



Project: COLORADO NORTHERN ZONE - 83
Site: WHIPSNAKE 36-22 HZ PAD
Well: WHIPSNAKE 2C-22HZ
Wellbore: OH
Design: PLAN #1 PRELIMINARY



WELL DETAILS: WHIPSNAKE 2C-22HZ

GL 4998 & KB 17 @ 5005.00ft (ASSUMED)

| +N/-S | +E/-W | Northing | Easting | Latitude | Longitude |
|-------|-------|------------|------------|------------|--------------|
| 0.00 | 0.00 | 1286180.56 | 3174557.13 | 40.1172720 | -104.8758450 |

SECTION DETAILS

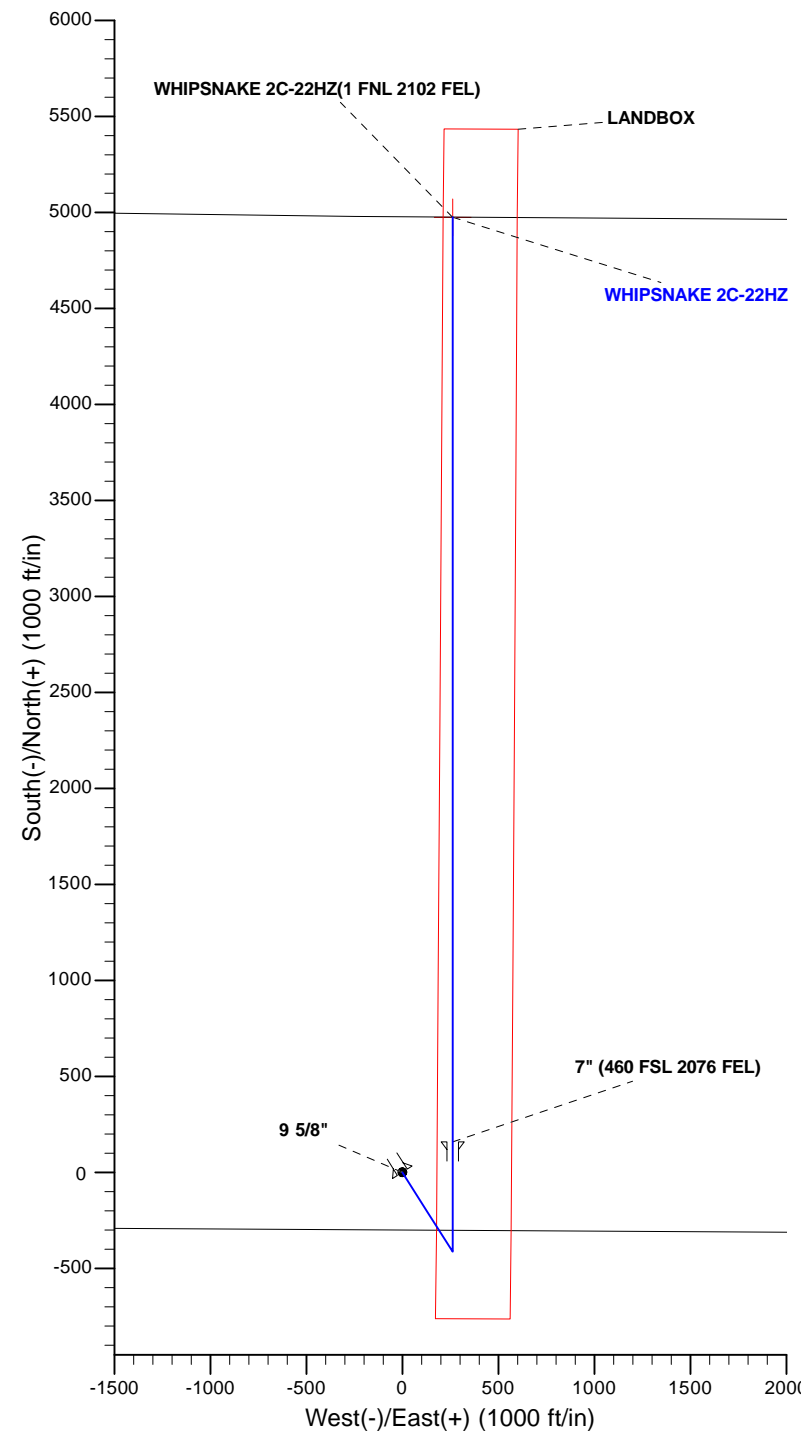
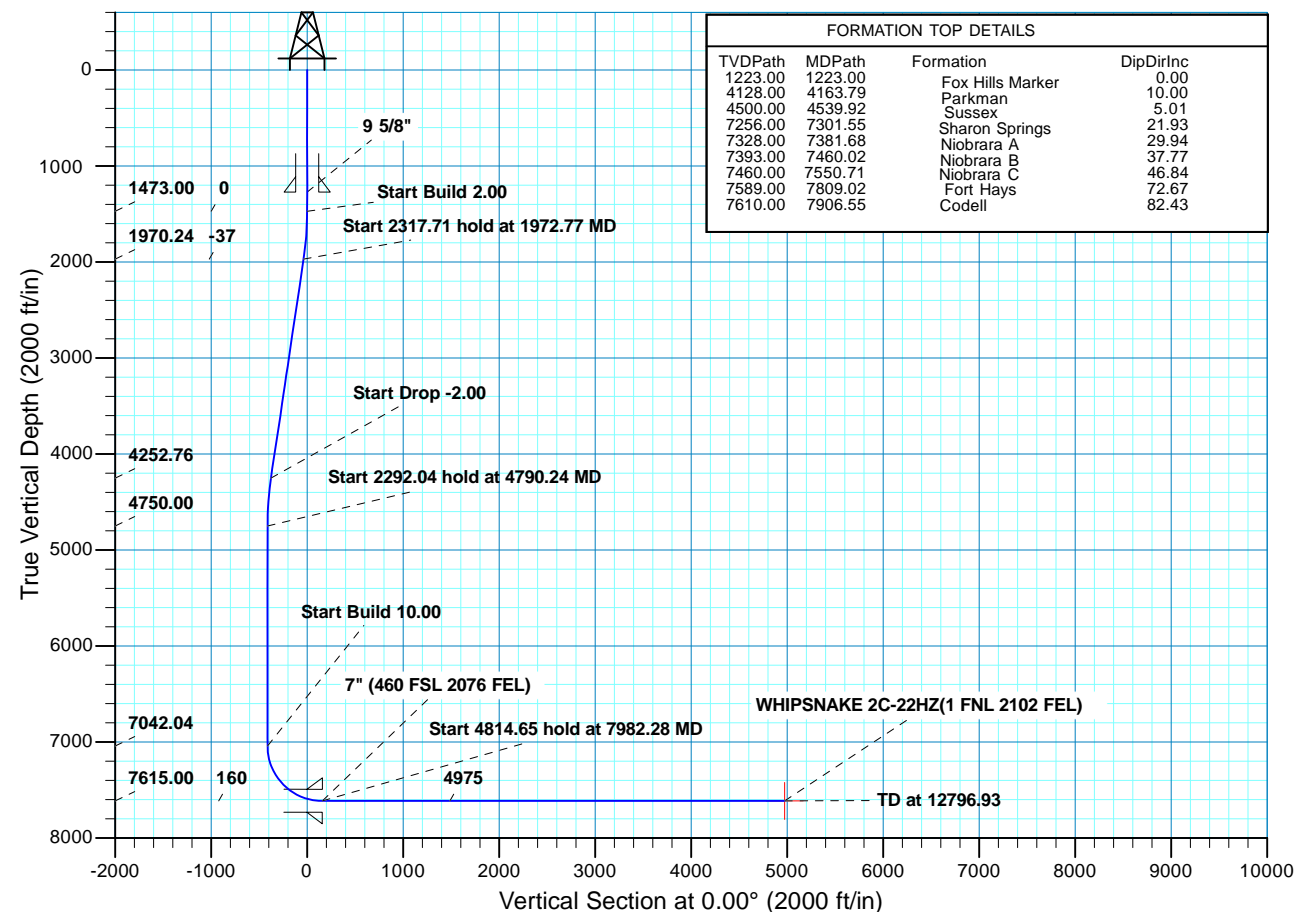
| MD | Inc | Azi | TVD | +N/-S | +E/-W | Dleg | TFace | VSec | Target |
|----------|-------|--------|---------|---------|--------|-------|--------|---------|-----------------------------------|
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 1473.00 | 0.00 | 0.00 | 1473.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 1972.77 | 10.00 | 147.58 | 1970.24 | -36.71 | 23.31 | 2.00 | 147.58 | -36.71 | |
| 4290.47 | 10.00 | 147.58 | 4252.76 | -376.29 | 238.97 | 0.00 | 0.00 | -376.29 | |
| 4790.24 | 0.00 | 0.00 | 4750.00 | -413.00 | 262.28 | 2.00 | 180.00 | -413.00 | |
| 7082.28 | 0.00 | 0.00 | 7042.04 | -413.00 | 262.28 | 0.00 | 0.00 | -413.00 | |
| 7982.28 | 90.00 | 0.00 | 7615.00 | 159.96 | 262.28 | 10.00 | 0.00 | 159.96 | |
| 12796.93 | 90.00 | 0.00 | 7615.00 | 4974.61 | 262.28 | 0.00 | 0.00 | 4974.61 | WHIPSNAKE 2C-22HZ(1 FNL 2102 FEL) |

CASING DETAILS

| TVD | MD | Name | Size |
|---------|---------|--------|-------|
| 1273.00 | 1273.00 | 9 5/8" | 9.625 |
| 7615.00 | 7982.28 | 7" | 7.000 |

FORMATION TOP DETAILS

| TVDPPath | MDPath | Formation | DipDirInc |
|----------|---------|------------------|-----------|
| 1223.00 | 1223.00 | Fox Hills Marker | 0.00 |
| 4128.00 | 4163.79 | Parkman | 10.00 |
| 4500.00 | 4539.92 | Sussex | 5.01 |
| 7256.00 | 7301.55 | Sharon Springs | 21.93 |
| 7328.00 | 7381.68 | Niobrara A | 29.94 |
| 7393.00 | 7460.02 | Niobrara B | 37.77 |
| 7460.00 | 7550.71 | Niobrara C | 46.84 |
| 7589.00 | 7809.02 | Fort Hays | 72.67 |
| 7610.00 | 7906.55 | Codell | 82.43 |



Plan: PLAN #1 PRELIMINARY (WHIPSNAKE 2C-22HZ/OH)

Created By: RobertScott Date: 7:53, February 18 2014



Scientific Drilling

US ROCKIES REGION PLANNING

COLORADO NORTHERN ZONE - 83

WHIPSNAKE 36-22 HZ PAD

WHIPSNAKE 2C-22HZ

OH

Plan: PLAN #1 PRELIMINARY

Standard Planning Report

18 February, 2014

| | | | |
|------------------|-----------------------------|-------------------------------------|---------------------------------------|
| Database: | EDM 5000.1 Single User Db | Local Co-ordinate Reference: | Well WHIPSNAKE 2C-22HZ |
| Company: | US ROCKIES REGION PLANNING | TVD Reference: | GL 4998 & KB 17 @ 5005.00ft (ASSUMED) |
| Project: | COLORADO NORTHERN ZONE - 83 | MD Reference: | GL 4998 & KB 17 @ 5005.00ft (ASSUMED) |
| Site: | WHIPSNAKE 36-22 HZ PAD | North Reference: | True |
| Well: | WHIPSNAKE 2C-22HZ | Survey Calculation Method: | Minimum Curvature |
| Wellbore: | OH | | |
| Design: | PLAN #1 PRELIMINARY | | |

| | | | |
|--------------------|--|----------------------|----------------|
| Project | COLORADO NORTHERN ZONE - 83, KERR MCGEE OIL & GAS ONSHORE LP | | |
| Map System: | US State Plane 1983 | System Datum: | Mean Sea Level |
| Geo Datum: | North American Datum 1983 | | |
| Map Zone: | Colorado Northern Zone | | |

| | | | | |
|------------------------------|---|---------------------|-------------------|---------------------------------|
| Site | WHIPSNAKE 36-22 HZ PAD, SECTION 22 T2N R67W | | | |
| Site Position: | | Northing: | 1,286,180.56 usft | Latitude: 40.1172720 |
| From: | Lat/Long | Easting: | 3,174,557.14 usft | Longitude: -104.8758450 |
| Position Uncertainty: | 0.00 ft | Slot Radius: | 13.200 in | Grid Convergence: 0.40 ° |

| | | | | |
|-----------------------------|-------------------------------------|---------|----------------------------|-------------------|
| Well | WHIPSNAKE 2C-22HZ, 300 FSL 2338 FWL | | | |
| Well Position | +N/-S | 0.00 ft | Northing: | 1,286,180.56 usft |
| | +E/-W | 0.00 ft | Easting: | 3,174,557.14 usft |
| Position Uncertainty | | 0.00 ft | Wellhead Elevation: | 0.00 ft |
| | | | Ground Level: | 4,988.00 ft |

| | | | | | |
|------------------|-------------------|--------------------|------------------------|----------------------|----------------------------|
| Wellbore | OH | | | | |
| Magnetics | Model Name | Sample Date | Declination (°) | Dip Angle (°) | Field Strength (nT) |
| | BGGM2013 | 02/13/14 | 8.58 | 66.70 | 52,609 |

| | | | | |
|--------------------------|------------------------------|-------------------|----------------------|----------------------|
| Design | PLAN #1 PRELIMINARY | | | |
| Audit Notes: | | | | |
| Version: | Phase: | PLAN | Tie On Depth: | 0.00 |
| Vertical Section: | Depth From (TVD) (ft) | +N/-S (ft) | +E/-W (ft) | Direction (°) |
| | 0.00 | 0.00 | 0.00 | 0.00 |

| 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 |
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 1,473.00 | 0.00 | 0.00 | 1,473.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 1,972.77 | 10.00 | 147.58 | 1,970.24 | -36.71 | 23.31 | 2.00 | 2.00 | 0.00 | 147.58 | |
| 4,290.47 | 10.00 | 147.58 | 4,252.76 | -376.29 | 238.97 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 4,790.24 | 0.00 | 0.00 | 4,750.00 | -413.00 | 262.28 | 2.00 | -2.00 | 0.00 | 180.00 | |
| 7,082.28 | 0.00 | 0.00 | 7,042.04 | -413.00 | 262.28 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 7,982.28 | 90.00 | 0.00 | 7,615.00 | 159.96 | 262.28 | 10.00 | 10.00 | 0.00 | 0.00 | |
| 12,796.93 | 90.00 | 0.00 | 7,615.00 | 4,974.61 | 262.28 | 0.00 | 0.00 | 0.00 | 0.00 | WHIPSNAKE 2C-22H |

| | | | |
|------------------|-----------------------------|-------------------------------------|---------------------------------------|
| Database: | EDM 5000.1 Single User Db | Local Co-ordinate Reference: | Well WHIPSNAKE 2C-22HZ |
| Company: | US ROCKIES REGION PLANNING | TVD Reference: | GL 4998 & KB 17 @ 5005.00ft (ASSUMED) |
| Project: | COLORADO NORTHERN ZONE - 83 | MD Reference: | GL 4998 & KB 17 @ 5005.00ft (ASSUMED) |
| Site: | WHIPSNAKE 36-22 HZ PAD | North Reference: | True |
| Well: | WHIPSNAKE 2C-22HZ | Survey Calculation Method: | Minimum Curvature |
| Wellbore: | OH | | |
| Design: | PLAN #1 PRELIMINARY | | |

| 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) | Turn Rate (°/100ft) |
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 100.00 | 0.00 | 0.00 | 100.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 200.00 | 0.00 | 0.00 | 200.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 300.00 | 0.00 | 0.00 | 300.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 400.00 | 0.00 | 0.00 | 400.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 500.00 | 0.00 | 0.00 | 500.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 600.00 | 0.00 | 0.00 | 600.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 700.00 | 0.00 | 0.00 | 700.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 800.00 | 0.00 | 0.00 | 800.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 900.00 | 0.00 | 0.00 | 900.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1,000.00 | 0.00 | 0.00 | 1,000.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1,100.00 | 0.00 | 0.00 | 1,100.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1,200.00 | 0.00 | 0.00 | 1,200.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1,223.00 | 0.00 | 0.00 | 1,223.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Fox Hills Marker | | | | | | | | | |
| 1,273.00 | 0.00 | 0.00 | 1,273.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9 5/8" | | | | | | | | | |
| 1,300.00 | 0.00 | 0.00 | 1,300.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1,400.00 | 0.00 | 0.00 | 1,400.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1,473.00 | 0.00 | 0.00 | 1,473.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Start Build 2.00 | | | | | | | | | |
| 1,500.00 | 0.54 | 147.58 | 1,500.00 | -0.11 | 0.07 | -0.11 | 2.00 | 2.00 | 0.00 |
| 1,600.00 | 2.54 | 147.58 | 1,599.96 | -2.38 | 1.51 | -2.38 | 2.00 | 2.00 | 0.00 |
| 1,700.00 | 4.54 | 147.58 | 1,699.76 | -7.59 | 4.82 | -7.59 | 2.00 | 2.00 | 0.00 |
| 1,800.00 | 6.54 | 147.58 | 1,799.29 | -15.74 | 9.99 | -15.74 | 2.00 | 2.00 | 0.00 |
| 1,900.00 | 8.54 | 147.58 | 1,898.42 | -26.81 | 17.03 | -26.81 | 2.00 | 2.00 | 0.00 |
| 1,972.77 | 10.00 | 147.58 | 1,970.24 | -36.71 | 23.31 | -36.71 | 2.00 | 2.00 | 0.00 |
| Start 2317.71 hold at 1972.77 MD | | | | | | | | | |
| 2,000.00 | 10.00 | 147.58 | 1,997.06 | -40.70 | 25.84 | -40.70 | 0.00 | 0.00 | 0.00 |
| 2,100.00 | 10.00 | 147.58 | 2,095.54 | -55.35 | 35.15 | -55.35 | 0.00 | 0.00 | 0.00 |
| 2,200.00 | 10.00 | 147.58 | 2,194.02 | -70.00 | 44.45 | -70.00 | 0.00 | 0.00 | 0.00 |
| 2,300.00 | 10.00 | 147.58 | 2,292.50 | -84.65 | 53.76 | -84.65 | 0.00 | 0.00 | 0.00 |
| 2,400.00 | 10.00 | 147.58 | 2,390.98 | -99.30 | 63.06 | -99.30 | 0.00 | 0.00 | 0.00 |
| 2,500.00 | 10.00 | 147.58 | 2,489.47 | -113.96 | 72.37 | -113.96 | 0.00 | 0.00 | 0.00 |
| 2,600.00 | 10.00 | 147.58 | 2,587.95 | -128.61 | 81.67 | -128.61 | 0.00 | 0.00 | 0.00 |
| 2,700.00 | 10.00 | 147.58 | 2,686.43 | -143.26 | 90.98 | -143.26 | 0.00 | 0.00 | 0.00 |
| 2,800.00 | 10.00 | 147.58 | 2,784.91 | -157.91 | 100.28 | -157.91 | 0.00 | 0.00 | 0.00 |
| 2,900.00 | 10.00 | 147.58 | 2,883.40 | -172.56 | 109.59 | -172.56 | 0.00 | 0.00 | 0.00 |
| 3,000.00 | 10.00 | 147.58 | 2,981.88 | -187.22 | 118.89 | -187.22 | 0.00 | 0.00 | 0.00 |
| 3,100.00 | 10.00 | 147.58 | 3,080.36 | -201.87 | 128.20 | -201.87 | 0.00 | 0.00 | 0.00 |
| 3,200.00 | 10.00 | 147.58 | 3,178.84 | -216.52 | 137.50 | -216.52 | 0.00 | 0.00 | 0.00 |
| 3,300.00 | 10.00 | 147.58 | 3,277.32 | -231.17 | 146.81 | -231.17 | 0.00 | 0.00 | 0.00 |
| 3,400.00 | 10.00 | 147.58 | 3,375.81 | -245.82 | 156.11 | -245.82 | 0.00 | 0.00 | 0.00 |
| 3,500.00 | 10.00 | 147.58 | 3,474.29 | -260.47 | 165.42 | -260.47 | 0.00 | 0.00 | 0.00 |
| 3,600.00 | 10.00 | 147.58 | 3,572.77 | -275.13 | 174.72 | -275.13 | 0.00 | 0.00 | 0.00 |
| 3,700.00 | 10.00 | 147.58 | 3,671.25 | -289.78 | 184.03 | -289.78 | 0.00 | 0.00 | 0.00 |
| 3,800.00 | 10.00 | 147.58 | 3,769.74 | -304.43 | 193.33 | -304.43 | 0.00 | 0.00 | 0.00 |
| 3,900.00 | 10.00 | 147.58 | 3,868.22 | -319.08 | 202.64 | -319.08 | 0.00 | 0.00 | 0.00 |
| 4,000.00 | 10.00 | 147.58 | 3,966.70 | -333.73 | 211.94 | -333.73 | 0.00 | 0.00 | 0.00 |
| 4,100.00 | 10.00 | 147.58 | 4,065.18 | -348.39 | 221.25 | -348.39 | 0.00 | 0.00 | 0.00 |
| 4,163.79 | 10.00 | 147.58 | 4,128.00 | -357.73 | 227.18 | -357.73 | 0.00 | 0.00 | 0.00 |
| Parkman | | | | | | | | | |
| 4,200.00 | 10.00 | 147.58 | 4,163.66 | -363.04 | 230.55 | -363.04 | 0.00 | 0.00 | 0.00 |
| 4,290.47 | 10.00 | 147.58 | 4,252.76 | -376.29 | 238.97 | -376.29 | 0.00 | 0.00 | 0.00 |

| | | | |
|------------------|-----------------------------|-------------------------------------|---------------------------------------|
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| Project: | COLORADO NORTHERN ZONE - 83 | MD Reference: | GL 4998 & KB 17 @ 5005.00ft (ASSUMED) |
| Site: | WHIPSNAKE 36-22 HZ PAD | North Reference: | True |
| Well: | WHIPSNAKE 2C-22HZ | Survey Calculation Method: | Minimum Curvature |
| Wellbore: | OH | | |
| Design: | PLAN #1 PRELIMINARY | | |

| 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) | Turn Rate (°/100ft) |
| Start Drop -2.00 | | | | | | | | | |
| 4,300.00 | 9.80 | 147.58 | 4,262.15 | -377.68 | 239.85 | -377.68 | 2.00 | -2.00 | 0.00 |
| 4,400.00 | 7.80 | 147.58 | 4,360.97 | -390.60 | 248.05 | -390.60 | 2.00 | -2.00 | 0.00 |
| 4,500.00 | 5.80 | 147.58 | 4,460.26 | -400.60 | 254.40 | -400.60 | 2.00 | -2.00 | 0.00 |
| 4,539.92 | 5.01 | 147.58 | 4,500.00 | -403.77 | 256.42 | -403.77 | 2.00 | -2.00 | 0.00 |
| Sussex | | | | | | | | | |
| 4,600.00 | 3.80 | 147.58 | 4,559.90 | -407.67 | 258.90 | -407.67 | 2.00 | -2.00 | 0.00 |
| 4,700.00 | 1.80 | 147.58 | 4,659.77 | -411.80 | 261.52 | -411.80 | 2.00 | -2.00 | 0.00 |
| 4,790.24 | 0.00 | 0.00 | 4,750.00 | -413.00 | 262.28 | -413.00 | 2.00 | -2.00 | 0.00 |
| Start 2292.04 hold at 4790.24 MD | | | | | | | | | |
| 4,800.00 | 0.00 | 0.00 | 4,759.76 | -413.00 | 262.28 | -413.00 | 0.00 | 0.00 | 0.00 |
| 4,900.00 | 0.00 | 0.00 | 4,859.76 | -413.00 | 262.28 | -413.00 | 0.00 | 0.00 | 0.00 |
| 5,000.00 | 0.00 | 0.00 | 4,959.76 | -413.00 | 262.28 | -413.00 | 0.00 | 0.00 | 0.00 |
| 5,100.00 | 0.00 | 0.00 | 5,059.76 | -413.00 | 262.28 | -413.00 | 0.00 | 0.00 | 0.00 |
| 5,200.00 | 0.00 | 0.00 | 5,159.76 | -413.00 | 262.28 | -413.00 | 0.00 | 0.00 | 0.00 |
| 5,300.00 | 0.00 | 0.00 | 5,259.76 | -413.00 | 262.28 | -413.00 | 0.00 | 0.00 | 0.00 |
| 5,400.00 | 0.00 | 0.00 | 5,359.76 | -413.00 | 262.28 | -413.00 | 0.00 | 0.00 | 0.00 |
| 5,500.00 | 0.00 | 0.00 | 5,459.76 | -413.00 | 262.28 | -413.00 | 0.00 | 0.00 | 0.00 |
| 5,600.00 | 0.00 | 0.00 | 5,559.76 | -413.00 | 262.28 | -413.00 | 0.00 | 0.00 | 0.00 |
| 5,700.00 | 0.00 | 0.00 | 5,659.76 | -413.00 | 262.28 | -413.00 | 0.00 | 0.00 | 0.00 |
| 5,800.00 | 0.00 | 0.00 | 5,759.76 | -413.00 | 262.28 | -413.00 | 0.00 | 0.00 | 0.00 |
| 5,900.00 | 0.00 | 0.00 | 5,859.76 | -413.00 | 262.28 | -413.00 | 0.00 | 0.00 | 0.00 |
| 6,000.00 | 0.00 | 0.00 | 5,959.76 | -413.00 | 262.28 | -413.00 | 0.00 | 0.00 | 0.00 |
| 6,100.00 | 0.00 | 0.00 | 6,059.76 | -413.00 | 262.28 | -413.00 | 0.00 | 0.00 | 0.00 |
| 6,200.00 | 0.00 | 0.00 | 6,159.76 | -413.00 | 262.28 | -413.00 | 0.00 | 0.00 | 0.00 |
| 6,300.00 | 0.00 | 0.00 | 6,259.76 | -413.00 | 262.28 | -413.00 | 0.00 | 0.00 | 0.00 |
| 6,400.00 | 0.00 | 0.00 | 6,359.76 | -413.00 | 262.28 | -413.00 | 0.00 | 0.00 | 0.00 |
| 6,500.00 | 0.00 | 0.00 | 6,459.76 | -413.00 | 262.28 | -413.00 | 0.00 | 0.00 | 0.00 |
| 6,600.00 | 0.00 | 0.00 | 6,559.76 | -413.00 | 262.28 | -413.00 | 0.00 | 0.00 | 0.00 |
| 6,700.00 | 0.00 | 0.00 | 6,659.76 | -413.00 | 262.28 | -413.00 | 0.00 | 0.00 | 0.00 |
| 6,800.00 | 0.00 | 0.00 | 6,759.76 | -413.00 | 262.28 | -413.00 | 0.00 | 0.00 | 0.00 |
| 6,900.00 | 0.00 | 0.00 | 6,859.76 | -413.00 | 262.28 | -413.00 | 0.00 | 0.00 | 0.00 |
| 7,000.00 | 0.00 | 0.00 | 6,959.76 | -413.00 | 262.28 | -413.00 | 0.00 | 0.00 | 0.00 |
| 7,082.28 | 0.00 | 0.00 | 7,042.04 | -413.00 | 262.28 | -413.00 | 0.00 | 0.00 | 0.00 |
| Start Build 10.00 | | | | | | | | | |
| 7,100.00 | 1.77 | 0.00 | 7,059.76 | -412.73 | 262.28 | -412.73 | 10.00 | 10.00 | 0.00 |
| 7,200.00 | 11.77 | 0.00 | 7,158.93 | -400.95 | 262.28 | -400.95 | 10.00 | 10.00 | 0.00 |
| 7,300.00 | 21.77 | 0.00 | 7,254.56 | -372.13 | 262.28 | -372.13 | 10.00 | 10.00 | 0.00 |
| 7,301.55 | 21.93 | 0.00 | 7,256.00 | -371.55 | 262.28 | -371.55 | 10.00 | 10.00 | 0.00 |
| Sharon Springs | | | | | | | | | |
| 7,381.68 | 29.94 | 0.00 | 7,328.00 | -336.54 | 262.28 | -336.54 | 10.00 | 10.00 | 0.00 |
| Niobrara A | | | | | | | | | |
| 7,400.00 | 31.77 | 0.00 | 7,343.73 | -327.14 | 262.28 | -327.14 | 10.00 | 10.00 | 0.00 |
| 7,460.02 | 37.77 | 0.00 | 7,393.00 | -292.93 | 262.28 | -292.93 | 10.00 | 10.00 | 0.00 |
| Niobrara B | | | | | | | | | |
| 7,500.00 | 41.77 | 0.00 | 7,423.73 | -267.36 | 262.28 | -267.36 | 10.00 | 10.00 | 0.00 |
| 7,550.71 | 46.84 | 0.00 | 7,460.00 | -231.95 | 262.28 | -231.95 | 10.00 | 10.00 | 0.00 |
| Niobrara C | | | | | | | | | |
| 7,600.00 | 51.77 | 0.00 | 7,492.13 | -194.58 | 262.28 | -194.58 | 10.00 | 10.00 | 0.00 |
| 7,700.00 | 61.77 | 0.00 | 7,546.86 | -111.04 | 262.28 | -111.04 | 10.00 | 10.00 | 0.00 |
| 7,800.00 | 71.77 | 0.00 | 7,586.25 | -19.26 | 262.28 | -19.26 | 10.00 | 10.00 | 0.00 |
| 7,809.02 | 72.67 | 0.00 | 7,589.00 | -10.67 | 262.28 | -10.67 | 10.00 | 10.00 | 0.00 |
| Fort Hays | | | | | | | | | |

| | | | |
|------------------|-----------------------------|-------------------------------------|---------------------------------------|
| Database: | EDM 5000.1 Single User Db | Local Co-ordinate Reference: | Well WHIPSNAKE 2C-22HZ |
| Company: | US ROCKIES REGION PLANNING | TVD Reference: | GL 4998 & KB 17 @ 5005.00ft (ASSUMED) |
| Project: | COLORADO NORTHERN ZONE - 83 | MD Reference: | GL 4998 & KB 17 @ 5005.00ft (ASSUMED) |
| Site: | WHIPSNAKE 36-22 HZ PAD | North Reference: | True |
| Well: | WHIPSNAKE 2C-22HZ | Survey Calculation Method: | Minimum Curvature |
| Wellbore: | OH | | |
| Design: | PLAN #1 PRELIMINARY | | |

| 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) | Turn Rate (°/100ft) |
| 7,900.00 | 81.77 | 0.00 | 7,609.10 | 77.96 | 262.28 | 77.96 | 10.00 | 10.00 | 0.00 |
| 7,906.55 | 82.43 | 0.00 | 7,610.00 | 84.45 | 262.28 | 84.45 | 10.00 | 10.00 | 0.00 |
| Codell | | | | | | | | | |
| 7,982.28 | 90.00 | 0.00 | 7,615.00 | 159.96 | 262.28 | 159.96 | 10.00 | 10.00 | 0.00 |
| Start 4814.65 hold at 7982.28 MD - 7" (460 FSL 2076 FEL) | | | | | | | | | |
| 8,000.00 | 90.00 | 0.00 | 7,615.00 | 177.68 | 262.28 | 177.68 | 0.00 | 0.00 | 0.00 |
| 8,100.00 | 90.00 | 0.00 | 7,615.00 | 277.68 | 262.28 | 277.68 | 0.00 | 0.00 | 0.00 |
| 8,200.00 | 90.00 | 0.00 | 7,615.00 | 377.68 | 262.28 | 377.68 | 0.00 | 0.00 | 0.00 |
| 8,300.00 | 90.00 | 0.00 | 7,615.00 | 477.68 | 262.28 | 477.68 | 0.00 | 0.00 | 0.00 |
| 8,400.00 | 90.00 | 0.00 | 7,615.00 | 577.68 | 262.28 | 577.68 | 0.00 | 0.00 | 0.00 |
| 8,500.00 | 90.00 | 0.00 | 7,615.00 | 677.68 | 262.28 | 677.68 | 0.00 | 0.00 | 0.00 |
| 8,600.00 | 90.00 | 0.00 | 7,615.00 | 777.68 | 262.28 | 777.68 | 0.00 | 0.00 | 0.00 |
| 8,700.00 | 90.00 | 0.00 | 7,615.00 | 877.68 | 262.28 | 877.68 | 0.00 | 0.00 | 0.00 |
| 8,800.00 | 90.00 | 0.00 | 7,615.00 | 977.68 | 262.28 | 977.68 | 0.00 | 0.00 | 0.00 |
| 8,900.00 | 90.00 | 0.00 | 7,615.00 | 1,077.68 | 262.28 | 1,077.68 | 0.00 | 0.00 | 0.00 |
| 9,000.00 | 90.00 | 0.00 | 7,615.00 | 1,177.68 | 262.28 | 1,177.68 | 0.00 | 0.00 | 0.00 |
| 9,100.00 | 90.00 | 0.00 | 7,615.00 | 1,277.68 | 262.28 | 1,277.68 | 0.00 | 0.00 | 0.00 |
| 9,200.00 | 90.00 | 0.00 | 7,615.00 | 1,377.68 | 262.28 | 1,377.68 | 0.00 | 0.00 | 0.00 |
| 9,300.00 | 90.00 | 0.00 | 7,615.00 | 1,477.68 | 262.28 | 1,477.68 | 0.00 | 0.00 | 0.00 |
| 9,400.00 | 90.00 | 0.00 | 7,615.00 | 1,577.68 | 262.28 | 1,577.68 | 0.00 | 0.00 | 0.00 |
| 9,500.00 | 90.00 | 0.00 | 7,615.00 | 1,677.68 | 262.28 | 1,677.68 | 0.00 | 0.00 | 0.00 |
| 9,600.00 | 90.00 | 0.00 | 7,615.00 | 1,777.68 | 262.28 | 1,777.68 | 0.00 | 0.00 | 0.00 |
| 9,700.00 | 90.00 | 0.00 | 7,615.00 | 1,877.68 | 262.28 | 1,877.68 | 0.00 | 0.00 | 0.00 |
| 9,800.00 | 90.00 | 0.00 | 7,615.00 | 1,977.68 | 262.28 | 1,977.68 | 0.00 | 0.00 | 0.00 |
| 9,900.00 | 90.00 | 0.00 | 7,615.00 | 2,077.68 | 262.28 | 2,077.68 | 0.00 | 0.00 | 0.00 |
| 10,000.00 | 90.00 | 0.00 | 7,615.00 | 2,177.68 | 262.28 | 2,177.68 | 0.00 | 0.00 | 0.00 |
| 10,100.00 | 90.00 | 0.00 | 7,615.00 | 2,277.68 | 262.28 | 2,277.68 | 0.00 | 0.00 | 0.00 |
| 10,200.00 | 90.00 | 0.00 | 7,615.00 | 2,377.68 | 262.28 | 2,377.68 | 0.00 | 0.00 | 0.00 |
| 10,300.00 | 90.00 | 0.00 | 7,615.00 | 2,477.68 | 262.28 | 2,477.68 | 0.00 | 0.00 | 0.00 |
| 10,400.00 | 90.00 | 0.00 | 7,615.00 | 2,577.68 | 262.28 | 2,577.68 | 0.00 | 0.00 | 0.00 |
| 10,500.00 | 90.00 | 0.00 | 7,615.00 | 2,677.68 | 262.28 | 2,677.68 | 0.00 | 0.00 | 0.00 |
| 10,600.00 | 90.00 | 0.00 | 7,615.00 | 2,777.68 | 262.28 | 2,777.68 | 0.00 | 0.00 | 0.00 |
| 10,700.00 | 90.00 | 0.00 | 7,615.00 | 2,877.68 | 262.28 | 2,877.68 | 0.00 | 0.00 | 0.00 |
| 10,800.00 | 90.00 | 0.00 | 7,615.00 | 2,977.68 | 262.28 | 2,977.68 | 0.00 | 0.00 | 0.00 |
| 10,900.00 | 90.00 | 0.00 | 7,615.00 | 3,077.68 | 262.28 | 3,077.68 | 0.00 | 0.00 | 0.00 |
| 11,000.00 | 90.00 | 0.00 | 7,615.00 | 3,177.68 | 262.28 | 3,177.68 | 0.00 | 0.00 | 0.00 |
| 11,100.00 | 90.00 | 0.00 | 7,615.00 | 3,277.68 | 262.28 | 3,277.68 | 0.00 | 0.00 | 0.00 |
| 11,200.00 | 90.00 | 0.00 | 7,615.00 | 3,377.68 | 262.28 | 3,377.68 | 0.00 | 0.00 | 0.00 |
| 11,300.00 | 90.00 | 0.00 | 7,615.00 | 3,477.68 | 262.28 | 3,477.68 | 0.00 | 0.00 | 0.00 |
| 11,400.00 | 90.00 | 0.00 | 7,615.00 | 3,577.68 | 262.28 | 3,577.68 | 0.00 | 0.00 | 0.00 |
| 11,500.00 | 90.00 | 0.00 | 7,615.00 | 3,677.68 | 262.28 | 3,677.68 | 0.00 | 0.00 | 0.00 |
| 11,600.00 | 90.00 | 0.00 | 7,615.00 | 3,777.68 | 262.28 | 3,777.68 | 0.00 | 0.00 | 0.00 |
| 11,700.00 | 90.00 | 0.00 | 7,615.00 | 3,877.68 | 262.28 | 3,877.68 | 0.00 | 0.00 | 0.00 |
| 11,800.00 | 90.00 | 0.00 | 7,615.00 | 3,977.68 | 262.28 | 3,977.68 | 0.00 | 0.00 | 0.00 |
| 11,900.00 | 90.00 | 0.00 | 7,615.00 | 4,077.68 | 262.28 | 4,077.68 | 0.00 | 0.00 | 0.00 |
| 12,000.00 | 90.00 | 0.00 | 7,615.00 | 4,177.68 | 262.28 | 4,177.68 | 0.00 | 0.00 | 0.00 |
| 12,100.00 | 90.00 | 0.00 | 7,615.00 | 4,277.68 | 262.28 | 4,277.68 | 0.00 | 0.00 | 0.00 |
| 12,200.00 | 90.00 | 0.00 | 7,615.00 | 4,377.68 | 262.28 | 4,377.68 | 0.00 | 0.00 | 0.00 |
| 12,300.00 | 90.00 | 0.00 | 7,615.00 | 4,477.68 | 262.28 | 4,477.68 | 0.00 | 0.00 | 0.00 |
| 12,400.00 | 90.00 | 0.00 | 7,615.00 | 4,577.68 | 262.28 | 4,577.68 | 0.00 | 0.00 | 0.00 |
| 12,500.00 | 90.00 | 0.00 | 7,615.00 | 4,677.68 | 262.28 | 4,677.68 | 0.00 | 0.00 | 0.00 |
| 12,600.00 | 90.00 | 0.00 | 7,615.00 | 4,777.68 | 262.28 | 4,777.68 | 0.00 | 0.00 | 0.00 |
| 12,700.00 | 90.00 | 0.00 | 7,615.00 | 4,877.68 | 262.28 | 4,877.68 | 0.00 | 0.00 | 0.00 |
| 12,796.93 | 90.00 | 0.00 | 7,615.00 | 4,974.61 | 262.28 | 4,974.61 | 0.00 | 0.00 | 0.00 |

| | | | |
|------------------|-----------------------------|-------------------------------------|---------------------------------------|
| Database: | EDM 5000.1 Single User Db | Local Co-ordinate Reference: | Well WHIPSNAKE 2C-22HZ |
| Company: | US ROCKIES REGION PLANNING | TVD Reference: | GL 4998 & KB 17 @ 5005.00ft (ASSUMED) |
| Project: | COLORADO NORTHERN ZONE - 83 | MD Reference: | GL 4998 & KB 17 @ 5005.00ft (ASSUMED) |
| Site: | WHIPSNAKE 36-22 HZ PAD | North Reference: | True |
| Well: | WHIPSNAKE 2C-22HZ | Survey Calculation Method: | Minimum Curvature |
| Wellbore: | OH | | |
| Design: | PLAN #1 PRELIMINARY | | |

| 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) | Turn Rate (°/100ft) |
| TD at 12796.93 - WHIPSNAKE 2C-22HZ(1 FNL 2102 FEL) | | | | | | | | | |

| Design Targets | | | | | | | | | |
|---------------------------|---------------|--------------|----------|------------|------------|-----------------|----------------|------------|--------------|
| Target Name | Dip Angle (°) | Dip Dir. (°) | TVD (ft) | +N/-S (ft) | +E/-W (ft) | Northing (usft) | Easting (usft) | Latitude | Longitude |
| - hit/miss target | | | | | | | | | |
| - Shape | | | | | | | | | |
| WHIPSNAKE 2C-22HZ(| 0.00 | 0.00 | 7,615.00 | 4,974.61 | 262.28 | 1,291,156.88 | 3,174,784.39 | 40.1309280 | -104.8749070 |
| - plan hits target center | | | | | | | | | |
| - Point | | | | | | | | | |

| Casing Points | | | | | |
|---------------------|---------------------|-----------------------|----------------------|--------------------|--|
| Measured Depth (ft) | Vertical Depth (ft) | Name | Casing Diameter (in) | Hole Diameter (in) | |
| 1,273.00 | 1,273.00 | 9 5/8" | 9.625 | 12.250 | |
| 7,982.28 | 7,615.00 | 7" (460 FSL 2076 FEL) | 7.000 | 7.500 | |

| Formations | | | | | | |
|---------------------|---------------------|------------------|-----------|---------|-------------------|--|
| Measured Depth (ft) | Vertical Depth (ft) | Name | Lithology | Dip (°) | Dip Direction (°) | |
| 1,223.00 | 1,223.00 | Fox Hills Marker | | | | |
| 4,163.79 | 4,128.00 | Parkman | | | | |
| 4,539.92 | 4,500.00 | Sussex | | | | |
| 7,301.55 | 7,256.00 | Sharon Springs | | | | |
| 7,381.68 | 7,328.00 | Niobrara A | | | | |
| 7,460.02 | 7,393.00 | Niobrara B | | | | |
| 7,550.71 | 7,460.00 | Niobrara C | | | | |
| 7,809.02 | 7,589.00 | Fort Hays | | | | |
| 7,906.55 | 7,610.00 | Codell | | | | |

| Plan Annotations | | | | | |
|---------------------|---------------------|-------------------|------------|----------------------------------|--|
| Measured Depth (ft) | Vertical Depth (ft) | Local Coordinates | | | |
| | | +N/-S (ft) | +E/-W (ft) | Comment | |
| 1,473.00 | 1,473.00 | 0.00 | 0.00 | Start Build 2.00 | |
| 1,972.77 | 1,970.24 | -36.71 | 23.31 | Start 2317.71 hold at 1972.77 MD | |
| 4,290.47 | 4,252.76 | -376.29 | 238.97 | Start Drop -2.00 | |
| 4,790.24 | 4,750.00 | -413.00 | 262.28 | Start 2292.04 hold at 4790.24 MD | |
| 7,082.28 | 7,042.04 | -413.00 | 262.28 | Start Build 10.00 | |
| 7,982.28 | 7,615.00 | 159.96 | 262.28 | Start 4814.65 hold at 7982.28 MD | |
| 12,796.93 | 7,615.00 | 4,974.61 | 262.28 | TD at 12796.93 | |