



US ROCKIES REGION PLANNING

COLORADO NOTHERN ZONE - 83

WELD_CARMA 6 PAD

P_CARMA 22-36

P_CARMA 22-36

Plan: PLAN #1 12-16-09 RHS

Standard Planning Report

16 December, 2009





Azimuths to True North
Magnetic North: 9.11°
Magnetic Field
Strength: 53174.7nT
Dip Angle: 66.90°
Date: 12/16/2009
Model: IGRF200510

WELL DETAILS: P_CARMA 22-36

| +N/-S | +E/-W | Northing | Ground Level: Easting | 4864.00 Latitude | Longitude | Slot |
|-------|-------|------------|--------------------------|---------------------|-------------------|------|
| 0.00 | 0.00 | 1310949.49 | 3152152.51 | 40° 11' 8.412 N | 104° 57' 19.476 W | |

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 | |
| 900.00 | 0.00 | 0.00 | 900.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 1659.85 | 15.20 | 187.11 | 1650.97 | -99.41 | -12.40 | 2.00 | 187.11 | 100.18 | |
| 5460.82 | 15.20 | 187.11 | 5319.03 | -1088.14 | -135.69 | 0.00 | 0.00 | 1096.57 | |
| 6220.68 | 0.00 | 0.00 | 6070.00 | -1187.55 | -148.08 | 2.00 | 180.00 | 1196.75 | |
| 8065.68 | 0.00 | 0.00 | 7915.00 | -1187.55 | -148.08 | 0.00 | 0.00 | 1196.75 | PBHL_CARMA 22-36(2625 FSL 1320 FWL)50°RAD |

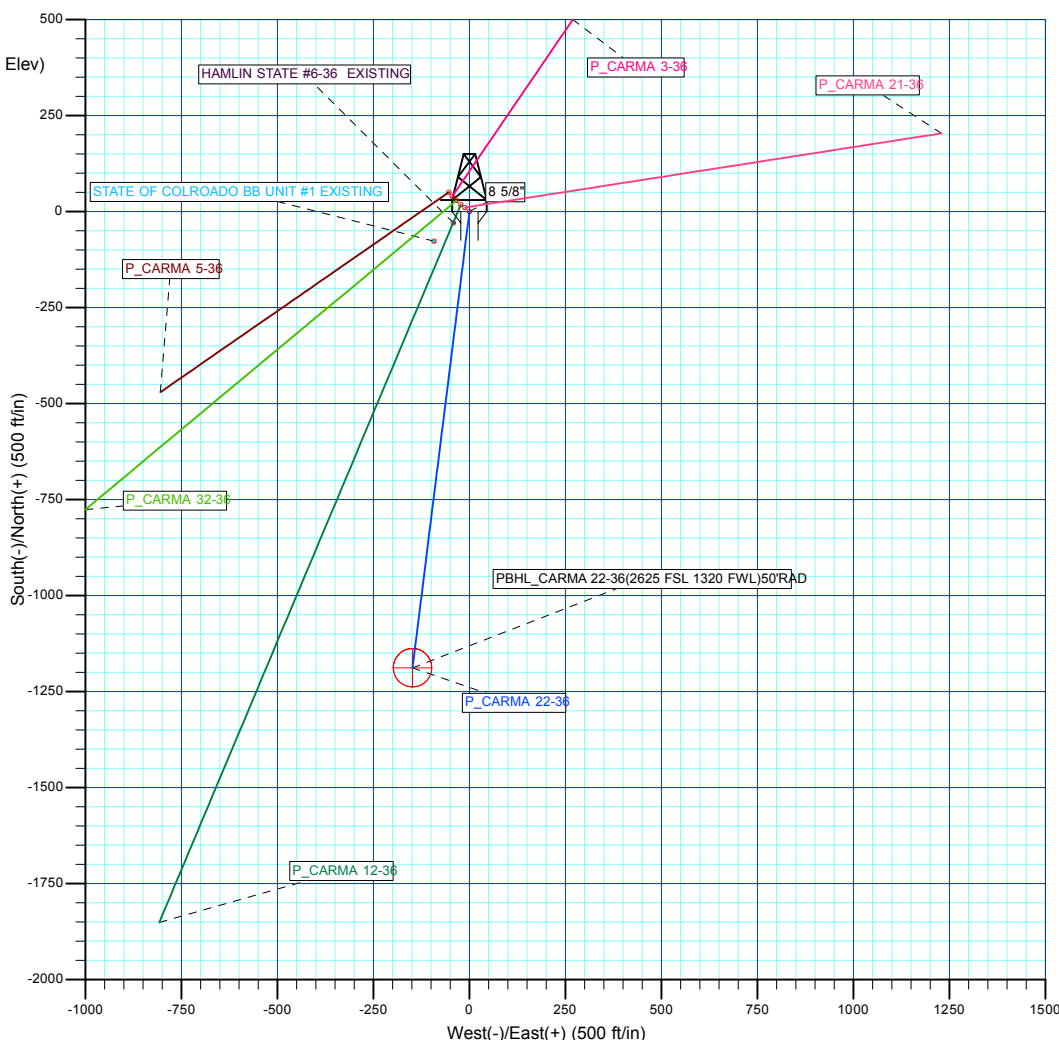
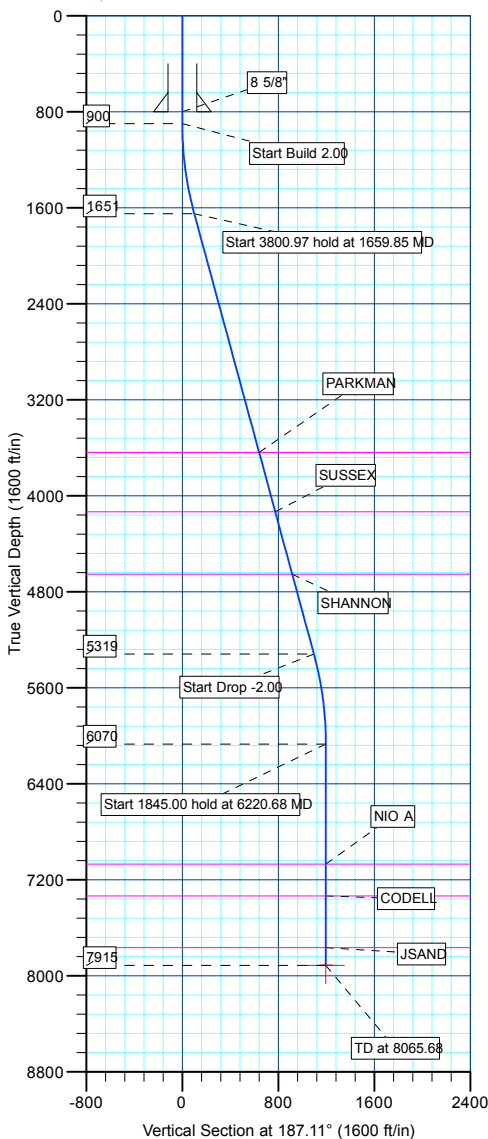
CASING DETAILS

| TVD | MD | Name | Size |
|--------|--------|--------|------|
| 800.00 | 800.00 | 8 5/8" | 8.62 |

FORMATION TOP DETAILS

| TVDPath | MDPath | Formation |
|---------|---------|-----------|
| 3639.00 | 3719.92 | PARKMAN |
| 4134.00 | 4232.86 | SUSSEX |
| 4654.00 | 4771.70 | SHANNON |
| 7070.00 | 7220.68 | NIO A |
| 7335.00 | 7485.68 | CODELL |
| 7765.00 | 7915.68 | JSAND |

KB ELEV: WELL @ 4879.00ft (Original Well Elev)
GRD ELEV: 4864.00



WELLBORE TARGET DETAILS (MAP CO-ORDINATES AND LAT/LONG)

| Name | TVD | +N/-S | +E/-W | Northing | Easting | Latitude | Longitude | Shape |
|------|---------|----------|---------|------------|------------|------------------|-------------------|------------------------|
| PBHL | 7915.00 | -1187.55 | -148.08 | 1309761.06 | 3152011.72 | 40° 10' 56.676 N | 104° 57' 21.384 W | Circle (Radius: 50.00) |

Plan: PLAN #1 12-16-09 RHS (P_CARMA 22-36/P_CARMA 22-36)

Created By: Robert H. Scott

| | | | |
|------------------|----------------------------|-------------------------------------|---------------------------------------|
| Database: | EDM 2003.21 Single User Db | Local Co-ordinate Reference: | Well P_CARMA 22-36 |
| Company: | US ROCKIES REGION PLANNING | TVD Reference: | WELL @ 4879.00ft (Original Well Elev) |
| Project: | COLORADO NOTHERN ZONE - 83 | MD Reference: | WELL @ 4879.00ft (Original Well Elev) |
| Site: | WELD_CARMA 6 PAD | North Reference: | True |
| Well: | P_CARMA 22-36 | Survey Calculation Method: | Minimum Curvature |
| Wellbore: | P_CARMA 22-36 | | |
| Design: | PLAN #1 12-16-09 RHS | | |

| | | | |
|--------------------|---|----------------------|----------------|
| Project | COLORADO NOTHERN 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 | | WELD_CARMA 6 PAD, SECTION 36 T3N R68W | | | |
| Site Position: | | Northing: | 1,310,967.58 ft | Latitude: | 40° 11' 8.592 N |
| From: | Lat/Long | Easting: | 3,152,130.05 ft | Longitude: | 104° 57' 19.764 W |
| Position Uncertainty: | 0.00 ft | Slot Radius: | in | Grid Convergence: | 0.35 ° |

| Well | P_CARMA 22-36 | | | | | |
|----------------------|---------------|-----------|---------------------|-----------------|---------------|-------------------|
| Well Position | +N/-S | -18.23 ft | Northing: | 1,310,949.49 ft | Latitude: | 40° 11' 8.412 N |
| | +E/-W | 22.35 ft | Easting: | 3,152,152.51 ft | Longitude: | 104° 57' 19.476 W |
| Position Uncertainty | | 0.00 ft | Wellhead Elevation: | ft | Ground Level: | 4,864.00 ft |

| | | | | | |
|------------------|-------------------|--------------------|------------------------|----------------------|----------------------------|
| Wellbore | P_CARMA 22-36 | | | | |
| Magnetics | Model Name | Sample Date | Declination (°) | Dip Angle (°) | Field Strength (nT) |
| | IGRF200510 | 12/16/2009 | 9.11 | 66.90 | 53,175 |

| | | | | |
|--------------------------|------------------------------|-------------------|----------------------|----------------------|
| Design | PLAN #1 12-16-09 RHS | | | |
| 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 | 187.11 |

| 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 | |
| 900.00 | 0.00 | 0.00 | 900.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 1,659.85 | 15.20 | 187.11 | 1,650.97 | -99.41 | -12.40 | 2.00 | 2.00 | 0.00 | 187.11 | |
| 5,460.82 | 15.20 | 187.11 | 5,319.03 | -1,088.14 | -135.69 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 6,220.68 | 0.00 | 0.00 | 6,070.00 | -1,187.55 | -148.08 | 2.00 | -2.00 | 0.00 | 180.00 | |
| 8,065.68 | 0.00 | 0.00 | 7,915.00 | -1,187.55 | -148.08 | 0.00 | 0.00 | 0.00 | 0.00 | PBHL_CARMA 22-36 |

| | | | |
|------------------|----------------------------|-------------------------------------|---------------------------------------|
| Database: | EDM 2003.21 Single User Db | Local Co-ordinate Reference: | Well P_CARMA 22-36 |
| Company: | US ROCKIES REGION PLANNING | TVD Reference: | WELL @ 4879.00ft (Original Well Elev) |
| Project: | COLORADO NOTHERN ZONE - 83 | MD Reference: | WELL @ 4879.00ft (Original Well Elev) |
| Site: | WELD_CARMA 6 PAD | North Reference: | True |
| Well: | P_CARMA 22-36 | Survey Calculation Method: | Minimum Curvature |
| Wellbore: | P_CARMA 22-36 | | |
| Design: | PLAN #1 12-16-09 RHS | | |

| 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 Build 2.00 | | | | | | | | | |
| 900.00 | 0.00 | 0.00 | 900.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1,000.00 | 2.00 | 187.11 | 999.98 | -1.73 | -0.22 | 1.75 | 2.00 | 2.00 | 0.00 |
| 1,100.00 | 4.00 | 187.11 | 1,099.84 | -6.92 | -0.86 | 6.98 | 2.00 | 2.00 | 0.00 |
| 1,200.00 | 6.00 | 187.11 | 1,199.45 | -15.57 | -1.94 | 15.69 | 2.00 | 2.00 | 0.00 |
| 1,300.00 | 8.00 | 187.11 | 1,298.70 | -27.67 | -3.45 | 27.88 | 2.00 | 2.00 | 0.00 |
| 1,400.00 | 10.00 | 187.11 | 1,397.47 | -43.19 | -5.39 | 43.52 | 2.00 | 2.00 | 0.00 |
| 1,500.00 | 12.00 | 187.11 | 1,495.62 | -62.12 | -7.75 | 62.60 | 2.00 | 2.00 | 0.00 |
| 1,600.00 | 14.00 | 187.11 | 1,593.06 | -84.44 | -10.53 | 85.10 | 2.00 | 2.00 | 0.00 |
| Start 3800.97 hold at 1659.85 MD | | | | | | | | | |
| 1,659.85 | 15.20 | 187.11 | 1,650.97 | -99.41 | -12.40 | 100.18 | 2.00 | 2.00 | 0.00 |
| 1,700.00 | 15.20 | 187.11 | 1,689.72 | -109.86 | -13.70 | 110.71 | 0.00 | 0.00 | 0.00 |
| 1,800.00 | 15.20 | 187.11 | 1,786.22 | -135.87 | -16.94 | 136.92 | 0.00 | 0.00 | 0.00 |
| 1,900.00 | 15.20 | 187.11 | 1,882.72 | -161.88 | -20.19 | 163.13 | 0.00 | 0.00 | 0.00 |
| 2,000.00 | 15.20 | 187.11 | 1,979.23 | -187.89 | -23.43 | 189.35 | 0.00 | 0.00 | 0.00 |
| 2,100.00 | 15.20 | 187.11 | 2,075.73 | -213.90 | -26.67 | 215.56 | 0.00 | 0.00 | 0.00 |
| 2,200.00 | 15.20 | 187.11 | 2,172.23 | -239.92 | -29.92 | 241.78 | 0.00 | 0.00 | 0.00 |
| 2,300.00 | 15.20 | 187.11 | 2,268.74 | -265.93 | -33.16 | 267.99 | 0.00 | 0.00 | 0.00 |
| 2,400.00 | 15.20 | 187.11 | 2,365.24 | -291.94 | -36.40 | 294.20 | 0.00 | 0.00 | 0.00 |
| 2,500.00 | 15.20 | 187.11 | 2,461.74 | -317.95 | -39.65 | 320.42 | 0.00 | 0.00 | 0.00 |
| 2,600.00 | 15.20 | 187.11 | 2,558.24 | -343.97 | -42.89 | 346.63 | 0.00 | 0.00 | 0.00 |
| 2,700.00 | 15.20 | 187.11 | 2,654.75 | -369.98 | -46.14 | 372.85 | 0.00 | 0.00 | 0.00 |
| 2,800.00 | 15.20 | 187.11 | 2,751.25 | -395.99 | -49.38 | 399.06 | 0.00 | 0.00 | 0.00 |
| 2,900.00 | 15.20 | 187.11 | 2,847.75 | -422.00 | -52.62 | 425.27 | 0.00 | 0.00 | 0.00 |
| 3,000.00 | 15.20 | 187.11 | 2,944.26 | -448.02 | -55.87 | 451.49 | 0.00 | 0.00 | 0.00 |
| 3,100.00 | 15.20 | 187.11 | 3,040.76 | -474.03 | -59.11 | 477.70 | 0.00 | 0.00 | 0.00 |
| 3,200.00 | 15.20 | 187.11 | 3,137.26 | -500.04 | -62.35 | 503.91 | 0.00 | 0.00 | 0.00 |
| 3,300.00 | 15.20 | 187.11 | 3,233.77 | -526.05 | -65.60 | 530.13 | 0.00 | 0.00 | 0.00 |
| 3,400.00 | 15.20 | 187.11 | 3,330.27 | -552.07 | -68.84 | 556.34 | 0.00 | 0.00 | 0.00 |
| 3,500.00 | 15.20 | 187.11 | 3,426.77 | -578.08 | -72.09 | 582.56 | 0.00 | 0.00 | 0.00 |
| 3,600.00 | 15.20 | 187.11 | 3,523.28 | -604.09 | -75.33 | 608.77 | 0.00 | 0.00 | 0.00 |
| 3,700.00 | 15.20 | 187.11 | 3,619.78 | -630.10 | -78.57 | 634.98 | 0.00 | 0.00 | 0.00 |
| PARKMAN | | | | | | | | | |
| 3,719.92 | 15.20 | 187.11 | 3,639.00 | -635.29 | -79.22 | 640.21 | 0.00 | 0.00 | 0.00 |
| 3,800.00 | 15.20 | 187.11 | 3,716.28 | -656.12 | -81.82 | 661.20 | 0.00 | 0.00 | 0.00 |
| 3,900.00 | 15.20 | 187.11 | 3,812.78 | -682.13 | -85.06 | 687.41 | 0.00 | 0.00 | 0.00 |
| 4,000.00 | 15.20 | 187.11 | 3,909.29 | -708.14 | -88.30 | 713.63 | 0.00 | 0.00 | 0.00 |
| 4,100.00 | 15.20 | 187.11 | 4,005.79 | -734.15 | -91.55 | 739.84 | 0.00 | 0.00 | 0.00 |
| 4,200.00 | 15.20 | 187.11 | 4,102.29 | -760.17 | -94.79 | 766.05 | 0.00 | 0.00 | 0.00 |
| SUSSEX | | | | | | | | | |
| 4,232.86 | 15.20 | 187.11 | 4,134.00 | -768.71 | -95.86 | 774.67 | 0.00 | 0.00 | 0.00 |
| 4,300.00 | 15.20 | 187.11 | 4,198.80 | -786.18 | -98.03 | 792.27 | 0.00 | 0.00 | 0.00 |
| 4,400.00 | 15.20 | 187.11 | 4,295.30 | -812.19 | -101.28 | 818.48 | 0.00 | 0.00 | 0.00 |
| 4,500.00 | 15.20 | 187.11 | 4,391.80 | -838.20 | -104.52 | 844.70 | 0.00 | 0.00 | 0.00 |
| 4,600.00 | 15.20 | 187.11 | 4,488.31 | -864.22 | -107.77 | 870.91 | 0.00 | 0.00 | 0.00 |
| 4,700.00 | 15.20 | 187.11 | 4,584.81 | -890.23 | -111.01 | 897.12 | 0.00 | 0.00 | 0.00 |
| SHANNON | | | | | | | | | |
| 4,771.70 | 15.20 | 187.11 | 4,654.00 | -908.88 | -113.34 | 915.92 | 0.00 | 0.00 | 0.00 |
| 4,800.00 | 15.20 | 187.11 | 4,681.31 | -916.24 | -114.25 | 923.34 | 0.00 | 0.00 | 0.00 |
| 4,900.00 | 15.20 | 187.11 | 4,777.81 | -942.25 | -117.50 | 949.55 | 0.00 | 0.00 | 0.00 |
| 5,000.00 | 15.20 | 187.11 | 4,874.32 | -968.27 | -120.74 | 975.77 | 0.00 | 0.00 | 0.00 |
| 5,100.00 | 15.20 | 187.11 | 4,970.82 | -994.28 | -123.98 | 1,001.98 | 0.00 | 0.00 | 0.00 |
| 5,200.00 | 15.20 | 187.11 | 5,067.32 | -1,020.29 | -127.23 | 1,028.19 | 0.00 | 0.00 | 0.00 |

| | | | |
|------------------|----------------------------|-------------------------------------|---------------------------------------|
| Database: | EDM 2003.21 Single User Db | Local Co-ordinate Reference: | Well P_CARMA 22-36 |
| Company: | US ROCKIES REGION PLANNING | TVD Reference: | WELL @ 4879.00ft (Original Well Elev) |
| Project: | COLORADO NOTHERN ZONE - 83 | MD Reference: | WELL @ 4879.00ft (Original Well Elev) |
| Site: | WELD_CARMA 6 PAD | North Reference: | True |
| Well: | P_CARMA 22-36 | Survey Calculation Method: | Minimum Curvature |
| Wellbore: | P_CARMA 22-36 | | |
| Design: | PLAN #1 12-16-09 RHS | | |

| 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) | |
| 5,300.00 | 15.20 | 187.11 | 5,163.83 | -1,046.30 | -130.47 | 1,054.41 | 0.00 | 0.00 | 0.00 | |
| 5,400.00 | 15.20 | 187.11 | 5,260.33 | -1,072.32 | -133.72 | 1,080.62 | 0.00 | 0.00 | 0.00 | |
| Start Drop -2.00 | | | | | | | | | | |
| 5,460.82 | 15.20 | 187.11 | 5,319.03 | -1,088.14 | -135.69 | 1,096.57 | 0.00 | 0.00 | 0.00 | |
| 5,500.00 | 14.41 | 187.11 | 5,356.90 | -1,098.07 | -136.93 | 1,106.58 | 2.00 | -2.00 | 0.00 | |
| 5,600.00 | 12.41 | 187.11 | 5,454.17 | -1,121.09 | -139.80 | 1,129.77 | 2.00 | -2.00 | 0.00 | |
| 5,700.00 | 10.41 | 187.11 | 5,552.19 | -1,140.73 | -142.25 | 1,149.56 | 2.00 | -2.00 | 0.00 | |
| 5,800.00 | 8.41 | 187.11 | 5,650.83 | -1,156.96 | -144.27 | 1,165.92 | 2.00 | -2.00 | 0.00 | |
| 5,900.00 | 6.41 | 187.11 | 5,749.99 | -1,169.76 | -145.87 | 1,178.82 | 2.00 | -2.00 | 0.00 | |
| 6,000.00 | 4.41 | 187.11 | 5,849.54 | -1,179.12 | -147.03 | 1,188.25 | 2.00 | -2.00 | 0.00 | |
| 6,100.00 | 2.41 | 187.11 | 5,949.36 | -1,185.03 | -147.77 | 1,194.21 | 2.00 | -2.00 | 0.00 | |
| 6,200.00 | 0.41 | 187.11 | 6,049.32 | -1,187.48 | -148.08 | 1,196.67 | 2.00 | -2.00 | 0.00 | |
| Start 1845.00 hold at 6220.68 MD | | | | | | | | | | |
| 6,220.68 | 0.00 | 0.00 | 6,070.00 | -1,187.55 | -148.08 | 1,196.75 | 2.00 | -2.00 | 836.20 | |
| 6,300.00 | 0.00 | 0.00 | 6,149.32 | -1,187.55 | -148.08 | 1,196.75 | 0.00 | 0.00 | 0.00 | |
| 6,400.00 | 0.00 | 0.00 | 6,249.32 | -1,187.55 | -148.08 | 1,196.75 | 0.00 | 0.00 | 0.00 | |
| 6,500.00 | 0.00 | 0.00 | 6,349.32 | -1,187.55 | -148.08 | 1,196.75 | 0.00 | 0.00 | 0.00 | |
| 6,600.00 | 0.00 | 0.00 | 6,449.32 | -1,187.55 | -148.08 | 1,196.75 | 0.00 | 0.00 | 0.00 | |
| 6,700.00 | 0.00 | 0.00 | 6,549.32 | -1,187.55 | -148.08 | 1,196.75 | 0.00 | 0.00 | 0.00 | |
| 6,800.00 | 0.00 | 0.00 | 6,649.32 | -1,187.55 | -148.08 | 1,196.75 | 0.00 | 0.00 | 0.00 | |
| 6,900.00 | 0.00 | 0.00 | 6,749.32 | -1,187.55 | -148.08 | 1,196.75 | 0.00 | 0.00 | 0.00 | |
| 7,000.00 | 0.00 | 0.00 | 6,849.32 | -1,187.55 | -148.08 | 1,196.75 | 0.00 | 0.00 | 0.00 | |
| 7,100.00 | 0.00 | 0.00 | 6,949.32 | -1,187.55 | -148.08 | 1,196.75 | 0.00 | 0.00 | 0.00 | |
| 7,200.00 | 0.00 | 0.00 | 7,049.32 | -1,187.55 | -148.08 | 1,196.75 | 0.00 | 0.00 | 0.00 | |
| NIO A | | | | | | | | | | |
| 7,220.68 | 0.00 | 0.00 | 7,070.00 | -1,187.55 | -148.08 | 1,196.75 | 0.00 | 0.00 | 0.00 | |
| 7,300.00 | 0.00 | 0.00 | 7,149.32 | -1,187.55 | -148.08 | 1,196.75 | 0.00 | 0.00 | 0.00 | |
| 7,400.00 | 0.00 | 0.00 | 7,249.32 | -1,187.55 | -148.08 | 1,196.75 | 0.00 | 0.00 | 0.00 | |
| CODELL | | | | | | | | | | |
| 7,485.68 | 0.00 | 0.00 | 7,335.00 | -1,187.55 | -148.08 | 1,196.75 | 0.00 | 0.00 | 0.00 | |
| 7,500.00 | 0.00 | 0.00 | 7,349.32 | -1,187.55 | -148.08 | 1,196.75 | 0.00 | 0.00 | 0.00 | |
| 7,600.00 | 0.00 | 0.00 | 7,449.32 | -1,187.55 | -148.08 | 1,196.75 | 0.00 | 0.00 | 0.00 | |
| 7,700.00 | 0.00 | 0.00 | 7,549.32 | -1,187.55 | -148.08 | 1,196.75 | 0.00 | 0.00 | 0.00 | |
| 7,800.00 | 0.00 | 0.00 | 7,649.32 | -1,187.55 | -148.08 | 1,196.75 | 0.00 | 0.00 | 0.00 | |
| 7,900.00 | 0.00 | 0.00 | 7,749.32 | -1,187.55 | -148.08 | 1,196.75 | 0.00 | 0.00 | 0.00 | |
| JSAND | | | | | | | | | | |
| 7,915.68 | 0.00 | 0.00 | 7,765.00 | -1,187.55 | -148.08 | 1,196.75 | 0.00 | 0.00 | 0.00 | |
| 8,000.00 | 0.00 | 0.00 | 7,849.32 | -1,187.55 | -148.08 | 1,196.75 | 0.00 | 0.00 | 0.00 | |
| PBHL_CARMA 22-36(2625 FSL 1320 FWL)50'RAD | | | | | | | | | | |
| 8,065.68 | 0.00 | 0.00 | 7,915.00 | -1,187.55 | -148.08 | 1,196.75 | 0.00 | 0.00 | 0.00 | |

| Design Targets | | | | | | | | | | |
|---------------------------|---------------|--------------|----------|------------|------------|---------------|--------------|------------------|-------------------|--|
| Target Name | Dip Angle (°) | Dip Dir. (°) | TVD (ft) | +N/-S (ft) | +E/-W (ft) | Northing (ft) | Easting (ft) | Latitude | Longitude | |
| - hit/miss target | | | | | | | | | | |
| - Shape | | | | | | | | | | |
| PBHL_CARMA 22-36 | 0.00 | 0.00 | 7,915.00 | -1,187.55 | -148.08 | 1,309,761.06 | 3,152,011.72 | 40° 10' 56.676 N | 104° 57' 21.384 W | |
| - plan hits target center | | | | | | | | | | |
| - Circle (radius 50.00) | | | | | | | | | | |

| | | | |
|------------------|----------------------------|-------------------------------------|---------------------------------------|
| Database: | EDM 2003.21 Single User Db | Local Co-ordinate Reference: | Well P_CARMA 22-36 |
| Company: | US ROCKIES REGION PLANNING | TVD Reference: | WELL @ 4879.00ft (Original Well Elev) |
| Project: | COLORADO NOTHERN ZONE - 83 | MD Reference: | WELL @ 4879.00ft (Original Well Elev) |
| Site: | WELD_CARMA 6 PAD | North Reference: | True |
| Well: | P_CARMA 22-36 | Survey Calculation Method: | Minimum Curvature |
| Wellbore: | P_CARMA 22-36 | | |
| Design: | PLAN #1 12-16-09 RHS | | |

| Casing Points | | | | | |
|---------------------|---------------------|--------|----------------------|--------------------|--|
| Measured Depth (ft) | Vertical Depth (ft) | Name | Casing Diameter (in) | Hole Diameter (in) | |
| 800.00 | 800.00 | 8 5/8" | 8.62 | 11.00 | |

| Formations | | | | | | |
|---------------------|---------------------|---------|-----------|---------|-------------------|--|
| Measured Depth (ft) | Vertical Depth (ft) | Name | Lithology | Dip (°) | Dip Direction (°) | |
| 3,719.92 | 3,639.00 | PARKMAN | | | | |
| 4,232.86 | 4,134.00 | SUSSEX | | | | |
| 4,771.70 | 4,654.00 | SHANNON | | | | |
| 7,220.68 | 7,070.00 | NIO A | | | | |
| 7,485.68 | 7,335.00 | CODELL | | | | |
| 7,915.68 | 7,765.00 | JSAND | | | | |

| Plan Annotations | | | | | |
|---------------------|---------------------|-------------------|------------|----------------------------------|--|
| Measured Depth (ft) | Vertical Depth (ft) | Local Coordinates | | | |
| | | +N/-S (ft) | +E/-W (ft) | Comment | |
| 900.00 | 900.00 | 0.00 | 0.00 | Start Build 2.00 | |
| 1,659.85 | 1,650.97 | -99.41 | -12.40 | Start 3800.97 hold at 1659.85 MD | |
| 5,460.82 | 5,319.03 | -1,088.14 | -135.69 | Start Drop -2.00 | |
| 6,220.68 | 6,070.00 | -1,187.55 | -148.08 | Start 1845.00 hold at 6220.68 MD | |
| 8,065.68 | 7,915.00 | -1,187.55 | -148.08 | TD at 8065.68 | |

US ROCKIES REGION PLANNING

**COLORADO NOTHERN ZONE - 83
WELD_CARMA 6 PAD
P_CARMA 22-36**

**P_CARMA 22-36
PLAN #1 12-16-09 RHS**

Anticollision Report

16 December, 2009



| | | | |
|---------------------------|----------------------------|-------------------------------------|---------------------------------------|
| Company: | US ROCKIES REGION PLANNING | Local Co-ordinate Reference: | Well P_CARMA 22-36 |
| Project: | COLORADO NOTHERN ZONE - 83 | TVD Reference: | WELL @ 4879.00ft (Original Well Elev) |
| Reference Site: | WELD_CARMA 6 PAD | MD Reference: | WELL @ 4879.00ft (Original Well Elev) |
| Site Error: | 0.00ft | North Reference: | True |
| Reference Well: | P_CARMA 22-36 | Survey Calculation Method: | Minimum Curvature |
| Well Error: | 0.00ft | Output errors are at | 2.00 sigma |
| Reference Wellbore | P_CARMA 22-36 | Database: | EDM 2003.21 Single User Db |
| Reference Design: | PLAN #1 12-16-09 RHS | Offset TVD Reference: | Offset Datum |

| Offset Design | | | | | | | | | | | | Offset Site Error: | 0.00 ft |
|---------------------------|---------------------|---------------------|---------------------|-----------------|-------------|-----------------------|-----------------------------------|------------|----------------------|-----------------------|-------------------------|--------------------|---------|
| Survey Program: 0-UNKNOWN | | | | | | | | | | | | Offset Well Error: | 0.00 ft |
| Reference | | Offset | | Semi Major Axis | | | Distance | | | | | | |
| Measured Depth (ft) | Vertical Depth (ft) | Measured Depth (ft) | Vertical Depth (ft) | Reference (ft) | Offset (ft) | Highside Toolface (°) | Offset Wellbore Centre +N/-S (ft) | +E/-W (ft) | Between Centres (ft) | Between Ellipses (ft) | Minimum Separation (ft) | Separation Factor | Warning |
| 1,600.00 | 1,593.06 | 1,574.06 | 1,574.06 | 13.70 | 60.96 | 142.49 | -29.15 | -41.91 | 63.58 | -7.44 | 71.02 | 0.895 Level 1 | |
| 1,659.85 | 1,650.97 | 1,631.97 | 1,631.97 | 13.38 | 63.28 | 149.22 | -29.15 | -41.91 | 76.21 | 5.35 | 70.86 | 1.075 Level 2 | |
| 1,700.00 | 1,689.72 | 1,670.72 | 1,670.72 | 13.54 | 64.83 | 152.81 | -29.15 | -41.91 | 85.50 | 14.34 | 71.15 | 1.202 Level 2 | |
| 1,800.00 | 1,786.22 | 1,767.22 | 1,767.22 | 15.07 | 68.69 | 159.05 | -29.15 | -41.91 | 109.60 | 36.49 | 73.11 | 1.499 Level 3 | |
| 1,900.00 | 1,882.72 | 1,863.72 | 1,863.72 | 17.83 | 72.55 | 163.04 | -29.15 | -41.91 | 134.50 | 57.02 | 77.48 | 1.736 | |
| 2,000.00 | 1,979.23 | 1,960.23 | 1,960.23 | 21.35 | 76.41 | 165.77 | -29.15 | -41.91 | 159.82 | 76.15 | 83.66 | 1.910 | |
| 2,100.00 | 2,075.73 | 2,056.73 | 2,056.73 | 25.32 | 80.27 | 167.76 | -29.15 | -41.91 | 185.39 | 94.73 | 90.65 | 2.045 | |
| 2,200.00 | 2,172.23 | 2,153.23 | 2,153.23 | 29.55 | 84.13 | 169.27 | -29.15 | -41.91 | 211.11 | 113.14 | 97.97 | 2.155 | |
| 2,300.00 | 2,268.74 | 2,249.74 | 2,249.74 | 33.94 | 87.99 | 170.45 | -29.15 | -41.91 | 236.94 | 131.51 | 105.44 | 2.247 | |
| 2,400.00 | 2,365.24 | 2,346.24 | 2,346.24 | 38.45 | 91.85 | 171.40 | -29.15 | -41.91 | 262.85 | 149.86 | 112.99 | 2.326 | |
| 2,500.00 | 2,461.74 | 2,442.74 | 2,442.74 | 43.03 | 95.71 | 172.17 | -29.15 | -41.91 | 288.82 | 168.22 | 120.60 | 2.395 | |
| 2,600.00 | 2,558.24 | 2,539.24 | 2,539.24 | 47.66 | 99.57 | 172.82 | -29.15 | -41.91 | 314.82 | 186.59 | 128.23 | 2.455 | |
| 2,700.00 | 2,654.75 | 2,635.75 | 2,635.75 | 52.34 | 103.43 | 173.37 | -29.15 | -41.91 | 340.86 | 204.98 | 135.88 | 2.508 | |
| 2,800.00 | 2,751.25 | 2,732.25 | 2,732.25 | 57.04 | 107.29 | 173.84 | -29.15 | -41.91 | 366.92 | 223.37 | 143.55 | 2.556 | |
| 2,900.00 | 2,847.75 | 2,828.75 | 2,828.75 | 61.77 | 111.15 | 174.25 | -29.15 | -41.91 | 393.00 | 241.77 | 151.23 | 2.599 | |
| 3,000.00 | 2,944.26 | 2,925.26 | 2,925.26 | 66.51 | 115.01 | 174.61 | -29.15 | -41.91 | 419.10 | 260.19 | 158.92 | 2.637 | |
| 3,100.00 | 3,040.76 | 3,021.76 | 3,021.76 | 71.27 | 118.87 | 174.93 | -29.15 | -41.91 | 445.22 | 278.61 | 166.61 | 2.672 | |
| 3,200.00 | 3,137.26 | 3,118.26 | 3,118.26 | 76.04 | 122.73 | 175.21 | -29.15 | -41.91 | 471.34 | 297.03 | 174.31 | 2.704 | |
| 3,300.00 | 3,233.77 | 3,214.77 | 3,214.77 | 80.82 | 126.59 | 175.46 | -29.15 | -41.91 | 497.47 | 315.46 | 182.01 | 2.733 | |
| 3,400.00 | 3,330.27 | 3,311.27 | 3,311.27 | 85.61 | 130.45 | 175.69 | -29.15 | -41.91 | 523.61 | 333.90 | 189.71 | 2.760 | |
| 3,500.00 | 3,426.77 | 3,407.77 | 3,407.77 | 90.41 | 134.31 | 175.90 | -29.15 | -41.91 | 549.76 | 352.34 | 197.42 | 2.785 | |
| 3,600.00 | 3,523.28 | 3,504.28 | 3,504.28 | 95.21 | 138.17 | 176.08 | -29.15 | -41.91 | 575.92 | 370.79 | 205.13 | 2.808 | |
| 3,700.00 | 3,619.78 | 3,600.78 | 3,600.78 | 100.01 | 142.03 | 176.25 | -29.15 | -41.91 | 602.07 | 389.24 | 212.84 | 2.829 | |
| 3,800.00 | 3,716.28 | 3,697.28 | 3,697.28 | 104.82 | 145.89 | 176.41 | -29.15 | -41.91 | 628.24 | 407.69 | 220.55 | 2.849 | |
| 3,900.00 | 3,812.78 | 3,793.78 | 3,793.78 | 109.64 | 149.75 | 176.55 | -29.15 | -41.91 | 654.41 | 426.14 | 228.26 | 2.867 | |
| 4,000.00 | 3,909.29 | 3,890.29 | 3,890.29 | 114.45 | 153.61 | 176.69 | -29.15 | -41.91 | 680.58 | 444.60 | 235.98 | 2.884 | |
| 4,100.00 | 4,005.79 | 3,986.79 | 3,986.79 | 119.27 | 157.47 | 176.81 | -29.15 | -41.91 | 706.75 | 463.06 | 243.69 | 2.900 | |
| 4,200.00 | 4,102.29 | 4,083.29 | 4,083.29 | 124.09 | 161.33 | 176.92 | -29.15 | -41.91 | 732.93 | 481.52 | 251.41 | 2.915 | |
| 4,300.00 | 4,198.80 | 4,179.80 | 4,179.80 | 128.92 | 165.19 | 177.03 | -29.15 | -41.91 | 759.11 | 499.98 | 259.13 | 2.929 | |
| 4,400.00 | 4,295.30 | 4,276.30 | 4,276.30 | 133.74 | 169.05 | 177.13 | -29.15 | -41.91 | 785.29 | 518.45 | 266.85 | 2.943 | |
| 4,500.00 | 4,391.80 | 4,372.80 | 4,372.80 | 138.57 | 172.91 | 177.22 | -29.15 | -41.91 | 811.48 | 536.91 | 274.56 | 2.956 | |
| 4,600.00 | 4,488.31 | 4,469.31 | 4,469.31 | 143.40 | 176.77 | 177.31 | -29.15 | -41.91 | 837.66 | 555.38 | 282.28 | 2.967 | |
| 4,700.00 | 4,584.81 | 4,565.81 | 4,565.81 | 148.23 | 180.63 | 177.39 | -29.15 | -41.91 | 863.85 | 573.85 | 290.00 | 2.979 | |
| 4,800.00 | 4,681.31 | 4,662.31 | 4,662.31 | 153.06 | 184.49 | 177.47 | -29.15 | -41.91 | 890.04 | 592.32 | 297.72 | 2.990 | |
| 4,900.00 | 4,777.81 | 4,758.81 | 4,758.81 | 157.90 | 188.35 | 177.54 | -29.15 | -41.91 | 916.23 | 610.79 | 305.44 | 3.000 | |
| 5,000.00 | 4,874.32 | 4,855.32 | 4,855.32 | 162.73 | 192.21 | 177.61 | -29.15 | -41.91 | 942.42 | 629.26 | 313.16 | 3.009 | |
| 5,100.00 | 4,970.82 | 4,951.82 | 4,951.82 | 167.57 | 196.07 | 177.67 | -29.15 | -41.91 | 968.62 | 647.73 | 320.88 | 3.019 | |
| 5,200.00 | 5,067.32 | 5,048.32 | 5,048.32 | 172.40 | 199.93 | 177.73 | -29.15 | -41.91 | 994.81 | 666.21 | 328.60 | 3.027 | |
| 5,300.00 | 5,163.83 | 5,144.83 | 5,144.83 | 177.24 | 203.79 | 177.79 | -29.15 | -41.91 | 1,021.01 | 684.68 | 336.32 | 3.036 | |
| 5,400.00 | 5,260.33 | 5,241.33 | 5,241.33 | 182.08 | 207.65 | 177.85 | -29.15 | -41.91 | 1,047.20 | 703.16 | 344.05 | 3.044 | |
| 5,460.82 | 5,319.03 | 5,300.03 | 5,300.03 | 185.02 | 210.00 | 177.88 | -29.15 | -41.91 | 1,063.14 | 714.39 | 348.74 | 3.048 | |
| 5,500.00 | 5,356.90 | 5,337.90 | 5,337.90 | 186.90 | 211.52 | 177.91 | -29.15 | -41.91 | 1,073.14 | 720.72 | 352.42 | 3.045 | |
| 5,600.00 | 5,454.17 | 5,435.17 | 5,435.17 | 191.54 | 215.41 | 177.97 | -29.15 | -41.91 | 1,096.32 | 734.76 | 361.56 | 3.032 | |
| 5,700.00 | 5,552.19 | 5,533.19 | 5,533.19 | 195.97 | 219.33 | 178.02 | -29.15 | -41.91 | 1,116.10 | 745.74 | 370.35 | 3.014 | |
| 5,800.00 | 5,650.83 | 5,631.83 | 5,631.83 | 200.18 | 223.27 | 178.06 | -29.15 | -41.91 | 1,132.44 | 753.67 | 378.77 | 2.990 | |
| 5,900.00 | 5,749.99 | 5,730.99 | 5,730.99 | 204.18 | 227.24 | 178.09 | -29.15 | -41.91 | 1,145.34 | 758.55 | 386.79 | 2.961 | |
| 6,000.00 | 5,849.54 | 5,830.54 | 5,830.54 | 207.97 | 231.22 | 178.11 | -29.15 | -41.91 | 1,154.77 | 760.38 | 394.39 | 2.928 | |
| 6,100.00 | 5,949.36 | 5,930.36 | 5,930.36 | 211.55 | 235.21 | 178.12 | -29.15 | -41.91 | 1,160.72 | 759.19 | 401.53 | 2.891 | |
| 6,200.00 | 6,049.32 | 6,030.32 | 6,030.32 | 214.94 | 239.21 | 178.13 | -29.15 | -41.91 | 1,163.18 | 754.98 | 408.21 | 2.849 | |
| 6,220.68 | 6,070.00 | 6,051.00 | 6,051.00 | 214.95 | 240.04 | 5.24 | -29.15 | -41.91 | 1,163.26 | 754.55 | 408.71 | 2.846 | |
| 6,300.00 | 6,149.32 | 6,130.32 | 6,130.32 | 212.41 | 243.21 | 5.24 | -29.15 | -41.91 | 1,163.26 | 754.52 | 408.74 | 2.846 | |
| 6,400.00 | 6,249.32 | 6,230.32 | 6,230.32 | 209.23 | 247.21 | 5.24 | -29.15 | -41.91 | 1,163.26 | 754.46 | 408.79 | 2.846 | |

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

| | | | |
|---------------------------|----------------------------|-------------------------------------|---------------------------------------|
| Company: | US ROCKIES REGION PLANNING | Local Co-ordinate Reference: | Well P_CARMA 22-36 |
| Project: | COLORADO NOTHERN ZONE - 83 | TVD Reference: | WELL @ 4879.00ft (Original Well Elev) |
| Reference Site: | WELD_CARMA 6 PAD | MD Reference: | WELL @ 4879.00ft (Original Well Elev) |
| Site Error: | 0.00ft | North Reference: | True |
| Reference Well: | P_CARMA 22-36 | Survey Calculation Method: | Minimum Curvature |
| Well Error: | 0.00ft | Output errors are at | 2.00 sigma |
| Reference Wellbore | P_CARMA 22-36 | Database: | EDM 2003.21 Single User Db |
| Reference Design: | PLAN #1 12-16-09 RHS | Offset TVD Reference: | Offset Datum |

| Offset Design WELD_CARMA 6 PAD - HAMLIN STATE #6-36 EXISTING - HAMLIN STATE #6-36 EXISTING - HAML | | | | | | | | | | | | Offset Site Error: | 0.00 ft |
|--|---------------------|---------------------|---------------------|-----------------|-------------|-----------------------|-----------------------------------|------------|----------------------|-----------------------|-------------------------|---------------------------|---------|
| Survey Program: 0-UNKNOWN | | | | | | | | | | | | Offset Well Error: | 0.00 ft |
| Reference | | Offset | | Semi Major Axis | | | Distance | | | | | | |
| Measured Depth (ft) | Vertical Depth (ft) | Measured Depth (ft) | Vertical Depth (ft) | Reference (ft) | Offset (ft) | Highside Toolface (°) | Offset Wellbore Centre +N/-S (ft) | +E/-W (ft) | Between Centres (ft) | Between Ellipses (ft) | Minimum Separation (ft) | Separation Factor | Warning |
| 6,500.00 | 6,349.32 | 6,330.32 | 6,330.32 | 206.08 | 251.21 | 5.24 | -29.15 | -41.91 | 1,163.26 | 754.41 | 408.85 | 2.845 | |
| 6,600.00 | 6,449.32 | 6,430.32 | 6,430.32 | 202.96 | 255.21 | 5.24 | -29.15 | -41.91 | 1,163.26 | 754.36 | 408.90 | 2.845 | |
| 6,700.00 | 6,549.32 | 6,530.32 | 6,530.32 | 199.87 | 259.21 | 5.24 | -29.15 | -41.91 | 1,163.26 | 754.30 | 408.96 | 2.844 | |
| 6,800.00 | 6,649.32 | 6,630.32 | 6,630.32 | 196.82 | 263.21 | 5.24 | -29.15 | -41.91 | 1,163.26 | 754.24 | 409.02 | 2.844 | |
| 6,900.00 | 6,749.32 | 6,730.32 | 6,730.32 | 193.80 | 267.21 | 5.24 | -29.15 | -41.91 | 1,163.26 | 754.17 | 409.09 | 2.844 | |
| 7,000.00 | 6,849.32 | 6,830.32 | 6,830.32 | 190.81 | 271.21 | 5.24 | -29.15 | -41.91 | 1,163.26 | 754.10 | 409.16 | 2.843 | |
| 7,100.00 | 6,949.32 | 6,930.32 | 6,930.32 | 187.86 | 275.21 | 5.24 | -29.15 | -41.91 | 1,163.26 | 754.03 | 409.23 | 2.843 | |
| 7,200.00 | 7,049.32 | 7,030.32 | 7,030.32 | 184.96 | 279.21 | 5.24 | -29.15 | -41.91 | 1,163.26 | 753.95 | 409.31 | 2.842 | |
| 7,300.00 | 7,149.32 | 7,130.32 | 7,130.32 | 182.09 | 283.21 | 5.24 | -29.15 | -41.91 | 1,163.26 | 753.87 | 409.39 | 2.841 | |
| 7,400.00 | 7,249.32 | 7,230.32 | 7,230.32 | 179.27 | 287.21 | 5.24 | -29.15 | -41.91 | 1,163.26 | 753.78 | 409.47 | 2.841 | |
| 7,500.00 | 7,349.32 | 7,330.32 | 7,330.32 | 176.49 | 291.21 | 5.24 | -29.15 | -41.91 | 1,163.26 | 753.69 | 409.57 | 2.840 | |
| 7,600.00 | 7,449.32 | 7,430.32 | 7,430.32 | 173.76 | 295.21 | 5.24 | -29.15 | -41.91 | 1,163.26 | 753.59 | 409.67 | 2.840 | |
| 7,700.00 | 7,549.32 | 7,530.32 | 7,530.32 | 171.08 | 299.21 | 5.24 | -29.15 | -41.91 | 1,163.26 | 753.48 | 409.77 | 2.839 | |
| 7,731.51 | 7,580.83 | 7,561.83 | 7,561.83 | 170.25 | 300.47 | 5.24 | -29.15 | -41.91 | 1,163.26 | 753.45 | 409.81 | 2.839 | |
| 7,800.00 | 7,649.32 | 7,579.00 | 7,579.00 | 168.45 | 301.16 | 5.24 | -29.15 | -41.91 | 1,164.39 | 756.55 | 407.84 | 2.855 | |
| 7,900.00 | 7,749.32 | 7,579.00 | 7,579.00 | 165.88 | 301.16 | 5.24 | -29.15 | -41.91 | 1,173.06 | 769.10 | 403.96 | 2.904 | |
| 8,000.00 | 7,849.32 | 7,579.00 | 7,579.00 | 163.36 | 301.16 | 5.24 | -29.15 | -41.91 | 1,190.10 | 790.01 | 400.09 | 2.975 | |
| 8,065.68 | 7,915.00 | 7,579.00 | 7,579.00 | 161.75 | 301.16 | 5.24 | -29.15 | -41.91 | 1,205.68 | 808.12 | 397.56 | 3.033 | |

| | | | |
|---------------------------|----------------------------|-------------------------------------|---------------------------------------|
| Company: | US ROCKIES REGION PLANNING | Local Co-ordinate Reference: | Well P_CARMA 22-36 |
| Project: | COLORADO NOTHERN ZONE - 83 | TVD Reference: | WELL @ 4879.00ft (Original Well Elev) |
| Reference Site: | WELD_CARMA 6 PAD | MD Reference: | WELL @ 4879.00ft (Original Well Elev) |
| Site Error: | 0.00ft | North Reference: | True |
| Reference Well: | P_CARMA 22-36 | Survey Calculation Method: | Minimum Curvature |
| Well Error: | 0.00ft | Output errors are at | 2.00 sigma |
| Reference Wellbore | P_CARMA 22-36 | Database: | EDM 2003.21 Single User Db |
| Reference Design: | PLAN #1 12-16-09 RHS | Offset TVD Reference: | Offset Datum |

| Offset Design WELD_CARMA 6 PAD - P_CARMA 12-36 - P_CARMA 12-36 - PLAN #1 12-16-09 RHS | | | | | | | | | | | | Offset Site Error: | 0.00 ft |
|---|---------------------|---------------------|---------------------|----------------|-------------|-----------------------|-----------------------------------|------------|----------------------|-----------------------|-------------------------|---------------------------|---------|
| Survey Program: 0-UNKNOWN | | | | | | | | | | | | Offset Well Error: | 0.00 ft |
| Reference | Offset | Semi Major Axis | | | | | Distance | | | | | | Warning |
| Measured Depth (ft) | Vertical Depth (ft) | Measured Depth (ft) | Vertical Depth (ft) | Reference (ft) | Offset (ft) | Highside Toolface (°) | Offset Wellbore Centre +N/-S (ft) | +E/-W (ft) | Between Centres (ft) | Between Ellipses (ft) | Minimum Separation (ft) | Separation Factor | |
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | -50.80 | 18.23 | -22.35 | 28.84 | | | | |
| 100.00 | 100.00 | 100.00 | 100.00 | 1.70 | 1.70 | -50.80 | 18.23 | -22.35 | 28.84 | 25.44 | 3.40 | 8.483 | |
| 200.00 | 200.00 | 200.00 | 200.00 | 5.70 | 5.70 | -50.80 | 18.23 | -22.35 | 28.84 | 17.44 | 11.40 | 2.530 | |
| 300.00 | 300.00 | 300.00 | 300.00 | 9.70 | 9.70 | -50.80 | 18.23 | -22.35 | 28.84 | 9.44 | 19.40 | 1.487 Level 3 | |
| 400.00 | 400.00 | 400.00 | 400.00 | 13.70 | 13.70 | -50.80 | 18.23 | -22.35 | 28.84 | 1.44 | 27.40 | 1.053 Level 2 | |
| 500.00 | 500.00 | 500.00 | 500.00 | 17.70 | 17.70 | -50.80 | 18.23 | -22.35 | 28.84 | -6.56 | 35.40 | 0.815 Level 1 | |
| 600.00 | 600.00 | 600.00 | 600.00 | 21.70 | 21.70 | -50.80 | 18.23 | -22.35 | 28.84 | -14.56 | 43.40 | 0.665 Level 1 | |
| 700.00 | 700.00 | 700.00 | 700.00 | 25.70 | 25.70 | -50.80 | 18.23 | -22.35 | 28.84 | -22.56 | 51.40 | 0.561 Level 1 | |
| 800.00 | 800.00 | 800.00 | 800.00 | 29.70 | 29.70 | -50.80 | 18.23 | -22.35 | 28.84 | -30.56 | 59.40 | 0.486 Level 1 | |
| 900.00 | 900.00 | 900.00 | 900.00 | 33.70 | 33.70 | -50.80 | 18.23 | -22.35 | 28.84 | -38.56 | 67.40 | 0.428 Level 1, CC, ES, SF | |
| 1,000.00 | 999.98 | 1,000.28 | 1,000.26 | 33.72 | 33.86 | 121.69 | 16.61 | -23.03 | 29.27 | -38.29 | 67.56 | 0.433 Level 1 | |
| 1,100.00 | 1,099.84 | 1,100.55 | 1,100.39 | 29.76 | 30.25 | 120.55 | 11.76 | -25.07 | 30.58 | -29.38 | 59.96 | 0.510 Level 1 | |
| 1,200.00 | 1,199.45 | 1,200.79 | 1,200.24 | 25.86 | 26.79 | 118.87 | 3.68 | -28.46 | 32.78 | -19.75 | 52.53 | 0.624 Level 1 | |
| 1,300.00 | 1,298.70 | 1,300.99 | 1,299.68 | 22.07 | 23.58 | 116.85 | -7.60 | -33.20 | 35.90 | -9.55 | 45.44 | 0.790 Level 1 | |
| 1,400.00 | 1,397.47 | 1,401.14 | 1,398.58 | 18.55 | 20.82 | 114.72 | -22.08 | -39.29 | 39.95 | 0.93 | 39.02 | 1.024 Level 2 | |
| 1,500.00 | 1,495.62 | 1,501.21 | 1,496.81 | 15.58 | 18.79 | 112.64 | -39.72 | -46.70 | 44.95 | 11.13 | 33.82 | 1.329 Level 3 | |
| 1,600.00 | 1,593.06 | 1,601.21 | 1,594.23 | 13.70 | 17.85 | 110.69 | -60.50 | -55.43 | 50.90 | 20.14 | 30.75 | 1.655 | |
| 1,659.85 | 1,650.97 | 1,661.01 | 1,652.09 | 13.38 | 18.11 | 109.62 | -74.41 | -61.27 | 54.91 | 24.37 | 30.54 | 1.798 | |
| 1,700.00 | 1,689.72 | 1,701.11 | 1,690.71 | 13.54 | 18.32 | 108.73 | -84.37 | -65.46 | 57.70 | 26.83 | 30.87 | 1.869 | |
| 1,800.00 | 1,786.22 | 1,800.83 | 1,786.06 | 15.07 | 20.23 | 104.69 | -111.28 | -76.76 | 64.68 | 30.21 | 34.46 | 1.877 | |
| 1,900.00 | 1,882.72 | 1,900.15 | 1,879.95 | 17.83 | 23.35 | 98.73 | -141.10 | -89.29 | 72.22 | 31.63 | 40.58 | 1.780 | |
| 2,000.00 | 1,979.23 | 1,998.82 | 1,972.08 | 21.35 | 27.36 | 91.58 | -173.69 | -102.98 | 81.13 | 33.15 | 47.98 | 1.691 | |
| 2,100.00 | 2,075.73 | 2,096.63 | 2,062.14 | 25.32 | 32.02 | 83.98 | -208.85 | -117.76 | 92.23 | 36.56 | 55.67 | 1.657 | |
| 2,200.00 | 2,172.23 | 2,194.46 | 2,151.15 | 29.55 | 37.13 | 76.77 | -246.27 | -133.48 | 105.87 | 42.72 | 63.16 | 1.676 | |
| 2,300.00 | 2,268.74 | 2,292.70 | 2,240.45 | 33.94 | 42.46 | 71.14 | -284.02 | -149.34 | 120.93 | 50.39 | 70.55 | 1.714 | |
| 2,400.00 | 2,365.24 | 2,390.94 | 2,329.74 | 38.45 | 47.91 | 66.78 | -321.78 | -165.20 | 136.89 | 58.93 | 77.96 | 1.756 | |
| 2,500.00 | 2,461.74 | 2,489.18 | 2,419.04 | 43.03 | 53.43 | 63.33 | -359.54 | -181.07 | 153.46 | 68.00 | 85.46 | 1.796 | |
| 2,600.00 | 2,558.24 | 2,587.42 | 2,508.34 | 47.66 | 59.00 | 60.56 | -397.29 | -196.93 | 170.47 | 77.41 | 93.07 | 1.832 | |
| 2,700.00 | 2,654.75 | 2,685.66 | 2,597.63 | 52.34 | 64.62 | 58.30 | -435.05 | -212.79 | 187.80 | 87.02 | 100.78 | 1.863 | |
| 2,800.00 | 2,751.25 | 2,783.90 | 2,686.93 | 57.04 | 70.27 | 56.41 | -472.80 | -228.65 | 205.37 | 96.78 | 108.59 | 1.891 | |
| 2,900.00 | 2,847.75 | 2,882.14 | 2,776.22 | 61.77 | 75.95 | 54.83 | -510.56 | -244.52 | 223.12 | 106.64 | 116.48 | 1.916 | |
| 3,000.00 | 2,944.26 | 2,980.37 | 2,865.52 | 66.51 | 81.65 | 53.48 | -548.31 | -260.38 | 241.01 | 116.56 | 124.44 | 1.937 | |
| 3,100.00 | 3,040.76 | 3,078.61 | 2,954.82 | 71.27 | 87.36 | 52.31 | -586.07 | -276.24 | 259.01 | 126.54 | 132.47 | 1.955 | |
| 3,200.00 | 3,137.26 | 3,176.85 | 3,044.11 | 76.04 | 93.08 | 51.30 | -623.82 | -292.11 | 277.10 | 136.56 | 140.55 | 1.972 | |
| 3,300.00 | 3,233.77 | 3,275.09 | 3,133.41 | 80.82 | 98.82 | 50.41 | -661.58 | -307.97 | 295.27 | 146.60 | 148.67 | 1.986 | |
| 3,400.00 | 3,330.27 | 3,373.33 | 3,222.70 | 85.61 | 104.56 | 49.62 | -699.34 | -323.83 | 313.49 | 156.66 | 156.83 | 1.999 | |
| 3,500.00 | 3,426.77 | 3,471.57 | 3,312.00 | 90.41 | 110.32 | 48.92 | -737.09 | -339.69 | 331.77 | 166.74 | 165.03 | 2.010 | |
| 3,600.00 | 3,523.28 | 3,569.81 | 3,401.30 | 95.21 | 116.07 | 48.30 | -774.85 | -355.56 | 350.09 | 176.84 | 173.25 | 2.021 | |
| 3,700.00 | 3,619.78 | 3,668.05 | 3,490.59 | 100.01 | 121.84 | 47.73 | -812.60 | -371.42 | 368.45 | 186.94 | 181.50 | 2.030 | |
| 3,800.00 | 3,716.28 | 3,766.29 | 3,579.89 | 104.82 | 127.61 | 47.22 | -850.36 | -387.28 | 386.84 | 197.06 | 189.78 | 2.038 | |
| 3,900.00 | 3,812.78 | 3,864.53 | 3,669.19 | 109.64 | 133.38 | 46.76 | -888.11 | -403.15 | 405.25 | 207.18 | 198.07 | 2.046 | |
| 4,000.00 | 3,909.29 | 3,962.77 | 3,758.48 | 114.45 | 139.16 | 46.33 | -925.87 | -419.01 | 423.69 | 217.31 | 206.38 | 2.053 | |
| 4,100.00 | 4,005.79 | 4,061.00 | 3,847.78 | 119.27 | 144.94 | 45.94 | -963.63 | -434.87 | 442.15 | 227.44 | 214.71 | 2.059 | |
| 4,200.00 | 4,102.29 | 4,159.24 | 3,937.07 | 124.09 | 150.72 | 45.59 | -1,001.38 | -450.73 | 460.63 | 237.58 | 223.05 | 2.065 | |
| 4,300.00 | 4,198.80 | 4,257.48 | 4,026.37 | 128.92 | 156.51 | 45.26 | -1,039.14 | -466.60 | 479.12 | 247.72 | 231.40 | 2.071 | |
| 4,400.00 | 4,295.30 | 4,355.72 | 4,115.67 | 133.74 | 162.29 | 44.95 | -1,076.89 | -482.46 | 497.63 | 257.87 | 239.76 | 2.076 | |
| 4,500.00 | 4,391.80 | 4,453.96 | 4,204.96 | 138.57 | 168.08 | 44.67 | -1,114.65 | -498.32 | 516.15 | 268.01 | 248.14 | 2.080 | |
| 4,600.00 | 4,488.31 | 4,552.20 | 4,294.26 | 143.40 | 173.87 | 44.40 | -1,152.40 | -514.18 | 534.68 | 278.16 | 256.52 | 2.084 | |
| 4,700.00 | 4,584.81 | 4,650.44 | 4,383.55 | 148.23 | 179.67 | 44.16 | -1,190.16 | -530.05 | 553.22 | 288.32 | 264.91 | 2.088 | |
| 4,800.00 | 4,681.31 | 4,748.68 | 4,472.85 | 153.06 | 185.46 | 43.93 | -1,227.91 | -545.91 | 571.77 | 298.47 | 273.30 | 2.092 | |
| 4,900.00 | 4,777.81 | 4,846.92 | 4,562.15 | 157.90 | 191.26 | 43.71 | -1,265.67 | -561.77 | 590.33 | 308.63 | 281.71 | 2.096 | |
| 5,000.00 | 4,874.32 | 4,945.16 | 4,651.44 | 162.73 | 197.05 | 43.51 | -1,303.43 | -577.64 | 608.90 | 318.78 | 290.12 | 2.099 | |

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

| | | | |
|---------------------------|----------------------------|-------------------------------------|---------------------------------------|
| Company: | US ROCKIES REGION PLANNING | Local Co-ordinate Reference: | Well P_CARMA 22-36 |
| Project: | COLORADO NOTHERN ZONE - 83 | TVD Reference: | WELL @ 4879.00ft (Original Well Elev) |
| Reference Site: | WELD_CARMA 6 PAD | MD Reference: | WELL @ 4879.00ft (Original Well Elev) |
| Site Error: | 0.00ft | North Reference: | True |
| Reference Well: | P_CARMA 22-36 | Survey Calculation Method: | Minimum Curvature |
| Well Error: | 0.00ft | Output errors are at | 2.00 sigma |
| Reference Wellbore | P_CARMA 22-36 | Database: | EDM 2003.21 Single User Db |
| Reference Design: | PLAN #1 12-16-09 RHS | Offset TVD Reference: | Offset Datum |

| Offset Design WELD_CARMA 6 PAD - P_CARMA 12-36 - P_CARMA 12-36 - PLAN #1 12-16-09 RHS | | | | | | | | | | | | Offset Site Error: | 0.00 ft |
|--|---------------------|---------------------|---------------------|----------------|-------------|-----------------------|-----------------------------------|------------|----------------------|-----------------------|-------------------------|---------------------------|---------|
| Survey Program: 0-UNKNOWN | | | | | | | | | | | | Offset Well Error: | 0.00 ft |
| Reference | Offset | Semi Major Axis | | Distance | | | | | | | | | |
| Measured Depth (ft) | Vertical Depth (ft) | Measured Depth (ft) | Vertical Depth (ft) | Reference (ft) | Offset (ft) | Highside Toolface (°) | Offset Wellbore Centre +N/-S (ft) | +E/-W (ft) | Between Centres (ft) | Between Ellipses (ft) | Minimum Separation (ft) | Separation Factor | Warning |
| 5,100.00 | 4,970.82 | 5,043.40 | 4,740.74 | 167.57 | 202.85 | 43.32 | -1,341.18 | -593.50 | 627.47 | 328.94 | 298.53 | 2.102 | |
| 5,200.00 | 5,067.32 | 5,141.63 | 4,830.03 | 172.40 | 208.65 | 43.14 | -1,378.94 | -609.36 | 646.05 | 339.10 | 306.95 | 2.105 | |
| 5,300.00 | 5,163.83 | 5,239.87 | 4,919.33 | 177.24 | 214.45 | 42.97 | -1,416.69 | -625.22 | 664.64 | 349.26 | 315.38 | 2.107 | |
| 5,400.00 | 5,260.33 | 5,338.11 | 5,008.63 | 182.08 | 220.25 | 42.81 | -1,454.45 | -641.09 | 683.23 | 359.42 | 323.81 | 2.110 | |
| 5,460.82 | 5,319.03 | 5,397.87 | 5,062.94 | 185.02 | 223.78 | 42.71 | -1,477.41 | -650.74 | 694.54 | 365.61 | 328.94 | 2.111 | |
| 5,500.00 | 5,356.90 | 5,436.31 | 5,097.89 | 186.90 | 226.05 | 42.74 | -1,492.19 | -656.94 | 702.02 | 370.03 | 331.99 | 2.115 | |
| 5,600.00 | 5,454.17 | 5,534.03 | 5,186.71 | 191.54 | 231.82 | 42.72 | -1,529.75 | -672.72 | 722.87 | 383.51 | 339.36 | 2.130 | |
| 5,700.00 | 5,552.19 | 5,631.07 | 5,274.92 | 195.97 | 237.56 | 42.56 | -1,567.04 | -688.39 | 746.26 | 400.14 | 346.11 | 2.156 | |
| 5,800.00 | 5,650.83 | 5,727.30 | 5,362.39 | 200.18 | 243.24 | 42.30 | -1,604.02 | -703.93 | 772.20 | 419.95 | 352.25 | 2.192 | |
| 5,900.00 | 5,749.99 | 5,849.35 | 5,474.12 | 204.18 | 250.28 | 41.77 | -1,649.27 | -722.94 | 799.41 | 440.87 | 358.54 | 2.230 | |
| 6,000.00 | 5,849.54 | 5,978.56 | 5,594.57 | 207.97 | 257.36 | 41.20 | -1,692.38 | -741.05 | 825.42 | 460.87 | 364.55 | 2.264 | |
| 6,100.00 | 5,949.36 | 6,109.90 | 5,719.02 | 211.55 | 264.12 | 40.62 | -1,731.03 | -757.29 | 850.11 | 479.98 | 370.14 | 2.297 | |
| 6,200.00 | 6,049.32 | 6,243.33 | 5,847.29 | 214.94 | 270.50 | 40.03 | -1,764.87 | -771.51 | 873.42 | 498.13 | 375.29 | 2.327 | |
| 6,220.68 | 6,070.00 | 6,271.18 | 5,874.27 | 214.95 | 271.78 | -132.99 | -1,771.23 | -774.18 | 878.06 | 502.51 | 375.56 | 2.338 | |
| 6,300.00 | 6,149.32 | 6,379.14 | 5,979.46 | 212.41 | 276.55 | -133.64 | -1,793.61 | -783.59 | 894.44 | 519.07 | 375.38 | 2.383 | |
| 6,400.00 | 6,249.32 | 6,517.69 | 6,115.67 | 209.23 | 282.23 | -134.29 | -1,816.96 | -793.39 | 911.29 | 535.66 | 375.63 | 2.426 | |
| 6,500.00 | 6,349.32 | 6,658.44 | 6,255.12 | 206.08 | 287.48 | -134.75 | -1,834.43 | -800.73 | 923.73 | 547.38 | 376.35 | 2.454 | |
| 6,600.00 | 6,449.32 | 6,800.73 | 6,396.87 | 202.96 | 292.33 | -135.03 | -1,845.65 | -805.45 | 931.65 | 554.14 | 377.51 | 2.468 | |
| 6,700.00 | 6,549.32 | 6,943.89 | 6,539.92 | 199.87 | 295.51 | -135.15 | -1,850.38 | -807.43 | 934.97 | 557.48 | 377.49 | 2.477 | |
| 6,800.00 | 6,649.32 | 7,053.29 | 6,649.32 | 196.82 | 293.66 | -135.15 | -1,850.53 | -807.50 | 935.08 | 563.65 | 371.43 | 2.518 | |
| 6,900.00 | 6,749.32 | 7,153.29 | 6,749.32 | 193.80 | 291.22 | -135.15 | -1,850.53 | -807.50 | 935.08 | 570.46 | 364.62 | 2.565 | |
| 7,000.00 | 6,849.32 | 7,253.29 | 6,849.32 | 190.81 | 288.81 | -135.15 | -1,850.53 | -807.50 | 935.08 | 577.21 | 357.87 | 2.613 | |
| 7,100.00 | 6,949.32 | 7,353.29 | 6,949.32 | 187.86 | 286.44 | -135.15 | -1,850.53 | -807.50 | 935.08 | 583.91 | 351.17 | 2.663 | |
| 7,200.00 | 7,049.32 | 7,453.29 | 7,049.32 | 184.96 | 284.11 | -135.15 | -1,850.53 | -807.50 | 935.08 | 590.55 | 344.53 | 2.714 | |
| 7,300.00 | 7,149.32 | 7,553.29 | 7,149.32 | 182.09 | 281.81 | -135.15 | -1,850.53 | -807.50 | 935.08 | 597.14 | 337.94 | 2.767 | |
| 7,400.00 | 7,249.32 | 7,653.29 | 7,249.32 | 179.27 | 279.55 | -135.15 | -1,850.53 | -807.50 | 935.08 | 603.66 | 331.42 | 2.821 | |
| 7,500.00 | 7,349.32 | 7,753.29 | 7,349.32 | 176.49 | 277.33 | -135.15 | -1,850.53 | -807.50 | 935.08 | 610.12 | 324.96 | 2.878 | |
| 7,600.00 | 7,449.32 | 7,853.29 | 7,449.32 | 173.76 | 275.16 | -135.15 | -1,850.53 | -807.50 | 935.08 | 616.51 | 318.57 | 2.935 | |
| 7,700.00 | 7,549.32 | 7,953.29 | 7,549.32 | 171.08 | 273.02 | -135.15 | -1,850.53 | -807.50 | 935.08 | 622.83 | 312.25 | 2.995 | |
| 7,800.00 | 7,649.32 | 8,053.29 | 7,649.32 | 168.45 | 270.93 | -135.15 | -1,850.53 | -807.50 | 935.08 | 629.06 | 306.02 | 3.056 | |
| 7,900.00 | 7,749.32 | 8,153.29 | 7,749.32 | 165.88 | 268.87 | -135.15 | -1,850.53 | -807.50 | 935.08 | 635.21 | 299.87 | 3.118 | |
| 8,000.00 | 7,849.32 | 8,253.29 | 7,849.32 | 163.36 | 266.87 | -135.15 | -1,850.53 | -807.50 | 935.08 | 641.28 | 293.80 | 3.183 | |
| 8,065.68 | 7,915.00 | 8,318.97 | 7,915.00 | 161.75 | 265.57 | -135.15 | -1,850.53 | -807.50 | 935.08 | 645.21 | 289.87 | 3.226 | |

| | | | |
|---------------------------|----------------------------|-------------------------------------|---------------------------------------|
| Company: | US ROCKIES REGION PLANNING | Local Co-ordinate Reference: | Well P_CARMA 22-36 |
| Project: | COLORADO NOTHERN ZONE - 83 | TVD Reference: | WELL @ 4879.00ft (Original Well Elev) |
| Reference Site: | WELD_CARMA 6 PAD | MD Reference: | WELL @ 4879.00ft (Original Well Elev) |
| Site Error: | 0.00ft | North Reference: | True |
| Reference Well: | P_CARMA 22-36 | Survey Calculation Method: | Minimum Curvature |
| Well Error: | 0.00ft | Output errors are at | 2.00 sigma |
| Reference Wellbore | P_CARMA 22-36 | Database: | EDM 2003.21 Single User Db |
| Reference Design: | PLAN #1 12-16-09 RHS | Offset TVD Reference: | Offset Datum |

| Offset Design WELD_CARMA 6 PAD - P_CARMA 21-36 - P_CARMA 21-36 - PLAN #1 12-16-09 RHS | | | | | | | | | | | | Offset Site Error: | 0.00 ft |
|---|---------------------|---------------------|---------------------|----------------|-------------|-----------------------|-----------------------------------|------------|----------------------|-----------------------|-------------------------|-----------------------|---------|
| Survey Program: 0-UNKNOWN | | | | | | | | | | | | Offset Well Error: | 0.00 ft |
| Reference | Offset | Semi Major Axis | | | | | Distance | | | | | | Warning |
| Measured Depth (ft) | Vertical Depth (ft) | Measured Depth (ft) | Vertical Depth (ft) | Reference (ft) | Offset (ft) | Highside Toolface (°) | Offset Wellbore Centre +N/-S (ft) | +E/-W (ft) | Between Centres (ft) | Between Ellipses (ft) | Minimum Separation (ft) | Separation Factor | |
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | -45.63 | 10.93 | -11.18 | 15.63 | | | | |
| 100.00 | 100.00 | 100.00 | 100.00 | 1.70 | 1.70 | -45.63 | 10.93 | -11.18 | 15.63 | 12.23 | 3.40 | 4.598 | |
| 200.00 | 200.00 | 200.00 | 200.00 | 5.70 | 5.70 | -45.63 | 10.93 | -11.18 | 15.63 | 4.23 | 11.40 | 1.371 Level 3 | |
| 300.00 | 300.00 | 300.00 | 300.00 | 9.70 | 9.70 | -45.63 | 10.93 | -11.18 | 15.63 | -3.77 | 19.40 | 0.806 Level 1 | |
| 400.00 | 400.00 | 400.00 | 400.00 | 13.70 | 13.70 | -45.63 | 10.93 | -11.18 | 15.63 | -11.77 | 27.40 | 0.571 Level 1 | |
| 500.00 | 500.00 | 500.00 | 500.00 | 17.70 | 17.70 | -45.63 | 10.93 | -11.18 | 15.63 | -19.77 | 35.40 | 0.442 Level 1 | |
| 600.00 | 600.00 | 600.00 | 600.00 | 21.70 | 21.70 | -45.63 | 10.93 | -11.18 | 15.63 | -27.77 | 43.40 | 0.360 Level 1 | |
| 700.00 | 700.00 | 700.00 | 700.00 | 25.70 | 25.70 | -45.63 | 10.93 | -11.18 | 15.63 | -35.77 | 51.40 | 0.304 Level 1 | |
| 800.00 | 800.00 | 800.00 | 800.00 | 29.70 | 29.70 | -45.63 | 10.93 | -11.18 | 15.63 | -43.77 | 59.40 | 0.263 Level 1 | |
| 900.00 | 900.00 | 900.00 | 900.00 | 33.70 | 33.70 | -45.63 | 10.93 | -11.18 | 15.63 | -51.77 | 67.40 | 0.232 Level 1, CC | |
| 926.07 | 926.07 | 926.16 | 926.16 | 33.70 | 34.32 | 127.96 | 10.95 | -11.06 | 15.64 | -52.39 | 68.02 | 0.230 Level 1 | |
| 1,000.00 | 999.98 | 1,000.25 | 1,000.23 | 33.72 | 36.07 | 137.39 | 11.20 | -9.44 | 15.89 | -53.87 | 69.76 | 0.228 Level 1, ES, SF | |
| 1,100.00 | 1,099.84 | 1,100.03 | 1,099.87 | 29.76 | 37.11 | 162.63 | 12.01 | -4.28 | 19.24 | -47.45 | 66.69 | 0.288 Level 1 | |
| 1,200.00 | 1,199.45 | 1,198.89 | 1,198.35 | 25.86 | 38.55 | -175.03 | 13.33 | 4.22 | 29.57 | -34.31 | 63.88 | 0.463 Level 1 | |
| 1,300.00 | 1,298.70 | 1,296.39 | 1,295.13 | 22.07 | 40.34 | -162.47 | 15.14 | 15.88 | 47.11 | -14.29 | 61.40 | 0.767 Level 1 | |
| 1,400.00 | 1,397.47 | 1,392.12 | 1,389.70 | 18.55 | 42.46 | -155.71 | 17.42 | 30.49 | 70.85 | 11.65 | 59.20 | 1.197 Level 2 | |
| 1,500.00 | 1,495.62 | 1,485.70 | 1,481.62 | 15.58 | 44.84 | -151.76 | 20.11 | 47.78 | 100.20 | 42.86 | 57.35 | 1.747 | |
| 1,600.00 | 1,593.06 | 1,576.80 | 1,570.52 | 13.70 | 47.45 | -149.21 | 23.17 | 67.45 | 134.80 | 78.69 | 56.10 | 2.403 | |
| 1,659.85 | 1,650.97 | 1,630.02 | 1,622.14 | 13.38 | 49.11 | -148.08 | 25.16 | 80.23 | 157.89 | 101.99 | 55.91 | 2.824 | |
| 1,700.00 | 1,689.72 | 1,665.22 | 1,656.15 | 13.54 | 50.26 | -147.56 | 26.56 | 89.21 | 174.14 | 117.83 | 56.31 | 3.093 | |
| 1,800.00 | 1,786.22 | 1,753.99 | 1,741.51 | 15.07 | 53.29 | -146.30 | 30.31 | 113.32 | 215.83 | 156.96 | 58.87 | 3.666 | |
| 1,900.00 | 1,882.72 | 1,844.68 | 1,828.60 | 17.83 | 56.60 | -145.36 | 34.20 | 138.27 | 257.84 | 194.40 | 63.44 | 4.064 | |
| 2,000.00 | 1,979.23 | 1,935.36 | 1,915.70 | 21.35 | 60.05 | -144.69 | 38.08 | 163.21 | 299.89 | 230.70 | 69.19 | 4.334 | |
| 2,100.00 | 2,075.73 | 2,026.04 | 2,002.80 | 25.32 | 63.64 | -144.19 | 41.96 | 188.15 | 341.96 | 266.38 | 75.58 | 4.525 | |
| 2,200.00 | 2,172.23 | 2,116.72 | 2,089.89 | 29.55 | 67.33 | -143.79 | 45.85 | 213.10 | 384.05 | 301.73 | 82.32 | 4.665 | |
| 2,300.00 | 2,268.74 | 2,207.40 | 2,176.99 | 33.94 | 71.11 | -143.47 | 49.73 | 238.04 | 426.16 | 336.87 | 89.28 | 4.773 | |
| 2,400.00 | 2,365.24 | 2,298.09 | 2,264.09 | 38.45 | 74.97 | -143.21 | 53.61 | 262.99 | 468.27 | 371.86 | 96.40 | 4.857 | |
| 2,500.00 | 2,461.74 | 2,388.77 | 2,351.19 | 43.03 | 78.91 | -143.00 | 57.50 | 287.93 | 510.39 | 406.74 | 103.64 | 4.924 | |
| 2,600.00 | 2,558.24 | 2,479.45 | 2,438.28 | 47.66 | 82.90 | -142.81 | 61.38 | 312.87 | 552.51 | 441.54 | 110.97 | 4.979 | |
| 2,700.00 | 2,654.75 | 2,570.13 | 2,525.38 | 52.34 | 86.93 | -142.65 | 65.26 | 337.82 | 594.64 | 476.27 | 118.36 | 5.024 | |
| 2,800.00 | 2,751.25 | 2,660.81 | 2,612.48 | 57.04 | 91.01 | -142.52 | 69.14 | 362.76 | 636.77 | 510.95 | 125.81 | 5.061 | |
| 2,900.00 | 2,847.75 | 2,751.50 | 2,699.58 | 61.77 | 95.13 | -142.40 | 73.03 | 387.71 | 678.90 | 545.59 | 133.31 | 5.092 | |
| 3,000.00 | 2,944.26 | 2,842.18 | 2,786.67 | 66.51 | 99.27 | -142.29 | 76.91 | 412.65 | 721.03 | 580.18 | 140.86 | 5.119 | |
| 3,100.00 | 3,040.76 | 2,932.86 | 2,873.77 | 71.27 | 103.45 | -142.20 | 80.79 | 437.60 | 763.17 | 614.74 | 148.43 | 5.142 | |
| 3,200.00 | 3,137.26 | 3,023.54 | 2,960.87 | 76.04 | 107.65 | -142.11 | 84.68 | 462.54 | 805.31 | 649.27 | 156.04 | 5.161 | |
| 3,300.00 | 3,233.77 | 3,114.22 | 3,047.97 | 80.82 | 111.87 | -142.04 | 88.56 | 487.48 | 847.45 | 683.78 | 163.68 | 5.178 | |
| 3,400.00 | 3,330.27 | 3,204.91 | 3,135.06 | 85.61 | 116.11 | -141.97 | 92.44 | 512.43 | 889.59 | 718.26 | 171.33 | 5.192 | |
| 3,500.00 | 3,426.77 | 3,295.59 | 3,222.16 | 90.41 | 120.38 | -141.90 | 96.33 | 537.37 | 931.73 | 752.72 | 179.02 | 5.205 | |
| 3,600.00 | 3,523.28 | 3,386.27 | 3,309.26 | 95.21 | 124.65 | -141.85 | 100.21 | 562.32 | 973.88 | 787.16 | 186.72 | 5.216 | |
| 3,700.00 | 3,619.78 | 3,476.95 | 3,396.35 | 100.01 | 128.94 | -141.79 | 104.09 | 587.26 | 1,016.02 | 821.59 | 194.43 | 5.226 | |
| 3,800.00 | 3,716.28 | 3,567.63 | 3,483.45 | 104.82 | 133.25 | -141.75 | 107.98 | 612.20 | 1,058.16 | 856.00 | 202.17 | 5.234 | |
| 3,900.00 | 3,812.78 | 3,658.32 | 3,570.55 | 109.64 | 137.57 | -141.70 | 111.86 | 637.15 | 1,100.31 | 890.39 | 209.91 | 5.242 | |
| 4,000.00 | 3,909.29 | 3,749.00 | 3,657.65 | 114.45 | 141.89 | -141.66 | 115.74 | 662.09 | 1,142.45 | 924.78 | 217.67 | 5.248 | |
| 4,100.00 | 4,005.79 | 3,839.68 | 3,744.74 | 119.27 | 146.23 | -141.62 | 119.62 | 687.04 | 1,184.60 | 959.16 | 225.44 | 5.255 | |
| 4,200.00 | 4,102.29 | 3,930.36 | 3,831.84 | 124.09 | 150.57 | -141.59 | 123.51 | 711.98 | 1,226.75 | 993.52 | 233.23 | 5.260 | |
| 4,300.00 | 4,198.80 | 4,021.04 | 3,918.94 | 128.92 | 154.93 | -141.55 | 127.39 | 736.93 | 1,268.89 | 1,027.88 | 241.02 | 5.265 | |
| 4,400.00 | 4,295.30 | 4,111.73 | 4,006.04 | 133.74 | 159.29 | -141.52 | 131.27 | 761.87 | 1,311.04 | 1,062.22 | 248.82 | 5.269 | |
| 4,500.00 | 4,391.80 | 4,202.41 | 4,093.13 | 138.57 | 163.66 | -141.49 | 135.16 | 786.81 | 1,353.19 | 1,096.56 | 256.62 | 5.273 | |
| 4,600.00 | 4,488.31 | 4,293.09 | 4,180.23 | 143.40 | 168.03 | -141.46 | 139.04 | 811.76 | 1,395.33 | 1,130.90 | 264.44 | 5.277 | |
| 4,700.00 | 4,584.81 | 4,383.77 | 4,267.33 | 148.23 | 172.41 | -141.44 | 142.92 | 836.70 | 1,437.48 | 1,165.22 | 272.26 | 5.280 | |
| 4,800.00 | 4,681.31 | 4,474.45 | 4,354.42 | 153.06 | 176.80 | -141.41 | 146.81 | 861.65 | 1,479.63 | 1,199.54 | 280.09 | 5.283 | |
| 4,900.00 | 4,777.81 | 4,565.14 | 4,441.52 | 157.90 | 181.19 | -141.39 | 150.69 | 886.59 | 1,521.78 | 1,233.85 | 287.92 | 5.285 | |

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

| | | | |
|---------------------------|----------------------------|-------------------------------------|---------------------------------------|
| Company: | US ROCKIES REGION PLANNING | Local Co-ordinate Reference: | Well P_CARMA 22-36 |
| Project: | COLORADO NOTHERN ZONE - 83 | TVD Reference: | WELL @ 4879.00ft (Original Well Elev) |
| Reference Site: | WELD_CARMA 6 PAD | MD Reference: | WELL @ 4879.00ft (Original Well Elev) |
| Site Error: | 0.00ft | North Reference: | True |
| Reference Well: | P_CARMA 22-36 | Survey Calculation Method: | Minimum Curvature |
| Well Error: | 0.00ft | Output errors are at | 2.00 sigma |
| Reference Wellbore | P_CARMA 22-36 | Database: | EDM 2003.21 Single User Db |
| Reference Design: | PLAN #1 12-16-09 RHS | Offset TVD Reference: | Offset Datum |

| Offset Design WELD_CARMA 6 PAD - P_CARMA 21-36 - P_CARMA 21-36 - PLAN #1 12-16-09 RHS | | | | | | | | | | | | Offset Site Error: | 0.00 ft |
|--|---------------------|---------------------|---------------------|----------------|-------------|-----------------------|-----------------------------------|------------|----------------------|-----------------------|-------------------------|---------------------------|---------|
| Survey Program: 0-UNKNOWN | | | | | | | | | | | | Offset Well Error: | 0.00 ft |
| Reference | Offset | Semi Major Axis | | Distance | | | | | | | | | |
| Measured Depth (ft) | Vertical Depth (ft) | Measured Depth (ft) | Vertical Depth (ft) | Reference (ft) | Offset (ft) | Highside Toolface (°) | Offset Wellbore Centre +N/-S (ft) | +E/-W (ft) | Between Centres (ft) | Between Ellipses (ft) | Minimum Separation (ft) | Separation Factor | Warning |
| 5,000.00 | 4,874.32 | 4,655.82 | 4,528.62 | 162.73 | 185.58 | -141.37 | 154.57 | 911.53 | 1,563.93 | 1,268.16 | 295.77 | 5.288 | |
| 5,100.00 | 4,970.82 | 4,746.50 | 4,615.72 | 167.57 | 189.98 | -141.35 | 158.46 | 936.48 | 1,606.08 | 1,302.46 | 303.61 | 5.290 | |
| 5,200.00 | 5,067.32 | 4,837.18 | 4,702.81 | 172.40 | 194.39 | -141.33 | 162.34 | 961.42 | 1,648.22 | 1,336.76 | 311.46 | 5.292 | |
| 5,300.00 | 5,163.83 | 4,927.87 | 4,789.91 | 177.24 | 198.79 | -141.31 | 166.22 | 986.37 | 1,690.37 | 1,371.06 | 319.31 | 5.294 | |
| 5,400.00 | 5,260.33 | 5,018.55 | 4,877.01 | 182.08 | 203.21 | -141.29 | 170.11 | 1,011.31 | 1,732.52 | 1,405.35 | 327.17 | 5.295 | |
| 5,460.82 | 5,319.03 | 5,073.70 | 4,929.99 | 185.02 | 205.89 | -141.28 | 172.47 | 1,026.48 | 1,758.16 | 1,426.20 | 331.96 | 5.296 | |
| 5,500.00 | 5,356.90 | 5,109.32 | 4,964.19 | 186.90 | 207.62 | -141.49 | 173.99 | 1,036.28 | 1,774.48 | 1,438.72 | 335.76 | 5.285 | |
| 5,600.00 | 5,454.17 | 5,200.96 | 5,052.21 | 191.54 | 212.09 | -141.95 | 177.92 | 1,061.49 | 1,814.41 | 1,469.05 | 345.36 | 5.254 | |
| 5,700.00 | 5,552.19 | 5,293.59 | 5,141.18 | 195.97 | 216.60 | -142.29 | 181.88 | 1,086.97 | 1,851.81 | 1,497.03 | 354.78 | 5.220 | |
| 5,800.00 | 5,650.83 | 5,387.09 | 5,230.98 | 200.18 | 221.16 | -142.53 | 185.89 | 1,112.69 | 1,886.65 | 1,522.66 | 363.99 | 5.183 | |
| 5,900.00 | 5,749.99 | 5,570.64 | 5,408.53 | 204.18 | 229.84 | -142.48 | 193.03 | 1,158.57 | 1,917.12 | 1,540.56 | 376.56 | 5.091 | |
| 6,000.00 | 5,849.54 | 5,782.35 | 5,616.50 | 207.97 | 239.09 | -142.41 | 199.08 | 1,197.47 | 1,939.44 | 1,549.61 | 389.83 | 4.975 | |
| 6,100.00 | 5,949.36 | 6,000.53 | 5,833.26 | 211.55 | 247.74 | -142.38 | 202.84 | 1,221.57 | 1,953.14 | 1,550.31 | 402.82 | 4.849 | |
| 6,200.00 | 6,049.32 | 6,216.79 | 6,049.32 | 214.94 | 255.21 | -142.40 | 204.04 | 1,229.31 | 1,957.94 | 1,543.10 | 414.84 | 4.720 | |
| 6,220.68 | 6,070.00 | 6,237.46 | 6,070.00 | 214.95 | 255.44 | 44.71 | 204.04 | 1,229.31 | 1,958.00 | 1,542.87 | 415.13 | 4.717 | |
| 6,300.00 | 6,149.32 | 6,316.79 | 6,149.32 | 212.41 | 256.32 | 44.71 | 204.04 | 1,229.31 | 1,958.00 | 1,544.80 | 413.19 | 4.739 | |
| 6,400.00 | 6,249.32 | 6,416.79 | 6,249.32 | 209.23 | 257.48 | 44.71 | 204.04 | 1,229.31 | 1,958.00 | 1,547.17 | 410.83 | 4.766 | |
| 6,500.00 | 6,349.32 | 6,516.79 | 6,349.32 | 206.08 | 258.70 | 44.71 | 204.04 | 1,229.31 | 1,958.00 | 1,549.46 | 408.54 | 4.793 | |
| 6,600.00 | 6,449.32 | 6,616.79 | 6,449.32 | 202.96 | 259.97 | 44.71 | 204.04 | 1,229.31 | 1,958.00 | 1,551.66 | 406.33 | 4.819 | |
| 6,700.00 | 6,549.32 | 6,716.79 | 6,549.32 | 199.87 | 261.30 | 44.71 | 204.04 | 1,229.31 | 1,958.00 | 1,553.79 | 404.21 | 4.844 | |
| 6,800.00 | 6,649.32 | 6,816.79 | 6,649.32 | 196.82 | 262.68 | 44.71 | 204.04 | 1,229.31 | 1,958.00 | 1,555.84 | 402.16 | 4.869 | |
| 6,900.00 | 6,749.32 | 6,916.79 | 6,749.32 | 193.80 | 264.12 | 44.71 | 204.04 | 1,229.31 | 1,958.00 | 1,557.80 | 400.19 | 4.893 | |
| 7,000.00 | 6,849.32 | 7,016.79 | 6,849.32 | 190.81 | 265.61 | 44.71 | 204.04 | 1,229.31 | 1,958.00 | 1,559.69 | 398.31 | 4.916 | |
| 7,100.00 | 6,949.32 | 7,116.79 | 6,949.32 | 187.86 | 267.15 | 44.71 | 204.04 | 1,229.31 | 1,958.00 | 1,561.50 | 396.50 | 4.938 | |
| 7,200.00 | 7,049.32 | 7,216.79 | 7,049.32 | 184.96 | 268.74 | 44.71 | 204.04 | 1,229.31 | 1,958.00 | 1,563.22 | 394.78 | 4.960 | |
| 7,300.00 | 7,149.32 | 7,316.79 | 7,149.32 | 182.09 | 270.38 | 44.71 | 204.04 | 1,229.31 | 1,958.00 | 1,564.86 | 393.14 | 4.980 | |
| 7,400.00 | 7,249.32 | 7,416.79 | 7,249.32 | 179.27 | 272.07 | 44.71 | 204.04 | 1,229.31 | 1,958.00 | 1,566.42 | 391.58 | 5.000 | |
| 7,500.00 | 7,349.32 | 7,516.79 | 7,349.32 | 176.49 | 273.81 | 44.71 | 204.04 | 1,229.31 | 1,958.00 | 1,567.89 | 390.11 | 5.019 | |
| 7,600.00 | 7,449.32 | 7,616.79 | 7,449.32 | 173.76 | 275.60 | 44.71 | 204.04 | 1,229.31 | 1,958.00 | 1,569.28 | 388.72 | 5.037 | |
| 7,700.00 | 7,549.32 | 7,716.79 | 7,549.32 | 171.08 | 277.43 | 44.71 | 204.04 | 1,229.31 | 1,958.00 | 1,570.58 | 387.42 | 5.054 | |
| 7,800.00 | 7,649.32 | 7,816.79 | 7,649.32 | 168.45 | 279.31 | 44.71 | 204.04 | 1,229.31 | 1,958.00 | 1,571.79 | 386.20 | 5.070 | |
| 7,900.00 | 7,749.32 | 7,916.79 | 7,749.32 | 165.88 | 281.23 | 44.71 | 204.04 | 1,229.31 | 1,958.00 | 1,572.91 | 385.08 | 5.085 | |
| 8,000.00 | 7,849.32 | 8,016.79 | 7,849.32 | 163.36 | 283.19 | 44.71 | 204.04 | 1,229.31 | 1,958.00 | 1,573.95 | 384.05 | 5.098 | |
| 8,030.33 | 7,879.65 | 8,047.12 | 7,879.65 | 162.62 | 283.80 | 44.71 | 204.04 | 1,229.31 | 1,958.00 | 1,574.24 | 383.76 | 5.102 | |
| 8,065.68 | 7,915.00 | 8,057.46 | 7,890.00 | 161.75 | 284.00 | 44.71 | 204.04 | 1,229.31 | 1,958.16 | 1,575.27 | 382.89 | 5.114 | |

| | | | |
|---------------------------|----------------------------|-------------------------------------|---------------------------------------|
| Company: | US ROCKIES REGION PLANNING | Local Co-ordinate Reference: | Well P_CARMA 22-36 |
| Project: | COLORADO NOTHERN ZONE - 83 | TVD Reference: | WELL @ 4879.00ft (Original Well Elev) |
| Reference Site: | WELD_CARMA 6 PAD | MD Reference: | WELL @ 4879.00ft (Original Well Elev) |
| Site Error: | 0.00ft | North Reference: | True |
| Reference Well: | P_CARMA 22-36 | Survey Calculation Method: | Minimum Curvature |
| Well Error: | 0.00ft | Output errors are at | 2.00 sigma |
| Reference Wellbore | P_CARMA 22-36 | Database: | EDM 2003.21 Single User Db |
| Reference Design: | PLAN #1 12-16-09 RHS | Offset TVD Reference: | Offset Datum |

| Offset Design WELD_CARMA 6 PAD - P_CARMA 32-36 - P_CARMA 32-36 - PLAN #1 12-16-09 RHS | | | | | | | | | | | | Offset Site Error: | 0.00 ft |
|---|---------------------|---------------------|---------------------|----------------|-------------|-----------------------|-----------------------------------|------------|----------------------|-----------------------|-------------------------|---------------------------|---------|
| Survey Program: 0-MWD | | | | | | | | | | | | Offset Well Error: | 0.00 ft |
| Reference | Offset | Semi Major Axis | | Distance | | | | | | | | | |
| Measured Depth (ft) | Vertical Depth (ft) | Measured Depth (ft) | Vertical Depth (ft) | Reference (ft) | Offset (ft) | Highside Toolface (°) | Offset Wellbore Centre +N/-S (ft) | +E/-W (ft) | Between Centres (ft) | Between Ellipses (ft) | Minimum Separation (ft) | Separation Factor | Warning |
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | -49.00 | 29.15 | -33.53 | 44.43 | | | | |
| 100.00 | 100.00 | 100.00 | 100.00 | 1.70 | 0.10 | -49.00 | 29.15 | -33.53 | 44.43 | 42.63 | 1.80 | 24.742 | |
| 200.00 | 200.00 | 200.00 | 200.00 | 5.70 | 0.32 | -49.00 | 29.15 | -33.53 | 44.43 | 38.40 | 6.02 | 7.379 | |
| 300.00 | 300.00 | 300.00 | 300.00 | 9.70 | 0.55 | -49.00 | 29.15 | -33.53 | 44.43 | 34.18 | 10.25 | 4.336 | |
| 400.00 | 400.00 | 400.00 | 400.00 | 13.70 | 0.77 | -49.00 | 29.15 | -33.53 | 44.43 | 29.96 | 14.47 | 3.070 | |
| 500.00 | 500.00 | 500.00 | 500.00 | 17.70 | 0.99 | -49.00 | 29.15 | -33.53 | 44.43 | 25.73 | 18.69 | 2.376 | |
| 600.00 | 600.00 | 600.00 | 600.00 | 21.70 | 1.22 | -49.00 | 29.15 | -33.53 | 44.43 | 21.51 | 22.92 | 1.938 | |
| 700.00 | 700.00 | 700.00 | 700.00 | 25.70 | 1.44 | -49.00 | 29.15 | -33.53 | 44.43 | 17.28 | 27.14 | 1.637 | |
| 800.00 | 800.00 | 800.00 | 800.00 | 29.70 | 1.67 | -49.00 | 29.15 | -33.53 | 44.43 | 13.06 | 31.37 | 1.416 Level 3 | |
| 900.00 | 900.00 | 900.00 | 900.00 | 33.70 | 1.89 | -49.00 | 29.15 | -33.53 | 44.43 | 8.83 | 35.59 | 1.248 Level 2, CC, ES, SF | |
| 1,000.00 | 999.98 | 999.74 | 999.72 | 33.72 | 2.10 | 123.54 | 28.04 | -34.86 | 45.68 | 9.87 | 35.80 | 1.276 Level 3 | |
| 1,100.00 | 1,099.84 | 1,099.37 | 1,099.21 | 29.76 | 2.28 | 122.57 | 24.71 | -38.86 | 49.44 | 17.43 | 32.02 | 1.544 | |
| 1,200.00 | 1,199.45 | 1,198.82 | 1,198.28 | 25.86 | 2.49 | 121.24 | 19.19 | -45.49 | 55.74 | 27.46 | 28.27 | 1.971 | |
| 1,300.00 | 1,298.70 | 1,297.97 | 1,296.69 | 22.07 | 2.72 | 119.79 | 11.49 | -54.74 | 64.56 | 39.92 | 24.64 | 2.620 | |
| 1,400.00 | 1,397.47 | 1,396.74 | 1,394.26 | 18.55 | 2.98 | 118.40 | 1.67 | -66.55 | 75.91 | 54.66 | 21.25 | 3.572 | |
| 1,500.00 | 1,495.62 | 1,495.04 | 1,490.77 | 15.58 | 3.29 | 117.15 | -10.24 | -80.86 | 89.78 | 71.40 | 18.38 | 4.885 | |
| 1,600.00 | 1,593.06 | 1,592.79 | 1,586.06 | 13.70 | 3.64 | 116.05 | -24.18 | -97.60 | 106.12 | 89.60 | 16.52 | 6.423 | |
| 1,659.85 | 1,650.97 | 1,650.99 | 1,642.42 | 13.38 | 3.89 | 115.46 | -33.46 | -108.75 | 117.08 | 100.86 | 16.21 | 7.221 | |
| 1,700.00 | 1,689.72 | 1,689.92 | 1,679.95 | 13.54 | 4.05 | 115.11 | -40.08 | -116.70 | 124.80 | 108.38 | 16.41 | 7.604 | |
| 1,800.00 | 1,786.22 | 1,786.47 | 1,772.39 | 15.07 | 4.52 | 113.54 | -57.89 | -138.11 | 144.75 | 126.50 | 18.25 | 7.932 | |
| 1,900.00 | 1,882.72 | 1,882.29 | 1,863.16 | 17.83 | 5.05 | 111.27 | -77.53 | -161.70 | 165.91 | 144.33 | 21.57 | 7.690 | |
| 2,000.00 | 1,979.23 | 1,977.17 | 1,951.97 | 21.35 | 5.64 | 108.62 | -98.88 | -187.35 | 188.51 | 162.71 | 25.81 | 7.305 | |
| 2,100.00 | 2,075.73 | 2,070.91 | 2,038.58 | 25.32 | 6.28 | 105.77 | -121.81 | -214.90 | 212.82 | 182.27 | 30.55 | 6.966 | |
| 2,200.00 | 2,172.23 | 2,164.01 | 2,123.41 | 29.55 | 6.97 | 102.86 | -146.33 | -244.37 | 239.02 | 203.45 | 35.57 | 6.719 | |
| 2,300.00 | 2,268.74 | 2,259.58 | 2,210.07 | 33.94 | 7.73 | 100.25 | -172.12 | -275.35 | 266.27 | 225.52 | 40.74 | 6.535 | |
| 2,400.00 | 2,365.24 | 2,355.15 | 2,296.72 | 38.45 | 8.49 | 98.12 | -197.90 | -306.33 | 293.93 | 247.97 | 45.96 | 6.395 | |
| 2,500.00 | 2,461.74 | 2,450.72 | 2,383.38 | 43.03 | 9.27 | 96.35 | -223.68 | -337.31 | 321.91 | 270.69 | 51.22 | 6.285 | |
| 2,600.00 | 2,558.24 | 2,546.29 | 2,470.04 | 47.66 | 10.05 | 94.87 | -249.47 | -368.29 | 350.13 | 293.63 | 56.51 | 6.196 | |
| 2,700.00 | 2,654.75 | 2,641.86 | 2,556.69 | 52.34 | 10.85 | 93.61 | -275.25 | -399.26 | 378.54 | 316.73 | 61.81 | 6.125 | |
| 2,800.00 | 2,751.25 | 2,737.43 | 2,643.35 | 57.04 | 11.64 | 92.52 | -301.03 | -430.24 | 407.08 | 339.96 | 67.12 | 6.065 | |
| 2,900.00 | 2,847.75 | 2,833.00 | 2,730.00 | 61.77 | 12.45 | 91.58 | -326.82 | -461.22 | 435.75 | 363.31 | 72.44 | 6.015 | |
| 3,000.00 | 2,944.26 | 2,928.57 | 2,816.66 | 66.51 | 13.25 | 90.75 | -352.60 | -492.20 | 464.51 | 386.74 | 77.78 | 5.972 | |
| 3,100.00 | 3,040.76 | 3,024.14 | 2,903.32 | 71.27 | 14.06 | 90.02 | -378.38 | -523.18 | 493.36 | 410.24 | 83.12 | 5.936 | |
| 3,200.00 | 3,137.26 | 3,119.71 | 2,989.97 | 76.04 | 14.87 | 89.37 | -404.17 | -554.16 | 522.26 | 433.80 | 88.46 | 5.904 | |
| 3,300.00 | 3,233.77 | 3,215.28 | 3,076.63 | 80.82 | 15.69 | 88.78 | -429.95 | -585.14 | 551.23 | 457.41 | 93.81 | 5.876 | |
| 3,400.00 | 3,330.27 | 3,310.85 | 3,163.28 | 85.61 | 16.50 | 88.26 | -455.73 | -616.12 | 580.24 | 481.07 | 99.17 | 5.851 | |
| 3,500.00 | 3,426.77 | 3,406.42 | 3,249.94 | 90.41 | 17.32 | 87.78 | -481.52 | -647.10 | 609.29 | 504.77 | 104.52 | 5.829 | |
| 3,600.00 | 3,523.28 | 3,501.99 | 3,336.60 | 95.21 | 18.13 | 87.35 | -507.30 | -678.08 | 638.37 | 528.49 | 109.88 | 5.810 | |
| 3,700.00 | 3,619.78 | 3,597.56 | 3,423.25 | 100.01 | 18.95 | 86.96 | -533.08 | -709.05 | 667.49 | 552.25 | 115.24 | 5.792 | |
| 3,800.00 | 3,716.28 | 3,693.13 | 3,509.91 | 104.82 | 19.77 | 86.60 | -558.87 | -740.03 | 696.63 | 576.03 | 120.61 | 5.776 | |
| 3,900.00 | 3,812.78 | 3,788.71 | 3,596.56 | 109.64 | 20.59 | 86.26 | -584.65 | -771.01 | 725.80 | 599.83 | 125.97 | 5.762 | |
| 4,000.00 | 3,909.29 | 3,884.28 | 3,683.22 | 114.45 | 21.42 | 85.96 | -610.43 | -801.99 | 754.99 | 623.65 | 131.34 | 5.749 | |
| 4,100.00 | 4,005.79 | 3,979.85 | 3,769.88 | 119.27 | 22.24 | 85.67 | -636.22 | -832.97 | 784.19 | 647.49 | 136.70 | 5.736 | |
| 4,200.00 | 4,102.29 | 4,075.42 | 3,856.53 | 124.09 | 23.06 | 85.41 | -662.00 | -863.95 | 813.41 | 671.34 | 142.07 | 5.725 | |
| 4,300.00 | 4,198.80 | 4,170.99 | 3,943.19 | 128.92 | 23.89 | 85.16 | -687.78 | -894.93 | 842.65 | 695.21 | 147.44 | 5.715 | |
| 4,400.00 | 4,295.30 | 4,266.56 | 4,029.84 | 133.74 | 24.71 | 84.93 | -713.57 | -925.91 | 871.90 | 719.09 | 152.81 | 5.706 | |
| 4,500.00 | 4,391.80 | 4,362.13 | 4,116.50 | 138.57 | 25.53 | 84.72 | -739.35 | -956.89 | 901.16 | 742.98 | 158.18 | 5.697 | |
| 4,600.00 | 4,488.31 | 4,457.70 | 4,203.16 | 143.40 | 26.36 | 84.52 | -765.13 | -987.87 | 930.43 | 766.89 | 163.55 | 5.689 | |
| 4,700.00 | 4,584.81 | 4,553.27 | 4,289.81 | 148.23 | 27.18 | 84.33 | -790.92 | -1,018.84 | 959.71 | 790.80 | 168.92 | 5.682 | |
| 4,800.00 | 4,681.31 | 4,648.84 | 4,376.47 | 153.06 | 28.01 | 84.15 | -816.70 | -1,049.82 | 989.01 | 814.72 | 174.29 | 5.675 | |
| 4,900.00 | 4,777.81 | 4,744.41 | 4,463.12 | 157.90 | 28.83 | 83.99 | -842.48 | -1,080.80 | 1,018.30 | 838.65 | 179.66 | 5.668 | |
| 5,000.00 | 4,874.32 | 4,839.98 | 4,549.78 | 162.73 | 29.66 | 83.83 | -868.27 | -1,111.78 | 1,047.61 | 862.58 | 185.03 | 5.662 | |

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

| | | | |
|---------------------------|----------------------------|-------------------------------------|---------------------------------------|
| Company: | US ROCKIES REGION PLANNING | Local Co-ordinate Reference: | Well P_CARMA 22-36 |
| Project: | COLORADO NOTHERN ZONE - 83 | TVD Reference: | WELL @ 4879.00ft (Original Well Elev) |
| Reference Site: | WELD_CARMA 6 PAD | MD Reference: | WELL @ 4879.00ft (Original Well Elev) |
| Site Error: | 0.00ft | North Reference: | True |
| Reference Well: | P_CARMA 22-36 | Survey Calculation Method: | Minimum Curvature |
| Well Error: | 0.00ft | Output errors are at | 2.00 sigma |
| Reference Wellbore | P_CARMA 22-36 | Database: | EDM 2003.21 Single User Db |
| Reference Design: | PLAN #1 12-16-09 RHS | Offset TVD Reference: | Offset Datum |

| Offset Design WELD_CARMA 6 PAD - P_CARMA 32-36 - P_CARMA 32-36 - PLAN #1 12-16-09 RHS | | | | | | | | | | | | Offset Site Error: | 0.00 ft |
|--|---------------------|---------------------|---------------------|----------------|-------------|-----------------------|-----------------------------------|------------|----------------------|-----------------------|-------------------------|---------------------------|---------|
| Survey Program: 0-MWD | | | | | | | | | | | | Offset Well Error: | 0.00 ft |
| Reference | Offset | Semi Major Axis | | Distance | | | | | | | | | |
| Measured Depth (ft) | Vertical Depth (ft) | Measured Depth (ft) | Vertical Depth (ft) | Reference (ft) | Offset (ft) | Highside Toolface (°) | Offset Wellbore Centre +N/-S (ft) | +E/-W (ft) | Between Centres (ft) | Between Ellipses (ft) | Minimum Separation (ft) | Separation Factor | Warning |
| 5,100.00 | 4,970.82 | 4,935.55 | 4,636.44 | 167.57 | 30.49 | 83.68 | -894.05 | -1,142.76 | 1,076.92 | 886.53 | 190.40 | 5.656 | |
| 5,200.00 | 5,067.32 | 5,031.12 | 4,723.09 | 172.40 | 31.31 | 83.54 | -919.83 | -1,173.74 | 1,106.24 | 910.48 | 195.77 | 5.651 | |
| 5,300.00 | 5,163.83 | 5,126.69 | 4,809.75 | 177.24 | 32.14 | 83.41 | -945.61 | -1,204.72 | 1,135.57 | 934.43 | 201.14 | 5.646 | |
| 5,400.00 | 5,260.33 | 5,254.81 | 4,926.75 | 182.08 | 33.04 | 83.31 | -978.99 | -1,244.82 | 1,163.84 | 957.25 | 206.59 | 5.634 | |
| 5,460.82 | 5,319.03 | 5,339.13 | 5,004.96 | 185.02 | 33.54 | 83.35 | -999.14 | -1,269.03 | 1,179.41 | 969.50 | 209.92 | 5.619 | |
| 5,500.00 | 5,356.90 | 5,393.91 | 5,056.25 | 186.90 | 33.85 | 83.59 | -1,011.44 | -1,283.80 | 1,188.79 | 976.67 | 212.12 | 5.604 | |
| 5,600.00 | 5,454.17 | 5,535.25 | 5,190.21 | 191.54 | 34.56 | 84.15 | -1,040.25 | -1,318.42 | 1,210.53 | 993.01 | 217.51 | 5.565 | |
| 5,700.00 | 5,552.19 | 5,678.56 | 5,328.14 | 195.97 | 35.20 | 84.63 | -1,065.12 | -1,348.30 | 1,229.02 | 1,006.41 | 222.61 | 5.521 | |
| 5,800.00 | 5,650.83 | 5,823.56 | 5,469.49 | 200.18 | 35.74 | 85.02 | -1,085.75 | -1,373.09 | 1,244.17 | 1,016.79 | 227.39 | 5.472 | |
| 5,900.00 | 5,749.99 | 5,969.92 | 5,613.63 | 204.18 | 36.19 | 85.34 | -1,101.91 | -1,392.51 | 1,255.92 | 1,024.07 | 231.85 | 5.417 | |
| 6,000.00 | 5,849.54 | 6,117.29 | 5,759.89 | 207.97 | 36.53 | 85.58 | -1,113.41 | -1,406.33 | 1,264.19 | 1,028.18 | 236.01 | 5.357 | |
| 6,100.00 | 5,949.36 | 6,265.31 | 5,907.52 | 211.55 | 36.76 | 85.75 | -1,120.10 | -1,414.36 | 1,268.94 | 1,029.08 | 239.86 | 5.290 | |
| 6,200.00 | 6,049.32 | 6,407.16 | 6,049.32 | 214.94 | 36.90 | 85.85 | -1,121.94 | -1,416.58 | 1,270.19 | 1,026.77 | 243.42 | 5.218 | |
| 6,220.68 | 6,070.00 | 6,427.83 | 6,070.00 | 214.95 | 36.92 | -87.04 | -1,121.94 | -1,416.58 | 1,270.19 | 1,026.75 | 243.44 | 5.218 | |
| 6,300.00 | 6,149.32 | 6,507.16 | 6,149.32 | 212.41 | 36.97 | -87.04 | -1,121.94 | -1,416.58 | 1,270.19 | 1,029.22 | 240.97 | 5.271 | |
| 6,400.00 | 6,249.32 | 6,607.16 | 6,249.32 | 209.23 | 37.05 | -87.04 | -1,121.94 | -1,416.58 | 1,270.19 | 1,032.32 | 237.87 | 5.340 | |
| 6,500.00 | 6,349.32 | 6,707.16 | 6,349.32 | 206.08 | 37.12 | -87.04 | -1,121.94 | -1,416.58 | 1,270.19 | 1,035.38 | 234.81 | 5.410 | |
| 6,600.00 | 6,449.32 | 6,807.16 | 6,449.32 | 202.96 | 37.19 | -87.04 | -1,121.94 | -1,416.58 | 1,270.19 | 1,038.41 | 231.77 | 5.480 | |
| 6,700.00 | 6,549.32 | 6,907.16 | 6,549.32 | 199.87 | 37.27 | -87.04 | -1,121.94 | -1,416.58 | 1,270.19 | 1,041.42 | 228.77 | 5.552 | |
| 6,800.00 | 6,649.32 | 7,007.16 | 6,649.32 | 196.82 | 37.34 | -87.04 | -1,121.94 | -1,416.58 | 1,270.19 | 1,044.38 | 225.81 | 5.625 | |
| 6,900.00 | 6,749.32 | 7,107.16 | 6,749.32 | 193.80 | 37.42 | -87.04 | -1,121.94 | -1,416.58 | 1,270.19 | 1,047.31 | 222.87 | 5.699 | |
| 7,000.00 | 6,849.32 | 7,207.16 | 6,849.32 | 190.81 | 37.50 | -87.04 | -1,121.94 | -1,416.58 | 1,270.19 | 1,050.21 | 219.98 | 5.774 | |
| 7,100.00 | 6,949.32 | 7,307.16 | 6,949.32 | 187.86 | 37.58 | -87.04 | -1,121.94 | -1,416.58 | 1,270.19 | 1,053.06 | 217.13 | 5.850 | |
| 7,200.00 | 7,049.32 | 7,407.16 | 7,049.32 | 184.96 | 37.66 | -87.04 | -1,121.94 | -1,416.58 | 1,270.19 | 1,055.87 | 214.31 | 5.927 | |
| 7,300.00 | 7,149.32 | 7,507.16 | 7,149.32 | 182.09 | 37.74 | -87.04 | -1,121.94 | -1,416.58 | 1,270.19 | 1,058.65 | 211.54 | 6.004 | |
| 7,400.00 | 7,249.32 | 7,607.16 | 7,249.32 | 179.27 | 37.82 | -87.04 | -1,121.94 | -1,416.58 | 1,270.19 | 1,061.37 | 208.82 | 6.083 | |
| 7,500.00 | 7,349.32 | 7,707.16 | 7,349.32 | 176.49 | 37.91 | -87.04 | -1,121.94 | -1,416.58 | 1,270.19 | 1,064.05 | 206.14 | 6.162 | |
| 7,600.00 | 7,449.32 | 7,807.16 | 7,449.32 | 173.76 | 37.99 | -87.04 | -1,121.94 | -1,416.58 | 1,270.19 | 1,066.68 | 203.51 | 6.241 | |
| 7,700.00 | 7,549.32 | 7,907.16 | 7,549.32 | 171.08 | 38.08 | -87.04 | -1,121.94 | -1,416.58 | 1,270.19 | 1,069.26 | 200.93 | 6.322 | |
| 7,800.00 | 7,649.32 | 8,007.16 | 7,649.32 | 168.45 | 38.17 | -87.04 | -1,121.94 | -1,416.58 | 1,270.19 | 1,071.79 | 198.40 | 6.402 | |
| 7,900.00 | 7,749.32 | 8,107.16 | 7,749.32 | 165.88 | 38.26 | -87.04 | -1,121.94 | -1,416.58 | 1,270.19 | 1,074.25 | 195.93 | 6.483 | |
| 8,000.00 | 7,849.32 | 8,207.16 | 7,849.32 | 163.36 | 38.35 | -87.04 | -1,121.94 | -1,416.58 | 1,270.19 | 1,076.67 | 193.52 | 6.564 | |
| 8,020.28 | 7,869.61 | 8,227.44 | 7,869.61 | 162.86 | 38.37 | -87.04 | -1,121.94 | -1,416.58 | 1,270.19 | 1,077.14 | 193.04 | 6.580 | |
| 8,065.68 | 7,915.00 | 8,238.83 | 7,881.00 | 161.75 | 38.38 | -87.04 | -1,121.94 | -1,416.58 | 1,270.64 | 1,078.71 | 191.94 | 6.620 | |

| | | | |
|---------------------------|----------------------------|-------------------------------------|---------------------------------------|
| Company: | US ROCKIES REGION PLANNING | Local Co-ordinate Reference: | Well P_CARMA 22-36 |
| Project: | COLORADO NOTHERN ZONE - 83 | TVD Reference: | WELL @ 4879.00ft (Original Well Elev) |
| Reference Site: | WELD_CARMA 6 PAD | MD Reference: | WELL @ 4879.00ft (Original Well Elev) |
| Site Error: | 0.00ft | North Reference: | True |
| Reference Well: | P_CARMA 22-36 | Survey Calculation Method: | Minimum Curvature |
| Well Error: | 0.00ft | Output errors are at | 2.00 sigma |
| Reference Wellbore | P_CARMA 22-36 | Database: | EDM 2003.21 Single User Db |
| Reference Design: | PLAN #1 12-16-09 RHS | Offset TVD Reference: | Offset Datum |

| Offset Design WELD_CARMA 6 PAD - P_CARMA 3-36 - P_CARMA 3-36 - PLAN #1 12-16-09 RHS | | | | | | | | | | | | Offset Site Error: | 0.00 ft |
|---|---------------------|---------------------|---------------------|----------------|-------------|----------------------|-----------------------------------|------------|----------------------|-----------------------|-------------------------|--------------------|-----------------|
| Survey Program: 0-UNKNOWN | | | | | | | | | | | | Offset Well Error: | 0.00 ft |
| Reference | Offset | Semi Major Axis | | | | | Distance | | | | | | Warning |
| Measured Depth (ft) | Vertical Depth (ft) | Measured Depth (ft) | Vertical Depth (ft) | Reference (ft) | Offset (ft) | Highside Tooface (") | Offset Wellbore Centre +N/-S (ft) | +E/-W (ft) | Between Centres (ft) | Between Ellipses (ft) | Minimum Separation (ft) | Separation Factor | |
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | -48.13 | 40.07 | -44.70 | 60.03 | | | | |
| 100.00 | 100.00 | 100.00 | 100.00 | 1.70 | 1.70 | -48.13 | 40.07 | -44.70 | 60.03 | 56.63 | 3.40 | 17.657 | |
| 200.00 | 200.00 | 200.00 | 200.00 | 5.70 | 5.70 | -48.13 | 40.07 | -44.70 | 60.03 | 48.63 | 11.40 | 5.266 | |
| 300.00 | 300.00 | 300.00 | 300.00 | 9.70 | 9.70 | -48.13 | 40.07 | -44.70 | 60.03 | 40.63 | 19.40 | 3.095 | |
| 400.00 | 400.00 | 400.00 | 400.00 | 13.70 | 13.70 | -48.13 | 40.07 | -44.70 | 60.03 | 32.63 | 27.40 | 2.191 | |
| 500.00 | 500.00 | 500.00 | 500.00 | 17.70 | 17.70 | -48.13 | 40.07 | -44.70 | 60.03 | 24.63 | 35.40 | 1.696 | |
| 600.00 | 600.00 | 600.00 | 600.00 | 21.70 | 21.70 | -48.13 | 40.07 | -44.70 | 60.03 | 16.63 | 43.40 | 1.383 | Level 3 |
| 700.00 | 700.00 | 700.00 | 700.00 | 25.70 | 25.70 | -48.13 | 40.07 | -44.70 | 60.03 | 8.63 | 51.40 | 1.168 | Level 2 |
| 800.00 | 800.00 | 800.00 | 800.00 | 29.70 | 29.70 | -48.13 | 40.07 | -44.70 | 60.03 | 0.63 | 59.40 | 1.011 | Level 2 |
| 900.00 | 900.00 | 900.00 | 900.00 | 33.70 | 33.70 | -48.13 | 40.07 | -44.70 | 60.03 | -7.37 | 67.40 | 0.891 | Level 1, CC |
| 1,000.00 | 999.98 | 999.61 | 999.59 | 33.72 | 37.36 | 127.68 | 41.50 | -43.73 | 61.34 | -9.72 | 71.05 | 0.863 | Level 1, ES, SF |
| 1,100.00 | 1,099.84 | 1,098.54 | 1,098.38 | 29.76 | 40.75 | 135.57 | 45.75 | -40.83 | 66.14 | -4.27 | 70.41 | 0.939 | Level 1 |
| 1,200.00 | 1,199.45 | 1,196.12 | 1,195.60 | 25.86 | 44.21 | 146.01 | 52.70 | -36.09 | 76.44 | 6.75 | 69.68 | 1.097 | Level 2 |
| 1,300.00 | 1,298.70 | 1,291.74 | 1,290.52 | 22.07 | 47.71 | 156.15 | 62.16 | -29.63 | 93.92 | 25.15 | 68.77 | 1.366 | Level 3 |
| 1,400.00 | 1,397.47 | 1,384.82 | 1,382.51 | 18.55 | 51.21 | 164.42 | 73.88 | -21.64 | 119.14 | 51.50 | 67.64 | 1.761 | |
| 1,500.00 | 1,495.62 | 1,474.85 | 1,471.00 | 15.58 | 54.69 | 170.62 | 87.56 | -12.31 | 151.76 | 85.48 | 66.28 | 2.290 | |
| 1,600.00 | 1,593.06 | 1,563.56 | 1,557.70 | 13.70 | 58.21 | 175.21 | 103.05 | -1.75 | 191.00 | 126.17 | 64.82 | 2.946 | |
| 1,659.85 | 1,650.97 | 1,617.21 | 1,610.09 | 13.38 | 60.38 | 177.29 | 112.62 | 4.78 | 216.62 | 152.57 | 64.05 | 3.382 | |
| 1,700.00 | 1,689.72 | 1,653.02 | 1,645.05 | 13.54 | 61.85 | 178.46 | 119.01 | 9.14 | 234.30 | 170.29 | 64.01 | 3.661 | |
| 1,800.00 | 1,786.22 | 1,742.21 | 1,732.14 | 15.07 | 65.52 | -179.28 | 134.92 | 19.99 | 278.60 | 213.45 | 65.14 | 4.277 | |
| 1,900.00 | 1,882.72 | 1,831.40 | 1,819.23 | 17.83 | 69.25 | -177.63 | 150.83 | 30.85 | 323.15 | 253.67 | 69.48 | 4.651 | |
| 2,000.00 | 1,979.23 | 1,920.59 | 1,906.31 | 21.35 | 73.01 | -176.38 | 166.75 | 41.70 | 367.87 | 292.17 | 75.70 | 4.859 | |
| 2,100.00 | 2,075.73 | 2,009.78 | 1,993.40 | 25.32 | 76.81 | -175.40 | 182.66 | 52.55 | 412.69 | 330.24 | 82.45 | 5.005 | |
| 2,200.00 | 2,172.23 | 2,098.97 | 2,080.49 | 29.55 | 80.63 | -174.62 | 198.57 | 63.41 | 457.60 | 368.21 | 89.38 | 5.119 | |
| 2,300.00 | 2,268.74 | 2,188.17 | 2,167.57 | 33.94 | 84.49 | -173.97 | 214.48 | 74.26 | 502.56 | 406.15 | 96.41 | 5.213 | |
| 2,400.00 | 2,365.24 | 2,277.36 | 2,254.66 | 38.45 | 88.36 | -173.43 | 230.39 | 85.11 | 547.57 | 444.09 | 103.48 | 5.292 | |
| 2,500.00 | 2,461.74 | 2,366.55 | 2,341.74 | 43.03 | 92.26 | -172.97 | 246.30 | 95.97 | 592.60 | 482.03 | 110.58 | 5.359 | |
| 2,600.00 | 2,558.24 | 2,455.74 | 2,428.83 | 47.66 | 96.17 | -172.58 | 262.22 | 106.82 | 637.67 | 519.97 | 117.70 | 5.418 | |
| 2,700.00 | 2,654.75 | 2,544.93 | 2,515.92 | 52.34 | 100.09 | -172.23 | 278.13 | 117.67 | 682.75 | 557.91 | 124.84 | 5.469 | |
| 2,800.00 | 2,751.25 | 2,634.12 | 2,603.00 | 57.04 | 104.03 | -171.93 | 294.04 | 128.52 | 727.85 | 595.86 | 131.99 | 5.514 | |
| 2,900.00 | 2,847.75 | 2,723.31 | 2,690.09 | 61.77 | 107.99 | -171.67 | 309.95 | 139.38 | 772.97 | 633.82 | 139.15 | 5.555 | |
| 3,000.00 | 2,944.26 | 2,812.50 | 2,777.17 | 66.51 | 111.95 | -171.43 | 325.86 | 150.23 | 818.10 | 671.77 | 146.32 | 5.591 | |
| 3,100.00 | 3,040.76 | 2,901.69 | 2,864.26 | 71.27 | 115.92 | -171.22 | 341.77 | 161.08 | 863.23 | 709.73 | 153.50 | 5.624 | |
| 3,200.00 | 3,137.26 | 2,990.88 | 2,951.35 | 76.04 | 119.90 | -171.03 | 357.69 | 171.94 | 908.38 | 747.69 | 160.69 | 5.653 | |
| 3,300.00 | 3,233.77 | 3,080.07 | 3,038.43 | 80.82 | 123.89 | -170.86 | 373.60 | 182.79 | 953.53 | 785.66 | 167.88 | 5.680 | |
| 3,400.00 | 3,330.27 | 3,169.26 | 3,125.52 | 85.61 | 127.88 | -170.70 | 389.51 | 193.64 | 998.69 | 823.62 | 175.07 | 5.704 | |
| 3,500.00 | 3,426.77 | 3,258.45 | 3,212.60 | 90.41 | 131.88 | -170.56 | 405.42 | 204.50 | 1,043.86 | 861.58 | 182.27 | 5.727 | |
| 3,600.00 | 3,523.28 | 3,347.64 | 3,299.69 | 95.21 | 135.89 | -170.43 | 421.33 | 215.35 | 1,089.03 | 899.55 | 189.48 | 5.748 | |
| 3,700.00 | 3,619.78 | 3,436.83 | 3,386.78 | 100.01 | 139.90 | -170.31 | 437.25 | 226.20 | 1,134.20 | 937.52 | 196.68 | 5.767 | |
| 3,800.00 | 3,716.28 | 3,526.02 | 3,473.86 | 104.82 | 143.92 | -170.20 | 453.16 | 237.06 | 1,179.38 | 975.48 | 203.90 | 5.784 | |
| 3,900.00 | 3,812.78 | 3,615.21 | 3,560.95 | 109.64 | 147.94 | -170.09 | 469.07 | 247.91 | 1,224.56 | 1,013.45 | 211.11 | 5.801 | |
| 4,000.00 | 3,909.29 | 3,704.41 | 3,648.03 | 114.45 | 151.96 | -170.00 | 484.98 | 258.76 | 1,269.74 | 1,051.42 | 218.32 | 5.816 | |
| 4,100.00 | 4,005.79 | 3,793.60 | 3,735.12 | 119.27 | 155.99 | -169.91 | 500.89 | 269.62 | 1,314.93 | 1,089.39 | 225.54 | 5.830 | |
| 4,200.00 | 4,102.29 | 3,882.79 | 3,822.21 | 124.09 | 160.03 | -169.82 | 516.80 | 280.47 | 1,360.12 | 1,127.35 | 232.76 | 5.843 | |
| 4,300.00 | 4,198.80 | 3,971.98 | 3,909.29 | 128.92 | 164.06 | -169.75 | 532.72 | 291.32 | 1,405.31 | 1,165.32 | 239.99 | 5.856 | |
| 4,400.00 | 4,295.30 | 4,061.17 | 3,996.38 | 133.74 | 168.10 | -169.67 | 548.63 | 302.17 | 1,450.50 | 1,203.29 | 247.21 | 5.867 | |
| 4,500.00 | 4,391.80 | 4,150.36 | 4,083.47 | 138.57 | 172.14 | -169.60 | 564.54 | 313.03 | 1,495.70 | 1,241.26 | 254.44 | 5.878 | |
| 4,600.00 | 4,488.31 | 4,239.55 | 4,170.55 | 143.40 | 176.19 | -169.54 | 580.45 | 323.88 | 1,540.89 | 1,279.23 | 261.67 | 5.889 | |
| 4,700.00 | 4,584.81 | 4,328.74 | 4,257.64 | 148.23 | 180.24 | -169.48 | 596.36 | 334.73 | 1,586.09 | 1,317.20 | 268.90 | 5.899 | |
| 4,800.00 | 4,681.31 | 4,417.93 | 4,344.72 | 153.06 | 184.28 | -169.42 | 612.27 | 345.59 | 1,631.29 | 1,355.16 | 276.13 | 5.908 | |
| 4,900.00 | 4,777.81 | 4,507.12 | 4,431.81 | 157.90 | 188.34 | -169.37 | 628.19 | 356.44 | 1,676.49 | 1,393.13 | 283.36 | 5.916 | |
| 5,000.00 | 4,874.32 | 4,596.31 | 4,518.90 | 162.73 | 192.39 | -169.31 | 644.10 | 367.29 | 1,721.69 | 1,431.10 | 290.59 | 5.925 | |

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

| | | | |
|---------------------------|----------------------------|-------------------------------------|---------------------------------------|
| Company: | US ROCKIES REGION PLANNING | Local Co-ordinate Reference: | Well P_CARMA 22-36 |
| Project: | COLORADO NOTHERN ZONE - 83 | TVD Reference: | WELL @ 4879.00ft (Original Well Elev) |
| Reference Site: | WELD_CARMA 6 PAD | MD Reference: | WELL @ 4879.00ft (Original Well Elev) |
| Site Error: | 0.00ft | North Reference: | True |
| Reference Well: | P_CARMA 22-36 | Survey Calculation Method: | Minimum Curvature |
| Well Error: | 0.00ft | Output errors are at | 2.00 sigma |
| Reference Wellbore | P_CARMA 22-36 | Database: | EDM 2003.21 Single User Db |
| Reference Design: | PLAN #1 12-16-09 RHS | Offset TVD Reference: | Offset Datum |

| Offset Design WELD_CARMA 6 PAD - P_CARMA 3-36 - P_CARMA 3-36 - PLAN #1 12-16-09 RHS | | | | | | | | | | | | Offset Site Error: | 0.00 ft |
|--|---------------------|---------------------|---------------------|----------------|-------------|-----------------------|-----------------------------------|------------|----------------------|-----------------------|-------------------------|---------------------------|---------|
| Survey Program: 0-UNKNOWN | | | | | | | | | | | | Offset Well Error: | 0.00 ft |
| Reference | Offset | Semi Major Axis | | | | | Distance | | | | | | Warning |
| Measured Depth (ft) | Vertical Depth (ft) | Measured Depth (ft) | Vertical Depth (ft) | Reference (ft) | Offset (ft) | Highside Toolface (°) | Offset Wellbore Centre +N/-S (ft) | +E/-W (ft) | Between Centres (ft) | Between Ellipses (ft) | Minimum Separation (ft) | Separation Factor | |
| 5,100.00 | 4,970.82 | 4,685.50 | 4,605.98 | 167.57 | 196.44 | -169.26 | 660.01 | 378.15 | 1,766.89 | 1,469.07 | 297.83 | 5.933 | |
| 5,200.00 | 5,067.32 | 4,774.69 | 4,693.07 | 172.40 | 200.50 | -169.22 | 675.92 | 389.00 | 1,812.10 | 1,507.03 | 305.06 | 5.940 | |
| 5,300.00 | 5,163.83 | 4,863.88 | 4,780.15 | 177.24 | 204.56 | -169.17 | 691.83 | 399.85 | 1,857.30 | 1,545.00 | 312.30 | 5.947 | |
| 5,400.00 | 5,260.33 | 4,953.07 | 4,867.24 | 182.08 | 208.62 | -169.13 | 707.75 | 410.71 | 1,902.51 | 1,582.97 | 319.54 | 5.954 | |
| 5,460.82 | 5,319.03 | 5,007.32 | 4,920.21 | 185.02 | 211.09 | -169.11 | 717.42 | 417.31 | 1,930.00 | 1,606.06 | 323.94 | 5.958 | |
| 5,500.00 | 5,356.90 | 5,042.38 | 4,954.44 | 186.90 | 212.69 | -169.16 | 723.68 | 421.57 | 1,947.48 | 1,619.72 | 327.76 | 5.942 | |
| 5,600.00 | 5,454.17 | 5,132.90 | 5,042.82 | 191.54 | 216.81 | -169.28 | 739.83 | 432.59 | 1,989.94 | 1,652.60 | 337.34 | 5.899 | |
| 5,700.00 | 5,552.19 | 5,224.80 | 5,132.56 | 195.97 | 221.00 | -169.37 | 756.22 | 443.77 | 2,029.27 | 1,682.59 | 346.67 | 5.854 | |
| 5,800.00 | 5,650.83 | 5,317.98 | 5,223.54 | 200.18 | 225.25 | -169.42 | 772.85 | 455.11 | 2,065.42 | 1,709.68 | 355.74 | 5.806 | |
| 5,900.00 | 5,749.99 | 5,412.32 | 5,315.65 | 204.18 | 229.55 | -169.44 | 789.68 | 466.59 | 2,098.37 | 1,733.84 | 364.52 | 5.756 | |
| 6,000.00 | 5,849.54 | 5,507.71 | 5,408.79 | 207.97 | 233.90 | -169.43 | 806.69 | 478.20 | 2,128.06 | 1,755.07 | 372.99 | 5.705 | |
| 6,100.00 | 5,949.36 | 5,604.34 | 5,508.92 | 211.55 | 248.25 | -169.19 | 850.78 | 508.27 | 2,149.43 | 1,758.97 | 390.46 | 5.505 | |
| 6,200.00 | 6,049.32 | 6,153.27 | 6,049.32 | 214.94 | 260.15 | -169.14 | 863.37 | 516.85 | 2,155.95 | 1,749.26 | 406.69 | 5.301 | |
| 6,220.68 | 6,070.00 | 6,173.94 | 6,070.00 | 214.95 | 260.81 | 17.96 | 863.37 | 516.85 | 2,156.02 | 1,748.66 | 407.36 | 5.293 | |
| 6,300.00 | 6,149.32 | 6,253.27 | 6,149.32 | 212.41 | 263.36 | 17.96 | 863.37 | 516.85 | 2,156.02 | 1,749.01 | 407.00 | 5.297 | |
| 6,400.00 | 6,249.32 | 6,353.27 | 6,249.32 | 209.23 | 266.59 | 17.96 | 863.37 | 516.85 | 2,156.02 | 1,749.45 | 406.57 | 5.303 | |
| 6,500.00 | 6,349.32 | 6,453.27 | 6,349.32 | 206.08 | 269.84 | 17.96 | 863.37 | 516.85 | 2,156.02 | 1,749.86 | 406.15 | 5.308 | |
| 6,600.00 | 6,449.32 | 6,553.27 | 6,449.32 | 202.96 | 273.11 | 17.96 | 863.37 | 516.85 | 2,156.02 | 1,750.26 | 405.76 | 5.314 | |
| 6,700.00 | 6,549.32 | 6,653.27 | 6,549.32 | 199.87 | 276.40 | 17.96 | 863.37 | 516.85 | 2,156.02 | 1,750.63 | 405.38 | 5.318 | |
| 6,800.00 | 6,649.32 | 6,753.27 | 6,649.32 | 196.82 | 279.70 | 17.96 | 863.37 | 516.85 | 2,156.02 | 1,750.99 | 405.03 | 5.323 | |
| 6,900.00 | 6,749.32 | 6,853.27 | 6,749.32 | 193.80 | 283.03 | 17.96 | 863.37 | 516.85 | 2,156.02 | 1,751.33 | 404.69 | 5.328 | |
| 7,000.00 | 6,849.32 | 6,953.27 | 6,849.32 | 190.81 | 286.37 | 17.96 | 863.37 | 516.85 | 2,156.02 | 1,751.65 | 404.37 | 5.332 | |
| 7,100.00 | 6,949.32 | 7,053.27 | 6,949.32 | 187.86 | 289.73 | 17.96 | 863.37 | 516.85 | 2,156.02 | 1,751.95 | 404.07 | 5.336 | |
| 7,200.00 | 7,049.32 | 7,153.27 | 7,049.32 | 184.96 | 293.11 | 17.96 | 863.37 | 516.85 | 2,156.02 | 1,752.23 | 403.79 | 5.339 | |
| 7,300.00 | 7,149.32 | 7,253.27 | 7,149.32 | 182.09 | 296.50 | 17.96 | 863.37 | 516.85 | 2,156.02 | 1,752.49 | 403.53 | 5.343 | |
| 7,400.00 | 7,249.32 | 7,353.27 | 7,249.32 | 179.27 | 299.90 | 17.96 | 863.37 | 516.85 | 2,156.02 | 1,752.73 | 403.29 | 5.346 | |
| 7,500.00 | 7,349.32 | 7,453.27 | 7,349.32 | 176.49 | 303.32 | 17.96 | 863.37 | 516.85 | 2,156.02 | 1,752.95 | 403.06 | 5.349 | |
| 7,600.00 | 7,449.32 | 7,553.27 | 7,449.32 | 173.76 | 306.76 | 17.96 | 863.37 | 516.85 | 2,156.02 | 1,753.16 | 402.86 | 5.352 | |
| 7,700.00 | 7,549.32 | 7,653.27 | 7,549.32 | 171.08 | 310.21 | 17.96 | 863.37 | 516.85 | 2,156.02 | 1,753.34 | 402.68 | 5.354 | |
| 7,800.00 | 7,649.32 | 7,753.27 | 7,649.32 | 168.45 | 313.67 | 17.96 | 863.37 | 516.85 | 2,156.02 | 1,753.50 | 402.52 | 5.356 | |
| 7,900.00 | 7,749.32 | 7,853.27 | 7,749.32 | 165.88 | 317.14 | 17.96 | 863.37 | 516.85 | 2,156.02 | 1,753.63 | 402.39 | 5.358 | |
| 8,000.00 | 7,849.32 | 7,953.27 | 7,849.32 | 163.36 | 320.63 | 17.96 | 863.37 | 516.85 | 2,156.02 | 1,753.74 | 402.28 | 5.360 | |
| 8,013.72 | 7,863.05 | 7,966.99 | 7,863.05 | 163.03 | 321.11 | 17.96 | 863.37 | 516.85 | 2,156.02 | 1,753.76 | 402.26 | 5.360 | |
| 8,065.68 | 7,915.00 | 7,980.94 | 7,877.00 | 161.75 | 321.59 | 17.96 | 863.37 | 516.85 | 2,156.35 | 1,755.53 | 400.82 | 5.380 | |

| | | | |
|---------------------------|----------------------------|-------------------------------------|---------------------------------------|
| Company: | US ROCKIES REGION PLANNING | Local Co-ordinate Reference: | Well P_CARMA 22-36 |
| Project: | COLORADO NOTHERN ZONE - 83 | TVD Reference: | WELL @ 4879.00ft (Original Well Elev) |
| Reference Site: | WELD_CARMA 6 PAD | MD Reference: | WELL @ 4879.00ft (Original Well Elev) |
| Site Error: | 0.00ft | North Reference: | True |
| Reference Well: | P_CARMA 22-36 | Survey Calculation Method: | Minimum Curvature |
| Well Error: | 0.00ft | Output errors are at | 2.00 sigma |
| Reference Wellbore | P_CARMA 22-36 | Database: | EDM 2003.21 Single User Db |
| Reference Design: | PLAN #1 12-16-09 RHS | Offset TVD Reference: | Offset Datum |

| Offset Design WELD_CARMA 6 PAD - P_CARMA 5-36 - P_CARMA 5-36 - PLAN #1 12-16-09 RHS | | | | | | | | | | | | Offset Site Error: | 0.00 ft |
|---|---------------------|---------------------|---------------------|----------------|-------------|-----------------------|-----------------------------------|------------|----------------------|-----------------------|-------------------------|--------------------|---------|
| Survey Program: 0-MWD | | | | | | | | | | | | Offset Well Error: | 0.00 ft |
| Measured Depth (ft) | Vertical Depth (ft) | Measured Depth (ft) | Vertical Depth (ft) | Reference (ft) | Offset (ft) | Highside Toolface (°) | Offset Wellbore Centre +N/-S (ft) | +E/-W (ft) | Between Centres (ft) | Between Ellipses (ft) | Minimum Separation (ft) | Separation Factor | Warning |
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | -46.15 | 51.00 | -53.08 | 73.61 | | | | |
| 100.00 | 100.00 | 100.00 | 100.00 | 1.70 | 0.10 | -46.15 | 51.00 | -53.08 | 73.61 | 71.82 | 1.80 | 40.998 | |
| 200.00 | 200.00 | 200.00 | 200.00 | 5.70 | 0.32 | -46.15 | 51.00 | -53.08 | 73.61 | 67.59 | 6.02 | 12.228 | |
| 300.00 | 300.00 | 300.00 | 300.00 | 9.70 | 0.55 | -46.15 | 51.00 | -53.08 | 73.61 | 63.37 | 10.25 | 7.185 | |
| 400.00 | 400.00 | 400.00 | 400.00 | 13.70 | 0.77 | -46.15 | 51.00 | -53.08 | 73.61 | 59.14 | 14.47 | 5.087 | |
| 500.00 | 500.00 | 500.00 | 500.00 | 17.70 | 0.99 | -46.15 | 51.00 | -53.08 | 73.61 | 54.92 | 18.69 | 3.938 | |
| 600.00 | 600.00 | 600.00 | 600.00 | 21.70 | 1.22 | -46.15 | 51.00 | -53.08 | 73.61 | 50.69 | 22.92 | 3.212 | |
| 700.00 | 700.00 | 700.00 | 700.00 | 25.70 | 1.44 | -46.15 | 51.00 | -53.08 | 73.61 | 46.47 | 27.14 | 2.712 | |
| 800.00 | 800.00 | 800.00 | 800.00 | 29.70 | 1.67 | -46.15 | 51.00 | -53.08 | 73.61 | 42.24 | 31.37 | 2.347 | |
| 900.00 | 900.00 | 900.00 | 900.00 | 33.70 | 1.89 | -46.15 | 51.00 | -53.08 | 73.61 | 38.02 | 35.59 | 2.068 CC, ES, SF | |
| 1,000.00 | 999.98 | 999.47 | 999.45 | 33.72 | 2.10 | 126.49 | 50.02 | -54.50 | 75.00 | 39.20 | 35.80 | 2.095 | |
| 1,100.00 | 1,099.84 | 1,098.83 | 1,098.67 | 29.76 | 2.29 | 125.78 | 47.07 | -58.75 | 79.17 | 47.16 | 32.01 | 2.473 | |
| 1,200.00 | 1,199.45 | 1,197.94 | 1,197.41 | 25.86 | 2.49 | 124.75 | 42.18 | -65.81 | 86.13 | 57.87 | 28.26 | 3.047 | |
| 1,300.00 | 1,298.70 | 1,296.71 | 1,295.44 | 22.07 | 2.72 | 123.54 | 35.38 | -75.62 | 95.89 | 71.27 | 24.61 | 3.896 | |
| 1,400.00 | 1,397.47 | 1,395.00 | 1,392.54 | 18.55 | 2.99 | 122.29 | 26.70 | -88.15 | 108.43 | 87.24 | 21.19 | 5.117 | |
| 1,500.00 | 1,495.62 | 1,493.02 | 1,488.82 | 15.58 | 3.29 | 121.12 | 16.22 | -103.26 | 123.72 | 105.47 | 18.25 | 6.779 | |
| 1,600.00 | 1,593.06 | 1,591.50 | 1,585.37 | 13.70 | 3.63 | 120.97 | 5.17 | -119.20 | 141.07 | 124.85 | 16.22 | 8.697 | |
| 1,659.85 | 1,650.97 | 1,650.27 | 1,642.98 | 13.38 | 3.84 | 121.40 | -1.42 | -128.72 | 152.30 | 136.61 | 15.70 | 9.702 | |
| 1,700.00 | 1,689.72 | 1,689.63 | 1,681.58 | 13.54 | 3.98 | 121.90 | -5.84 | -135.09 | 160.07 | 144.35 | 15.72 | 10.184 | |
| 1,800.00 | 1,786.22 | 1,787.69 | 1,777.71 | 15.07 | 4.35 | 122.95 | -16.84 | -150.96 | 179.45 | 162.47 | 16.97 | 10.571 | |
| 1,900.00 | 1,882.72 | 1,885.75 | 1,873.85 | 17.83 | 4.73 | 123.80 | -27.84 | -166.83 | 198.88 | 179.25 | 19.63 | 10.134 | |
| 2,000.00 | 1,979.23 | 1,983.80 | 1,969.99 | 21.35 | 5.12 | 124.50 | -38.84 | -182.70 | 218.34 | 195.19 | 23.15 | 9.432 | |
| 2,100.00 | 2,075.73 | 2,081.86 | 2,066.12 | 25.32 | 5.52 | 125.08 | -49.84 | -198.58 | 237.83 | 210.66 | 27.17 | 8.754 | |
| 2,200.00 | 2,172.23 | 2,179.92 | 2,162.26 | 29.55 | 5.92 | 125.58 | -60.84 | -214.45 | 257.33 | 225.86 | 31.48 | 8.175 | |
| 2,300.00 | 2,268.74 | 2,277.97 | 2,258.39 | 33.94 | 6.33 | 126.00 | -71.84 | -230.32 | 276.86 | 240.90 | 35.96 | 7.700 | |
| 2,400.00 | 2,365.24 | 2,376.03 | 2,354.53 | 38.45 | 6.74 | 126.37 | -82.84 | -246.19 | 296.39 | 255.84 | 40.55 | 7.309 | |
| 2,500.00 | 2,461.74 | 2,474.08 | 2,450.67 | 43.03 | 7.15 | 126.70 | -93.84 | -262.07 | 315.94 | 270.72 | 45.22 | 6.987 | |
| 2,600.00 | 2,558.24 | 2,572.14 | 2,546.80 | 47.66 | 7.57 | 126.98 | -104.84 | -277.94 | 335.50 | 285.56 | 49.94 | 6.718 | |
| 2,700.00 | 2,654.75 | 2,670.20 | 2,642.94 | 52.34 | 7.99 | 127.24 | -115.84 | -293.81 | 355.06 | 300.37 | 54.69 | 6.492 | |
| 2,800.00 | 2,751.25 | 2,768.25 | 2,739.07 | 57.04 | 8.41 | 127.46 | -126.84 | -309.68 | 374.63 | 315.15 | 59.48 | 6.298 | |
| 2,900.00 | 2,847.75 | 2,866.31 | 2,835.21 | 61.77 | 8.83 | 127.67 | -137.84 | -325.55 | 394.20 | 329.92 | 64.29 | 6.132 | |
| 3,000.00 | 2,944.26 | 2,964.37 | 2,931.34 | 66.51 | 9.25 | 127.86 | -148.84 | -341.43 | 413.78 | 344.67 | 69.11 | 5.987 | |
| 3,100.00 | 3,040.76 | 3,062.42 | 3,027.48 | 71.27 | 9.68 | 128.02 | -159.84 | -357.30 | 433.36 | 359.42 | 73.95 | 5.861 | |
| 3,200.00 | 3,137.26 | 3,160.48 | 3,123.62 | 76.04 | 10.10 | 128.18 | -170.84 | -373.17 | 452.95 | 374.16 | 78.79 | 5.749 | |
| 3,300.00 | 3,233.77 | 3,258.53 | 3,219.75 | 80.82 | 10.53 | 128.32 | -181.85 | -389.04 | 472.54 | 388.89 | 83.65 | 5.649 | |
| 3,400.00 | 3,330.27 | 3,356.59 | 3,315.89 | 85.61 | 10.95 | 128.45 | -192.85 | -404.91 | 492.13 | 403.62 | 88.51 | 5.560 | |
| 3,500.00 | 3,426.77 | 3,454.65 | 3,412.02 | 90.41 | 11.38 | 128.57 | -203.85 | -420.79 | 511.72 | 418.34 | 93.38 | 5.480 | |
| 3,600.00 | 3,523.28 | 3,552.70 | 3,508.16 | 95.21 | 11.81 | 128.68 | -214.85 | -436.66 | 531.32 | 433.07 | 98.25 | 5.408 | |
| 3,700.00 | 3,619.78 | 3,650.76 | 3,604.30 | 100.01 | 12.24 | 128.79 | -225.85 | -452.53 | 550.92 | 447.79 | 103.13 | 5.342 | |
| 3,800.00 | 3,716.28 | 3,748.82 | 3,700.43 | 104.82 | 12.67 | 128.88 | -236.85 | -468.40 | 570.51 | 462.50 | 108.01 | 5.282 | |
| 3,900.00 | 3,812.78 | 3,846.87 | 3,796.57 | 109.64 | 13.10 | 128.97 | -247.85 | -484.28 | 590.11 | 477.22 | 112.89 | 5.227 | |
| 4,000.00 | 3,909.29 | 3,944.93 | 3,892.70 | 114.45 | 13.53 | 129.06 | -258.85 | -500.15 | 609.72 | 491.94 | 117.78 | 5.177 | |
| 4,100.00 | 4,005.79 | 4,042.98 | 3,988.84 | 119.27 | 13.96 | 129.14 | -269.85 | -516.02 | 629.32 | 506.65 | 122.67 | 5.130 | |
| 4,200.00 | 4,102.29 | 4,141.04 | 4,084.97 | 124.09 | 14.39 | 129.21 | -280.85 | -531.89 | 648.92 | 521.36 | 127.56 | 5.087 | |
| 4,300.00 | 4,198.80 | 4,239.10 | 4,181.11 | 128.92 | 14.82 | 129.28 | -291.85 | -547.76 | 668.53 | 536.08 | 132.45 | 5.047 | |
| 4,400.00 | 4,295.30 | 4,337.15 | 4,277.25 | 133.74 | 15.25 | 129.35 | -302.85 | -563.64 | 688.13 | 550.79 | 137.35 | 5.010 | |
| 4,500.00 | 4,391.80 | 4,435.21 | 4,373.38 | 138.57 | 15.68 | 129.41 | -313.85 | -579.51 | 707.74 | 565.49 | 142.25 | 4.975 | |
| 4,600.00 | 4,488.31 | 4,533.27 | 4,469.52 | 143.40 | 16.11 | 129.47 | -324.85 | -595.38 | 727.35 | 580.20 | 147.15 | 4.943 | |
| 4,700.00 | 4,584.81 | 4,631.32 | 4,565.65 | 148.23 | 16.55 | 129.52 | -335.85 | -611.25 | 746.96 | 594.90 | 152.05 | 4.912 | |
| 4,800.00 | 4,681.31 | 4,729.38 | 4,661.79 | 153.06 | 16.98 | 129.58 | -346.85 | -627.12 | 766.56 | 609.60 | 156.96 | 4.884 | |
| 4,900.00 | 4,777.81 | 4,827.43 | 4,757.92 | 157.90 | 17.41 | 129.63 | -357.86 | -643.00 | 786.17 | 624.31 | 161.87 | 4.857 | |
| 5,000.00 | 4,874.32 | 4,925.49 | 4,854.06 | 162.73 | 17.84 | 129.67 | -368.86 | -658.87 | 805.78 | 639.01 | 166.77 | 4.832 | |

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

| | | | |
|---------------------------|----------------------------|-------------------------------------|---------------------------------------|
| Company: | US ROCKIES REGION PLANNING | Local Co-ordinate Reference: | Well P_CARMA 22-36 |
| Project: | COLORADO NOTHERN ZONE - 83 | TVD Reference: | WELL @ 4879.00ft (Original Well Elev) |
| Reference Site: | WELD_CARMA 6 PAD | MD Reference: | WELL @ 4879.00ft (Original Well Elev) |
| Site Error: | 0.00ft | North Reference: | True |
| Reference Well: | P_CARMA 22-36 | Survey Calculation Method: | Minimum Curvature |
| Well Error: | 0.00ft | Output errors are at | 2.00 sigma |
| Reference Wellbore | P_CARMA 22-36 | Database: | EDM 2003.21 Single User Db |
| Reference Design: | PLAN #1 12-16-09 RHS | Offset TVD Reference: | Offset Datum |

| Offset Design WELD_CARMA 6 PAD - P_CARMA 5-36 - P_CARMA 5-36 - PLAN #1 12-16-09 RHS | | | | | | | | | | | | Offset Site Error: | 0.00 ft |
|--|---------------------|---------------------|---------------------|----------------|-------------|-----------------------|-----------------------------------|------------|----------------------|-----------------------|-------------------------|---------------------------|---------|
| Survey Program: 0-MWD | | | | | | | | | | | | Offset Well Error: | 0.00 ft |
| Reference | Offset | Semi Major Axis | | Distance | | | | | | | | | |
| Measured Depth (ft) | Vertical Depth (ft) | Measured Depth (ft) | Vertical Depth (ft) | Reference (ft) | Offset (ft) | Highside Toolface (°) | Offset Wellbore Centre +N/-S (ft) | +E/-W (ft) | Between Centres (ft) | Between Ellipses (ft) | Minimum Separation (ft) | Separation Factor | Warning |
| 5,100.00 | 4,970.82 | 5,023.55 | 4,950.20 | 167.57 | 18.28 | 129.72 | -379.86 | -674.74 | 825.39 | 653.71 | 171.68 | 4.808 | |
| 5,200.00 | 5,067.32 | 5,121.60 | 5,046.33 | 172.40 | 18.71 | 129.76 | -390.86 | -690.61 | 845.00 | 668.41 | 176.59 | 4.785 | |
| 5,300.00 | 5,163.83 | 5,219.66 | 5,142.47 | 177.24 | 19.14 | 129.80 | -401.86 | -706.49 | 864.61 | 683.12 | 181.50 | 4.764 | |
| 5,400.00 | 5,260.33 | 5,317.72 | 5,238.60 | 182.08 | 19.57 | 129.84 | -412.86 | -722.36 | 884.23 | 697.82 | 186.41 | 4.743 | |
| 5,460.82 | 5,319.03 | 5,377.36 | 5,297.08 | 185.02 | 19.84 | 129.87 | -419.55 | -732.01 | 896.16 | 706.76 | 189.40 | 4.732 | |
| 5,500.00 | 5,356.90 | 5,415.81 | 5,334.77 | 186.90 | 20.01 | 129.99 | -423.86 | -738.24 | 903.67 | 712.42 | 191.25 | 4.725 | |
| 5,600.00 | 5,454.17 | 5,514.22 | 5,431.25 | 191.54 | 20.44 | 130.15 | -434.90 | -754.16 | 921.32 | 725.38 | 195.94 | 4.702 | |
| 5,700.00 | 5,552.19 | 5,616.10 | 5,531.33 | 195.97 | 20.82 | 130.16 | -445.79 | -769.87 | 936.64 | 736.11 | 200.53 | 4.671 | |
| 5,800.00 | 5,650.83 | 5,719.74 | 5,633.74 | 200.18 | 21.11 | 130.18 | -454.84 | -782.94 | 949.29 | 744.49 | 204.80 | 4.635 | |
| 5,900.00 | 5,749.99 | 5,823.87 | 5,737.14 | 204.18 | 21.35 | 130.22 | -461.81 | -792.99 | 959.23 | 750.42 | 208.81 | 4.594 | |
| 6,000.00 | 5,849.54 | 5,928.36 | 5,841.27 | 207.97 | 21.55 | 130.28 | -466.65 | -799.97 | 966.44 | 753.88 | 212.56 | 4.547 | |
| 6,100.00 | 5,949.36 | 6,033.06 | 5,945.86 | 211.55 | 21.71 | 130.35 | -469.32 | -803.83 | 970.91 | 754.86 | 216.05 | 4.494 | |
| 6,200.00 | 6,049.32 | 6,136.53 | 6,049.32 | 214.94 | 21.85 | 130.43 | -469.90 | -804.66 | 972.63 | 753.34 | 219.30 | 4.435 | |
| 6,220.68 | 6,070.00 | 6,157.20 | 6,070.00 | 214.95 | 21.87 | -42.46 | -469.90 | -804.66 | 972.68 | 753.45 | 219.23 | 4.437 | |
| 6,300.00 | 6,149.32 | 6,236.53 | 6,149.32 | 212.41 | 21.97 | -42.46 | -469.90 | -804.66 | 972.68 | 756.09 | 216.60 | 4.491 | |
| 6,400.00 | 6,249.32 | 6,336.53 | 6,249.32 | 209.23 | 22.09 | -42.46 | -469.90 | -804.66 | 972.68 | 759.39 | 213.29 | 4.560 | |
| 6,500.00 | 6,349.32 | 6,436.53 | 6,349.32 | 206.08 | 22.21 | -42.46 | -469.90 | -804.66 | 972.68 | 762.67 | 210.01 | 4.631 | |
| 6,600.00 | 6,449.32 | 6,536.53 | 6,449.32 | 202.96 | 22.33 | -42.46 | -469.90 | -804.66 | 972.68 | 765.92 | 206.76 | 4.704 | |
| 6,700.00 | 6,549.32 | 6,636.53 | 6,549.32 | 199.87 | 22.46 | -42.46 | -469.90 | -804.66 | 972.68 | 769.15 | 203.54 | 4.779 | |
| 6,800.00 | 6,649.32 | 6,736.53 | 6,649.32 | 196.82 | 22.58 | -42.46 | -469.90 | -804.66 | 972.68 | 772.34 | 200.34 | 4.855 | |
| 6,900.00 | 6,749.32 | 6,836.53 | 6,749.32 | 193.80 | 22.71 | -42.46 | -469.90 | -804.66 | 972.68 | 775.51 | 197.17 | 4.933 | |
| 7,000.00 | 6,849.32 | 6,936.53 | 6,849.32 | 190.81 | 22.84 | -42.46 | -469.90 | -804.66 | 972.68 | 778.65 | 194.04 | 5.013 | |
| 7,100.00 | 6,949.32 | 7,036.53 | 6,949.32 | 187.86 | 22.97 | -42.46 | -469.90 | -804.66 | 972.68 | 781.75 | 190.93 | 5.094 | |
| 7,200.00 | 7,049.32 | 7,136.53 | 7,049.32 | 184.96 | 23.10 | -42.46 | -469.90 | -804.66 | 972.68 | 784.82 | 187.87 | 5.178 | |
| 7,300.00 | 7,149.32 | 7,236.53 | 7,149.32 | 182.09 | 23.23 | -42.46 | -469.90 | -804.66 | 972.68 | 787.85 | 184.84 | 5.262 | |
| 7,400.00 | 7,249.32 | 7,336.53 | 7,249.32 | 179.27 | 23.37 | -42.46 | -469.90 | -804.66 | 972.68 | 790.84 | 181.85 | 5.349 | |
| 7,500.00 | 7,349.32 | 7,436.53 | 7,349.32 | 176.49 | 23.50 | -42.46 | -469.90 | -804.66 | 972.68 | 793.79 | 178.90 | 5.437 | |
| 7,600.00 | 7,449.32 | 7,536.53 | 7,449.32 | 173.76 | 23.64 | -42.46 | -469.90 | -804.66 | 972.68 | 796.69 | 175.99 | 5.527 | |
| 7,700.00 | 7,549.32 | 7,636.53 | 7,549.32 | 171.08 | 23.78 | -42.46 | -469.90 | -804.66 | 972.68 | 799.55 | 173.13 | 5.618 | |
| 7,800.00 | 7,649.32 | 7,736.53 | 7,649.32 | 168.45 | 23.92 | -42.46 | -469.90 | -804.66 | 972.68 | 802.36 | 170.33 | 5.711 | |
| 7,900.00 | 7,749.32 | 7,836.53 | 7,749.32 | 165.88 | 24.06 | -42.46 | -469.90 | -804.66 | 972.68 | 805.11 | 167.57 | 5.805 | |
| 8,000.00 | 7,849.32 | 7,936.53 | 7,849.32 | 163.36 | 24.20 | -42.46 | -469.90 | -804.66 | 972.68 | 807.81 | 164.87 | 5.900 | |
| 8,065.68 | 7,915.00 | 7,954.20 | 7,867.00 | 161.75 | 24.22 | -42.46 | -469.90 | -804.66 | 973.87 | 810.81 | 163.06 | 5.972 | |

| | | | |
|---------------------------|----------------------------|-------------------------------------|---------------------------------------|
| Company: | US ROCKIES REGION PLANNING | Local Co-ordinate Reference: | Well P_CARMA 22-36 |
| Project: | COLORADO NOTHERN ZONE - 83 | TVD Reference: | WELL @ 4879.00ft (Original Well Elev) |
| Reference Site: | WELD_CARMA 6 PAD | MD Reference: | WELL @ 4879.00ft (Original Well Elev) |
| Site Error: | 0.00ft | North Reference: | True |
| Reference Well: | P_CARMA 22-36 | Survey Calculation Method: | Minimum Curvature |
| Well Error: | 0.00ft | Output errors are at | 2.00 sigma |
| Reference Wellbore | P_CARMA 22-36 | Database: | EDM 2003.21 Single User Db |
| Reference Design: | PLAN #1 12-16-09 RHS | Offset TVD Reference: | Offset Datum |

| Offset Design WELD_CARMA 6 PAD - STATE OF COLROADO BB UNIT #1 EXISTING - STATE OF COLROADO BB | | | | | | | | | | | | Offset Site Error: | 0.00 ft |
|---|---------------------|---------------------|---------------------|----------------|-------------|-----------------------|-----------------------------------|------------|----------------------|-----------------------|-------------------------|--------------------|-----------------|
| Survey Program: 0-UNKNOWN | | | | | | | | | | | | Offset Well Error: | 0.00 ft |
| Reference | Offset | Semi Major Axis | | Distance | | | | | | | | | |
| Measured Depth (ft) | Vertical Depth (ft) | Measured Depth (ft) | Vertical Depth (ft) | Reference (ft) | Offset (ft) | Highside Toolface (°) | Offset Wellbore Centre +N/-S (ft) | +E/-W (ft) | Between Centres (ft) | Between Ellipses (ft) | Minimum Separation (ft) | Separation Factor | Warning |
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | -129.68 | -76.50 | -92.20 | 121.63 | | | | |
| 100.00 | 100.00 | 79.00 | 79.00 | 1.70 | 1.58 | -129.68 | -76.50 | -92.20 | 119.81 | 116.53 | 3.28 | 36.526 | |
| 200.00 | 200.00 | 179.00 | 179.00 | 5.70 | 5.16 | -129.68 | -76.50 | -92.20 | 119.81 | 108.95 | 10.86 | 11.032 | |
| 300.00 | 300.00 | 279.00 | 279.00 | 9.70 | 9.16 | -129.68 | -76.50 | -92.20 | 119.81 | 100.95 | 18.86 | 6.352 | |
| 400.00 | 400.00 | 379.00 | 379.00 | 13.70 | 13.16 | -129.68 | -76.50 | -92.20 | 119.81 | 92.95 | 26.86 | 4.460 | |
| 500.00 | 500.00 | 479.00 | 479.00 | 17.70 | 17.16 | -129.68 | -76.50 | -92.20 | 119.81 | 84.95 | 34.86 | 3.437 | |
| 600.00 | 600.00 | 579.00 | 579.00 | 21.70 | 21.16 | -129.68 | -76.50 | -92.20 | 119.81 | 76.95 | 42.86 | 2.795 | |
| 700.00 | 700.00 | 679.00 | 679.00 | 25.70 | 25.16 | -129.68 | -76.50 | -92.20 | 119.81 | 68.95 | 50.86 | 2.356 | |
| 800.00 | 800.00 | 779.00 | 779.00 | 29.70 | 29.16 | -129.68 | -76.50 | -92.20 | 119.81 | 60.95 | 58.86 | 2.035 | |
| 900.00 | 900.00 | 879.00 | 879.00 | 33.70 | 33.16 | -129.68 | -76.50 | -92.20 | 119.81 | 52.95 | 66.86 | 1.792 | |
| 1,000.00 | 999.98 | 978.98 | 978.98 | 33.72 | 37.16 | 43.80 | -76.50 | -92.20 | 118.54 | 47.69 | 70.85 | 1.673 | |
| 1,100.00 | 1,099.84 | 1,078.84 | 1,078.84 | 29.76 | 41.15 | 45.66 | -76.50 | -92.20 | 114.82 | 43.99 | 70.82 | 1.621 | |
| 1,200.00 | 1,199.45 | 1,178.45 | 1,178.45 | 25.86 | 45.14 | 49.03 | -76.50 | -92.20 | 108.90 | 38.11 | 70.79 | 1.538 | |
| 1,300.00 | 1,298.70 | 1,277.70 | 1,277.70 | 22.07 | 49.11 | 54.33 | -76.50 | -92.20 | 101.30 | 30.44 | 70.86 | 1.430 | Level 3 |
| 1,400.00 | 1,397.47 | 1,376.47 | 1,376.47 | 18.55 | 53.06 | 62.26 | -76.50 | -92.20 | 92.99 | 21.76 | 71.23 | 1.305 | Level 3 |
| 1,500.00 | 1,495.62 | 1,474.62 | 1,474.62 | 15.58 | 56.98 | 73.57 | -76.50 | -92.20 | 85.67 | 13.33 | 72.34 | 1.184 | Level 2 |
| 1,600.00 | 1,593.06 | 1,572.06 | 1,572.06 | 13.70 | 60.88 | 88.49 | -76.50 | -92.20 | 82.05 | 7.47 | 74.59 | 1.100 | Level 2 |
| 1,609.15 | 1,601.93 | 1,580.93 | 1,580.93 | 13.65 | 61.24 | 90.00 | -76.50 | -92.20 | 82.02 | 7.14 | 74.89 | 1.095 | Level 2, CC |
| 1,659.85 | 1,650.97 | 1,629.97 | 1,629.97 | 13.38 | 63.20 | 98.60 | -76.50 | -92.20 | 83.03 | 6.64 | 76.39 | 1.087 | Level 2, ES, SF |
| 1,700.00 | 1,689.72 | 1,668.72 | 1,668.72 | 13.54 | 64.75 | 105.38 | -76.50 | -92.20 | 85.29 | 7.61 | 77.68 | 1.098 | Level 2 |
| 1,800.00 | 1,786.22 | 1,765.22 | 1,765.22 | 15.07 | 68.61 | 120.26 | -76.50 | -92.20 | 95.85 | 14.78 | 81.07 | 1.182 | Level 2 |
| 1,900.00 | 1,882.72 | 1,861.72 | 1,861.72 | 17.83 | 72.47 | 131.73 | -76.50 | -92.20 | 111.69 | 26.69 | 85.00 | 1.314 | Level 3 |
| 2,000.00 | 1,979.23 | 1,958.23 | 1,958.23 | 21.35 | 76.33 | 140.20 | -76.50 | -92.20 | 130.91 | 41.12 | 89.79 | 1.458 | Level 3 |
| 2,100.00 | 2,075.73 | 2,054.73 | 2,054.73 | 25.32 | 80.19 | 146.46 | -76.50 | -92.20 | 152.23 | 56.79 | 95.43 | 1.595 | |
| 2,200.00 | 2,172.23 | 2,151.23 | 2,151.23 | 29.55 | 84.05 | 151.18 | -76.50 | -92.20 | 174.88 | 73.17 | 101.71 | 1.719 | |
| 2,300.00 | 2,268.74 | 2,247.74 | 2,247.74 | 33.94 | 87.91 | 154.80 | -76.50 | -92.20 | 198.41 | 89.98 | 108.43 | 1.830 | |
| 2,400.00 | 2,365.24 | 2,344.24 | 2,344.24 | 38.45 | 91.77 | 157.66 | -76.50 | -92.20 | 222.55 | 107.11 | 115.43 | 1.928 | |
| 2,500.00 | 2,461.74 | 2,440.74 | 2,440.74 | 43.03 | 95.63 | 159.97 | -76.50 | -92.20 | 247.10 | 124.47 | 122.63 | 2.015 | |
| 2,600.00 | 2,558.24 | 2,537.24 | 2,537.24 | 47.66 | 99.49 | 161.85 | -76.50 | -92.20 | 271.97 | 142.02 | 129.95 | 2.093 | |
| 2,700.00 | 2,654.75 | 2,633.75 | 2,633.75 | 52.34 | 103.35 | 163.42 | -76.50 | -92.20 | 297.07 | 159.70 | 137.37 | 2.163 | |
| 2,800.00 | 2,751.25 | 2,730.25 | 2,730.25 | 57.04 | 107.21 | 164.75 | -76.50 | -92.20 | 322.35 | 177.50 | 144.85 | 2.225 | |
| 2,900.00 | 2,847.75 | 2,826.75 | 2,826.75 | 61.77 | 111.07 | 165.88 | -76.50 | -92.20 | 347.76 | 195.39 | 152.37 | 2.282 | |
| 3,000.00 | 2,944.26 | 2,923.26 | 2,923.26 | 66.51 | 114.93 | 166.86 | -76.50 | -92.20 | 373.29 | 213.35 | 159.94 | 2.334 | |
| 3,100.00 | 3,040.76 | 3,019.76 | 3,019.76 | 71.27 | 118.79 | 167.72 | -76.50 | -92.20 | 398.90 | 231.38 | 167.52 | 2.381 | |
| 3,200.00 | 3,137.26 | 3,116.26 | 3,116.26 | 76.04 | 122.65 | 168.47 | -76.50 | -92.20 | 424.59 | 249.45 | 175.13 | 2.424 | |
| 3,300.00 | 3,233.77 | 3,212.77 | 3,212.77 | 80.82 | 126.51 | 169.13 | -76.50 | -92.20 | 450.34 | 267.58 | 182.76 | 2.464 | |
| 3,400.00 | 3,330.27 | 3,309.27 | 3,309.27 | 85.61 | 130.37 | 169.73 | -76.50 | -92.20 | 476.14 | 285.73 | 190.40 | 2.501 | |
| 3,500.00 | 3,426.77 | 3,405.77 | 3,405.77 | 90.41 | 134.23 | 170.26 | -76.50 | -92.20 | 501.98 | 303.93 | 198.05 | 2.535 | |
| 3,600.00 | 3,523.28 | 3,502.28 | 3,502.28 | 95.21 | 138.09 | 170.74 | -76.50 | -92.20 | 527.86 | 322.14 | 205.71 | 2.566 | |
| 3,700.00 | 3,619.78 | 3,598.78 | 3,598.78 | 100.01 | 141.95 | 171.18 | -76.50 | -92.20 | 553.77 | 340.39 | 213.38 | 2.595 | |
| 3,800.00 | 3,716.28 | 3,695.28 | 3,695.28 | 104.82 | 145.81 | 171.58 | -76.50 | -92.20 | 579.71 | 358.65 | 221.06 | 2.622 | |
| 3,900.00 | 3,812.78 | 3,791.78 | 3,791.78 | 109.64 | 149.67 | 171.94 | -76.50 | -92.20 | 605.67 | 376.93 | 228.74 | 2.648 | |
| 4,000.00 | 3,909.29 | 3,888.29 | 3,888.29 | 114.45 | 153.53 | 172.27 | -76.50 | -92.20 | 631.65 | 395.23 | 236.42 | 2.672 | |
| 4,100.00 | 4,005.79 | 3,984.79 | 3,984.79 | 119.27 | 157.39 | 172.58 | -76.50 | -92.20 | 657.65 | 413.54 | 244.11 | 2.694 | |
| 4,200.00 | 4,102.29 | 4,081.29 | 4,081.29 | 124.09 | 161.25 | 172.86 | -76.50 | -92.20 | 683.67 | 431.87 | 251.80 | 2.715 | |
| 4,300.00 | 4,198.80 | 4,177.80 | 4,177.80 | 128.92 | 165.11 | 173.12 | -76.50 | -92.20 | 709.70 | 450.20 | 259.50 | 2.735 | |
| 4,400.00 | 4,295.30 | 4,274.30 | 4,274.30 | 133.74 | 168.97 | 173.37 | -76.50 | -92.20 | 735.74 | 468.55 | 267.19 | 2.754 | |
| 4,500.00 | 4,391.80 | 4,370.80 | 4,370.80 | 138.57 | 172.83 | 173.60 | -76.50 | -92.20 | 761.80 | 486.91 | 274.89 | 2.771 | |
| 4,600.00 | 4,488.31 | 4,467.31 | 4,467.31 | 143.40 | 176.69 | 173.81 | -76.50 | -92.20 | 787.87 | 505.27 | 282.59 | 2.788 | |
| 4,700.00 | 4,584.81 | 4,563.81 | 4,563.81 | 148.23 | 180.55 | 174.01 | -76.50 | -92.20 | 813.94 | 523.65 | 290.30 | 2.804 | |
| 4,800.00 | 4,681.31 | 4,660.31 | 4,660.31 | 153.06 | 184.41 | 174.19 | -76.50 | -92.20 | 840.03 | 542.02 | 298.00 | 2.819 | |
| 4,900.00 | 4,777.81 | 4,756.81 | 4,756.81 | 157.90 | 188.27 | 174.37 | -76.50 | -92.20 | 866.12 | 560.41 | 305.71 | 2.833 | |

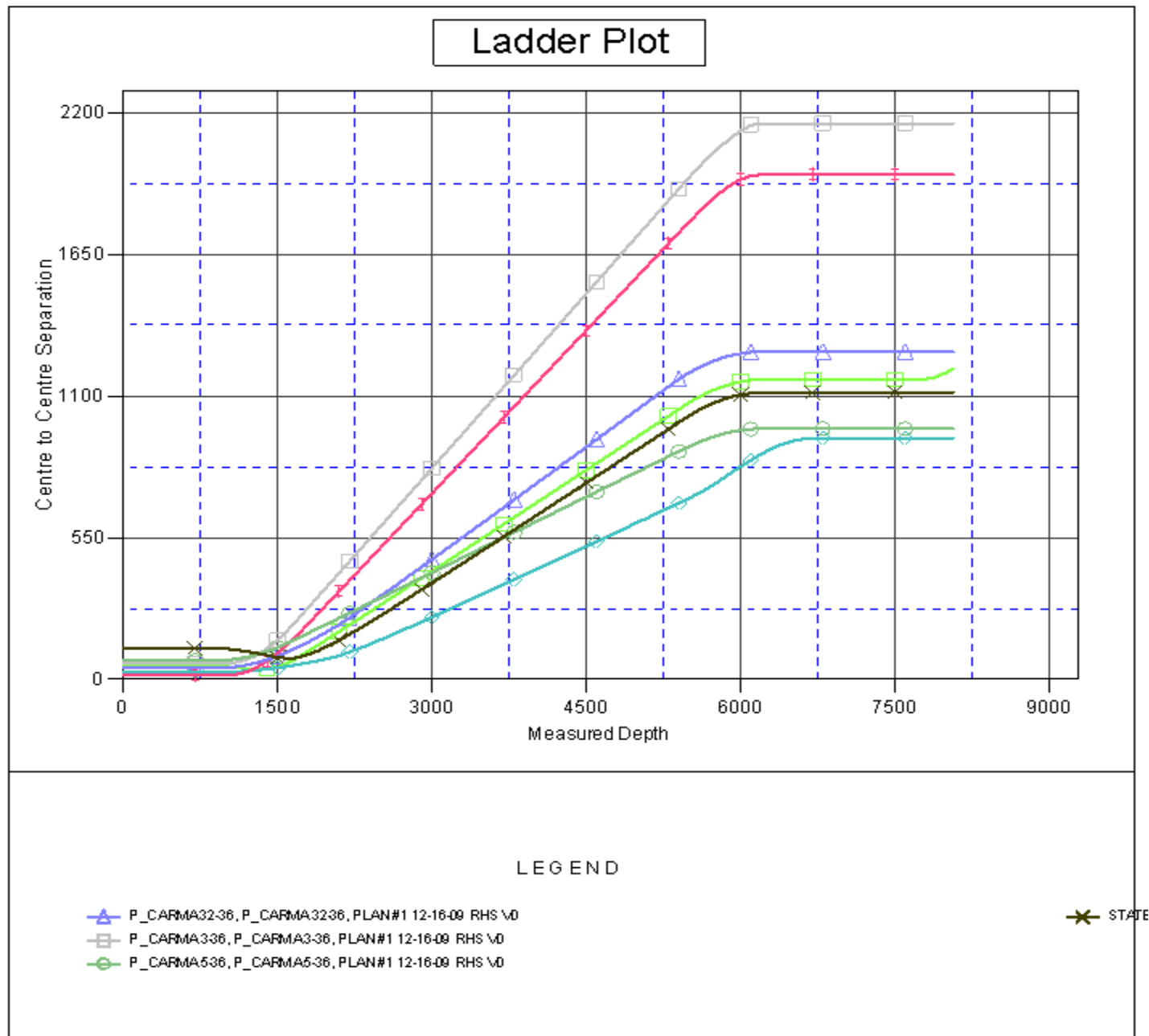
CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

| | | | |
|---------------------------|----------------------------|-------------------------------------|---------------------------------------|
| Company: | US ROCKIES REGION PLANNING | Local Co-ordinate Reference: | Well P_CARMA 22-36 |
| Project: | COLORADO NOTHERN ZONE - 83 | TVD Reference: | WELL @ 4879.00ft (Original Well Elev) |
| Reference Site: | WELD_CARMA 6 PAD | MD Reference: | WELL @ 4879.00ft (Original Well Elev) |
| Site Error: | 0.00ft | North Reference: | True |
| Reference Well: | P_CARMA 22-36 | Survey Calculation Method: | Minimum Curvature |
| Well Error: | 0.00ft | Output errors are at | 2.00 sigma |
| Reference Wellbore | P_CARMA 22-36 | Database: | EDM 2003.21 Single User Db |
| Reference Design: | PLAN #1 12-16-09 RHS | Offset TVD Reference: | Offset Datum |

| Offset Design WELD_CARMA 6 PAD - STATE OF COLROADO BB UNIT #1 EXISTING - STATE OF COLROADO BB | | | | | | | | | | | | Offset Site Error: | 0.00 ft |
|---|---------------------|---------------------|---------------------|-----------------|-------------|-----------------------|-----------------------------------|------------|----------------------|-----------------------|-------------------------|--------------------|---------|
| Survey Program: 0-UNKNOWN | | | | | | | | | | | | Offset Well Error: | 0.00 ft |
| Reference | | Offset | | Semi Major Axis | | | Distance | | | | | | |
| Measured Depth (ft) | Vertical Depth (ft) | Measured Depth (ft) | Vertical Depth (ft) | Reference (ft) | Offset (ft) | Highside Toolface (°) | Offset Wellbore Centre +N/-S (ft) | +E/-W (ft) | Between Centres (ft) | Between Ellipses (ft) | Minimum Separation (ft) | Separation Factor | Warning |
| 5,000.00 | 4,874.32 | 4,853.32 | 4,853.32 | 162.73 | 192.13 | 174.54 | -76.50 | -92.20 | 892.22 | 578.80 | 313.42 | 2.847 | |
| 5,100.00 | 4,970.82 | 4,949.82 | 4,949.82 | 167.57 | 195.99 | 174.69 | -76.50 | -92.20 | 918.33 | 597.20 | 321.13 | 2.860 | |
| 5,200.00 | 5,067.32 | 5,046.32 | 5,046.32 | 172.40 | 199.85 | 174.84 | -76.50 | -92.20 | 944.44 | 615.60 | 328.84 | 2.872 | |
| 5,300.00 | 5,163.83 | 5,142.83 | 5,142.83 | 177.24 | 203.71 | 174.98 | -76.50 | -92.20 | 970.56 | 634.01 | 336.55 | 2.884 | |
| 5,400.00 | 5,260.33 | 5,239.33 | 5,239.33 | 182.08 | 207.57 | 175.11 | -76.50 | -92.20 | 996.68 | 652.42 | 344.26 | 2.895 | |
| 5,460.82 | 5,319.03 | 5,298.03 | 5,298.03 | 185.02 | 209.92 | 175.19 | -76.50 | -92.20 | 1,012.57 | 663.62 | 348.95 | 2.902 | |
| 5,500.00 | 5,356.90 | 5,335.90 | 5,335.90 | 186.90 | 211.44 | 175.25 | -76.50 | -92.20 | 1,022.55 | 669.93 | 352.61 | 2.900 | |
| 5,600.00 | 5,454.17 | 5,433.17 | 5,433.17 | 191.54 | 215.33 | 175.39 | -76.50 | -92.20 | 1,045.67 | 683.93 | 361.74 | 2.891 | |
| 5,700.00 | 5,552.19 | 5,531.19 | 5,531.19 | 195.97 | 219.25 | 175.51 | -76.50 | -92.20 | 1,065.40 | 694.88 | 370.52 | 2.875 | |
| 5,800.00 | 5,650.83 | 5,629.83 | 5,629.83 | 200.18 | 223.19 | 175.60 | -76.50 | -92.20 | 1,081.71 | 702.78 | 378.93 | 2.855 | |
| 5,900.00 | 5,749.99 | 5,728.99 | 5,728.99 | 204.18 | 227.16 | 175.68 | -76.50 | -92.20 | 1,094.57 | 707.63 | 386.94 | 2.829 | |
| 6,000.00 | 5,849.54 | 5,828.54 | 5,828.54 | 207.97 | 231.14 | 175.73 | -76.50 | -92.20 | 1,103.98 | 709.44 | 394.53 | 2.798 | |
| 6,100.00 | 5,949.36 | 5,928.36 | 5,928.36 | 211.55 | 235.13 | 175.76 | -76.50 | -92.20 | 1,109.92 | 708.23 | 401.68 | 2.763 | |
| 6,200.00 | 6,049.32 | 6,028.32 | 6,028.32 | 214.94 | 239.13 | 175.77 | -76.50 | -92.20 | 1,112.38 | 704.01 | 408.36 | 2.724 | |
| 6,220.68 | 6,070.00 | 6,049.00 | 6,049.00 | 214.95 | 239.96 | 2.88 | -76.50 | -92.20 | 1,112.45 | 703.59 | 408.86 | 2.721 | |
| 6,300.00 | 6,149.32 | 6,128.32 | 6,128.32 | 212.41 | 243.13 | 2.88 | -76.50 | -92.20 | 1,112.45 | 703.55 | 408.90 | 2.721 | |
| 6,400.00 | 6,249.32 | 6,228.32 | 6,228.32 | 209.23 | 247.13 | 2.88 | -76.50 | -92.20 | 1,112.45 | 703.49 | 408.96 | 2.720 | |
| 6,500.00 | 6,349.32 | 6,328.32 | 6,328.32 | 206.08 | 251.13 | 2.88 | -76.50 | -92.20 | 1,112.45 | 703.43 | 409.02 | 2.720 | |
| 6,600.00 | 6,449.32 | 6,428.32 | 6,428.32 | 202.96 | 255.13 | 2.88 | -76.50 | -92.20 | 1,112.45 | 703.37 | 409.08 | 2.719 | |
| 6,700.00 | 6,549.32 | 6,528.32 | 6,528.32 | 199.87 | 259.13 | 2.88 | -76.50 | -92.20 | 1,112.45 | 703.30 | 409.15 | 2.719 | |
| 6,800.00 | 6,649.32 | 6,628.32 | 6,628.32 | 196.82 | 263.13 | 2.88 | -76.50 | -92.20 | 1,112.45 | 703.23 | 409.22 | 2.718 | |
| 6,900.00 | 6,749.32 | 6,728.32 | 6,728.32 | 193.80 | 267.13 | 2.88 | -76.50 | -92.20 | 1,112.45 | 703.16 | 409.29 | 2.718 | |
| 7,000.00 | 6,849.32 | 6,828.32 | 6,828.32 | 190.81 | 271.13 | 2.88 | -76.50 | -92.20 | 1,112.45 | 703.09 | 409.37 | 2.718 | |
| 7,100.00 | 6,949.32 | 6,928.32 | 6,928.32 | 187.86 | 275.13 | 2.88 | -76.50 | -92.20 | 1,112.45 | 703.00 | 409.45 | 2.717 | |
| 7,200.00 | 7,049.32 | 7,028.32 | 7,028.32 | 184.96 | 279.13 | 2.88 | -76.50 | -92.20 | 1,112.45 | 702.92 | 409.53 | 2.716 | |
| 7,300.00 | 7,149.32 | 7,128.32 | 7,128.32 | 182.09 | 283.13 | 2.88 | -76.50 | -92.20 | 1,112.45 | 702.83 | 409.62 | 2.716 | |
| 7,400.00 | 7,249.32 | 7,228.32 | 7,228.32 | 179.27 | 287.13 | 2.88 | -76.50 | -92.20 | 1,112.45 | 702.73 | 409.72 | 2.715 | |
| 7,500.00 | 7,349.32 | 7,328.32 | 7,328.32 | 176.49 | 291.13 | 2.88 | -76.50 | -92.20 | 1,112.45 | 702.62 | 409.83 | 2.714 | |
| 7,600.00 | 7,449.32 | 7,428.32 | 7,428.32 | 173.76 | 295.13 | 2.88 | -76.50 | -92.20 | 1,112.45 | 702.51 | 409.94 | 2.714 | |
| 7,700.00 | 7,549.32 | 7,528.32 | 7,528.32 | 171.08 | 299.13 | 2.88 | -76.50 | -92.20 | 1,112.45 | 702.39 | 410.06 | 2.713 | |
| 7,800.00 | 7,649.32 | 7,628.32 | 7,628.32 | 168.45 | 303.13 | 2.88 | -76.50 | -92.20 | 1,112.45 | 702.27 | 410.18 | 2.712 | |
| 7,900.00 | 7,749.32 | 7,728.32 | 7,728.32 | 165.88 | 307.13 | 2.88 | -76.50 | -92.20 | 1,112.45 | 702.13 | 410.32 | 2.711 | |
| 8,000.00 | 7,849.32 | 7,828.32 | 7,828.32 | 163.36 | 311.13 | 2.88 | -76.50 | -92.20 | 1,112.45 | 701.98 | 410.47 | 2.710 | |
| 8,065.68 | 7,915.00 | 7,894.00 | 7,894.00 | 161.75 | 313.76 | 2.88 | -76.50 | -92.20 | 1,112.45 | 701.88 | 410.58 | 2.709 | |

| | | | |
|---------------------------|----------------------------|-------------------------------------|---------------------------------------|
| Company: | US ROCKIES REGION PLANNING | Local Co-ordinate Reference: | Well P_CARMA 22-36 |
| Project: | COLORADO NOTHERN ZONE - 83 | TVD Reference: | WELL @ 4879.00ft (Original Well Elev) |
| Reference Site: | WELD_CARMA 6 PAD | MD Reference: | WELL @ 4879.00ft (Original Well Elev) |
| Site Error: | 0.00ft | North Reference: | True |
| Reference Well: | P_CARMA 22-36 | Survey Calculation Method: | Minimum Curvature |
| Well Error: | 0.00ft | Output errors are at | 2.00 sigma |
| Reference Wellbore | P_CARMA 22-36 | Database: | EDM 2003.21 Single User Db |
| Reference Design: | PLAN #1 12-16-09 RHS | Offset TVD Reference: | Offset Datum |

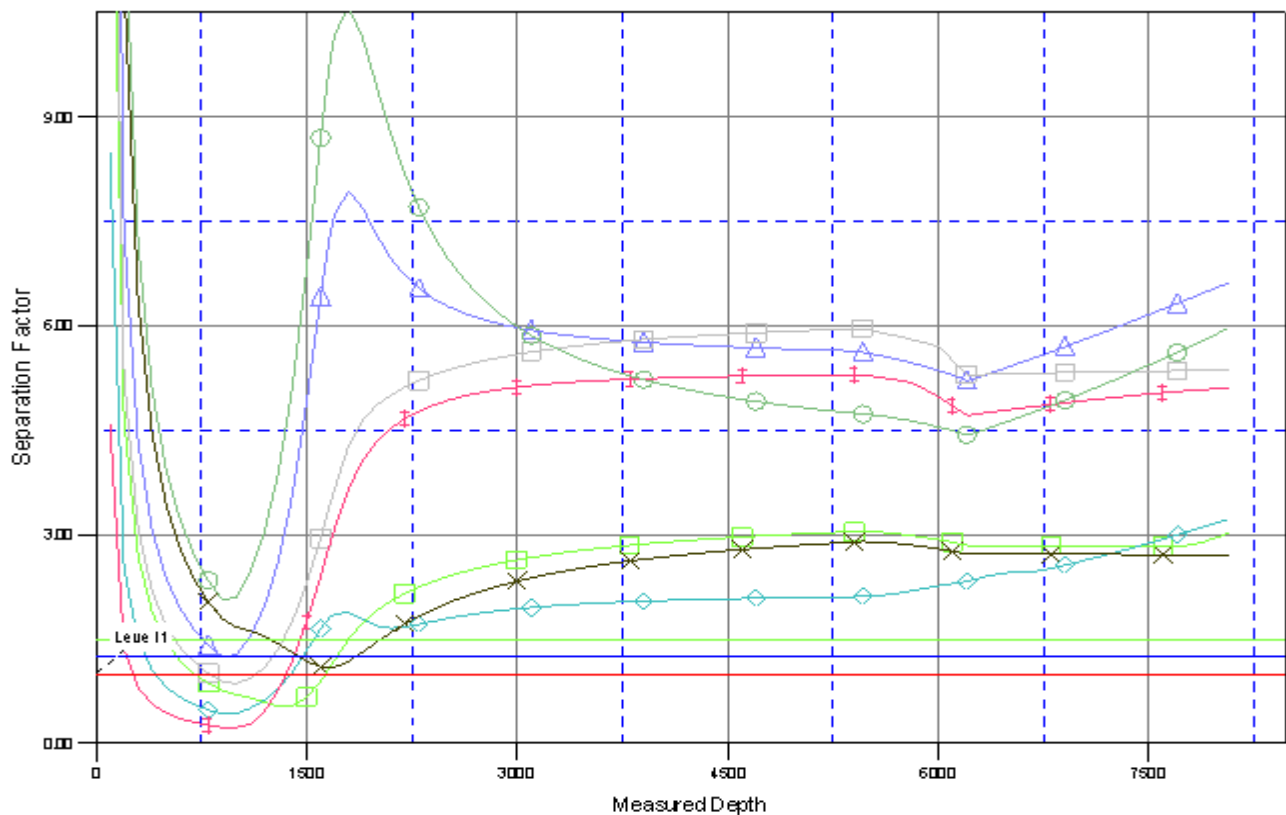
Reference Depths are relative to WELL @ 4879.00ft (Original Well Elev) Coordinates are relative to: P_CARMA 22-36
Offset Depths are relative to Offset Datum Coordinate System is US State Plane 1983, Colorado Northern Zone
Central Meridian is 105° 30' 0.000 W ° Grid Convergence at Surface is: 0.35°



| | | | |
|---------------------------|----------------------------|-------------------------------------|---------------------------------------|
| Company: | US ROCKIES REGION PLANNING | Local Co-ordinate Reference: | Well P_CARMA 22-36 |
| Project: | COLORADO NOTHERN ZONE - 83 | TVD Reference: | WELL @ 4879.00ft (Original Well Elev) |
| Reference Site: | WELD_CARMA 6 PAD | MD Reference: | WELL @ 4879.00ft (Original Well Elev) |
| Site Error: | 0.00ft | North Reference: | True |
| Reference Well: | P_CARMA 22-36 | Survey Calculation Method: | Minimum Curvature |
| Well Error: | 0.00ft | Output errors are at | 2.00 sigma |
| Reference Wellbore | P_CARMA 22-36 | Database: | EDM 2003.21 Single User Db |
| Reference Design: | PLAN #1 12-16-09 RHS | Offset TVD Reference: | Offset Datum |

Reference Depths are relative to WELL @ 4879.00ft (Original Well Elev) Coordinates are relative to: P_CARMA 22-36
Offset Depths are relative to Offset Datum Coordinate System is US State Plane 1983, Colorado Northern Zone
Central Meridian is 105° 30' 0.000 W ° Grid Convergence at Surface is: 0.35°

Separation Factor Plot



LEGEND

- ▲ P_CARMA32-36, P_CARMA3236, PLAN#1 12-16-09 RHS \0
- P_CARMA336, P_CARMA336, PLAN#1 12-16-09 RHS \0
- P_CARMA536, P_CARMA536, PLAN#1 12-16-09 RHS \0

✕ STATE