190.25 | 5,500.0 | -1,955.7 | -329.3 | 1,983.2 | 0.00 | 0.00 | Williams Fork |
| 5,900.0 | 22.11 | 190.25 | 5,520.1 | -1,963.7 | -330.8 | 1,991.4 | 0.00 | 0.00 | |
| 5,984.7 | 22.11 | 190.25 | 5,598.6 | -1,995.1 | -336.4 | 2,023.3 | 0.00 | 0.00 | Start 2° Drop |
| 6,000.0 | 21.81 | 190.25 | 5,612.8 | -2,000.7 | -337.4 | 2,029.0 | 2.00 | -2.00 | |
| 6,100.0 | 19.81 | 190.25 | 5,706.2 | -2,035.7 | -343.8 | 2,064.5 | 2.00 | -2.00 | |
| 6,200.0 | 17.81 | 190.25 | 5,800.9 | -2,067.4 | -349.5 | 2,096.8 | 2.00 | -2.00 | |
| 6,300.0 | 15.81 | 190.25 | 5,896.6 | -2,095.9 | -354.6 | 2,125.7 | 2.00 | -2.00 | |
| 6,400.0 | 13.81 | 190.25 | 5,993.3 | -2,121.0 | -359.2 | 2,151.2 | 2.00 | -2.00 | |
| 6,500.0 | 11.81 | 190.25 | 6,090.8 | -2,142.8 | -363.1 | 2,173.4 | 2.00 | -2.00 | |
| 6,600.0 | 9.81 | 190.25 | 6,189.0 | -2,161.3 | -366.5 | 2,192.1 | 2.00 | -2.00 | |
| 6,700.0 | 7.81 | 190.25 | 6,287.8 | -2,176.4 | -369.2 | 2,207.4 | 2.00 | -2.00 | |
| 6,800.0 | 5.81 | 190.25 | 6,387.1 | -2,188.0 | -371.3 | 2,219.3 | 2.00 | -2.00 | |
| 6,900.0 | 3.81 | 190.25 | 6,486.8 | -2,196.3 | -372.8 | 2,227.7 | 2.00 | -2.00 | |
| 7,000.0 | 1.81 | 190.25 | 6,586.6 | -2,201.1 | -373.7 | 2,232.6 | 2.00 | -2.00 | |
| 7,090.4 | 0.00 | 0.00 | 6,677.0 | -2,202.5 | -373.9 | 2,234.0 | 2.00 | -2.00 | EOD @ Inc. = 0° - Top Gas |
| 7,100.0 | 0.00 | 0.00 | 6,686.6 | -2,202.5 | -373.9 | 2,234.0 | 0.00 | 0.00 | |
| 7,200.0 | 0.00 | 0.00 | 6,786.6 | -2,202.5 | -373.9 | 2,234.0 | 0.00 | 0.00 | |
| 7,300.0 | 0.00 | 0.00 | 6,886.6 | -2,202.5 | -373.9 | 2,234.0 | 0.00 | 0.00 | |
| 7,400.0 | 0.00 | 0.00 | 6,986.6 | -2,202.5 | -373.9 | 2,234.0 | 0.00 | 0.00 | |
| 7,500.0 | 0.00 | 0.00 | 7,086.6 | -2,202.5 | -373.9 | 2,234.0 | 0.00 | 0.00 | |
| 7,600.0 | 0.00 | 0.00 | 7,186.6 | -2,202.5 | -373.9 | 2,234.0 | 0.00 | 0.00 | |
| 7,700.0 | 0.00 | 0.00 | 7,286.6 | -2,202.5 | -373.9 | 2,234.0 | 0.00 | 0.00 | |
| 7,800.0 | 0.00 | 0.00 | 7,386.6 | -2,202.5 | -373.9 | 2,234.0 | 0.00 | 0.00 | |
| 7,900.0 | 0.00 | 0.00 | 7,486.6 | -2,202.5 | -373.9 | 2,234.0 | 0.00 | 0.00 | |
| 8,000.0 | 0.00 | 0.00 | 7,586.6 | -2,202.5 | -373.9 | 2,234.0 | 0.00 | 0.00 | |
| 8,100.0 | 0.00 | 0.00 | 7,686.6 | -2,202.5 | -373.9 | 2,234.0 | 0.00 | 0.00 | |
| 8,126.4 | 0.00 | 0.00 | 7,713.0 | -2,202.5 | -373.9 | 2,234.0 | 0.00 | 0.00 | Coal Ridge |
| 8,200.0 | 0.00 | 0.00 | 7,786.6 | -2,202.5 | -373.9 | 2,234.0 | 0.00 | 0.00 | |
| 8,300.0 | 0.00 | 0.00 | 7,886.6 | -2,202.5 | -373.9 | 2,234.0 | 0.00 | 0.00 | |
| 8,400.0 | 0.00 | 0.00 | 7,986.6 | -2,202.5 | -373.9 | 2,234.0 | 0.00 | 0.00 | |
| 8,500.0 | 0.00 | 0.00 | 8,086.6 | -2,202.5 | -373.9 | 2,234.0 | 0.00 | 0.00 | |
| 8,600.0 | 0.00 | 0.00 | 8,186.6 | -2,202.5 | -373.9 | 2,234.0 | 0.00 | 0.00 | |
| 8,700.0 | 0.00 | 0.00 | 8,286.6 | -2,202.5 | -373.9 | 2,234.0 | 0.00 | 0.00 | |
| 8,780.4 | 0.00 | 0.00 | 8,367.0 | -2,202.5 | -373.9 | 2,234.0 | 0.00 | 0.00 | Rollins |
| 8,800.0 | 0.00 | 0.00 | 8,386.6 | -2,202.5 | -373.9 | 2,234.0 | 0.00 | 0.00 | |
| 8,900.0 | 0.00 | 0.00 | 8,486.6 | -2,202.5 | -373.9 | 2,234.0 | 0.00 | 0.00 | |
| 8,930.4 | 0.00 | 0.00 | 8,517.0 | -2,202.5 | -373.9 | 2,234.0 | 0.00 | 0.00 | TD @ 8,930.4' MD |
| 9,000.0 | 0.00 | 0.00 | 8,586.6 | -2,202.5 | -373.9 | 2,234.0 | 0.00 | 0.00 | |
| 9,030.4 | 0.00 | 0.00 | 8,617.0 | -2,202.5 | -373.9 | 2,234.0 | 0.00 | 0.00 | Permit TD @ 9,030.4' MD |

Cathedral Energy Services

Planning Report

| | | | |
|------------------|-----------------------------|-------------------------------------|--|
| Database: | USA EDM 5000 Multi Users DB | Local Co-ordinate Reference: | Well Shideler Fee 6-6D |
| Company: | EnCana Oil & Gas (USA) Inc | TVD Reference: | KB=24' @ 7128.0ft (Original Well Elev) |
| Project: | Mamm Creek | MD Reference: | KB=24' @ 7128.0ft (Original Well Elev) |
| Site: | O31E Pad | North Reference: | True |
| Well: | Shideler Fee 6-6D | Survey Calculation Method: | Minimum Curvature |
| Wellbore: | DD | | |
| Design: | Plan #1 | | |

| Targets | | | | | | | | | |
|---------------------------|-----------|----------|---------|----------|--------|--------------|--------------|-----------|-------------|
| Target Name | Dip Angle | Dip Dir. | TVD | +N/-S | +E/-W | Northing | Easting | Latitude | Longitude |
| - hit/miss target | (°) | (°) | (ft) | (ft) | (ft) | (ft) | (ft) | | |
| - Shape | | | | | | | | | |
| Shideler Fee 6-6D TGT | 0.00 | 0.00 | 6,677.0 | -2,202.5 | -373.9 | 1,574,614.78 | 2,376,174.98 | 39.390258 | -107.707492 |
| - plan hits target center | | | | | | | | | |
| - Point | | | | | | | | | |
| Shideler Fee 6-6D PBHL | 0.00 | 0.00 | 8,517.0 | -2,202.5 | -373.9 | 1,574,614.78 | 2,376,174.98 | 39.390258 | -107.707492 |
| - plan hits target center | | | | | | | | | |
| - Circle (radius 25.0) | | | | | | | | | |

| Casing Points | | | | |
|----------------|----------------|----------------|-----------------|---------------|
| Measured Depth | Vertical Depth | Name | Casing Diameter | Hole Diameter |
| (ft) | (ft) | | (in) | (in) |
| 1,094.7 | 1,068.3 | Surface Casing | | |

| Formations | | | | | |
|----------------|----------------|------------------|-----------|-----|---------------|
| Measured Depth | Vertical Depth | Name | Lithology | Dip | Dip Direction |
| (ft) | (ft) | | | (°) | (°) |
| 5,310.5 | 4,974.0 | Mesaverde Marker | | | |
| 5,878.3 | 5,500.0 | Williams Fork | | | |
| 7,090.4 | 6,677.0 | Top Gas | | | |
| 8,126.4 | 7,713.0 | Coal Ridge | | | |
| 8,780.4 | 8,367.0 | Rollins | | | |

| Plan Annotations | | | | | |
|------------------|----------------|-------------------|--------|-------------------------|--|
| Measured Depth | Vertical Depth | Local Coordinates | | | |
| (ft) | (ft) | +N/-S | +E/-W | Comment | |
| (ft) | (ft) | (ft) | (ft) | | |
| 210.0 | 210.0 | 0.0 | 0.0 | KOP @ 210' | |
| 994.7 | 975.7 | -146.5 | -2.3 | EOB @ Inc. = 22.11° | |
| 5,984.7 | 5,598.6 | -1,995.1 | -336.4 | Start 2° Drop | |
| 7,090.4 | 6,677.0 | -2,202.5 | -373.9 | EOD @ Inc. = 0° | |
| 8,930.4 | 8,517.0 | -2,202.5 | -373.9 | TD @ 8,930.4' MD | |
| 9,030.4 | 8,617.0 | -2,202.5 | -373.9 | Permit TD @ 9,030.4' MD | |