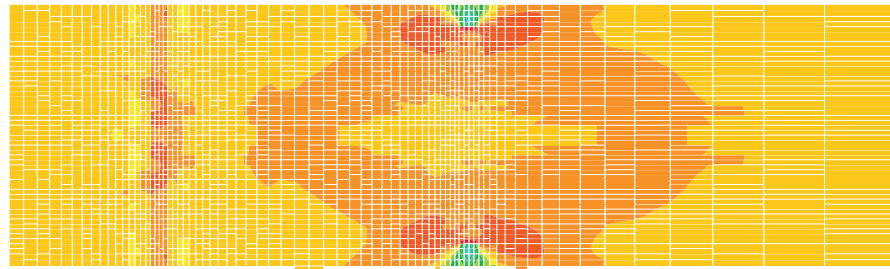
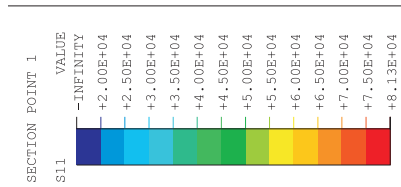


Horizontal Strain

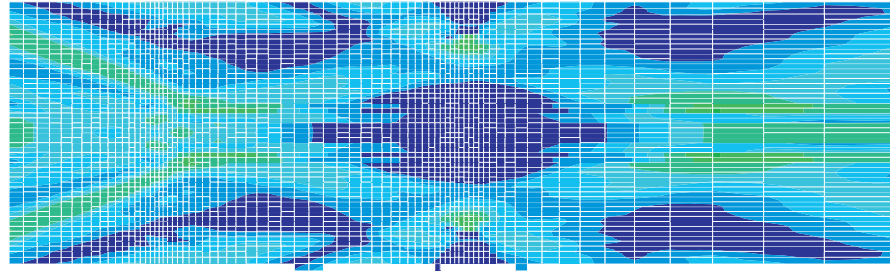
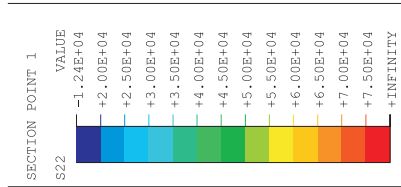
Vertical Strain

Effective Plastic Strain

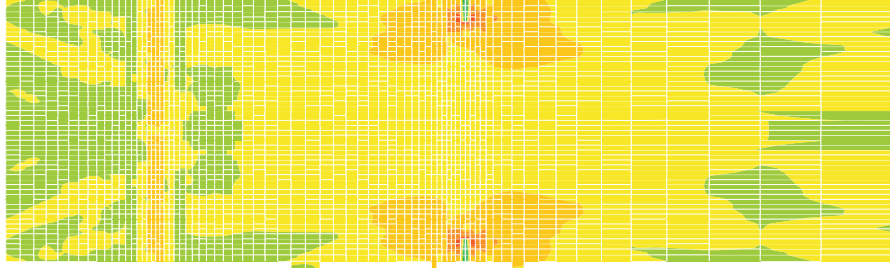
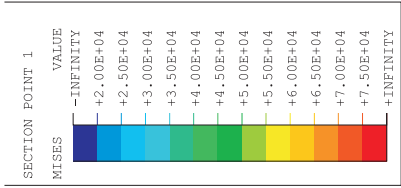
Figure 8-64. PCCV Liner Model, Liner Seam Rat-Hole Study Case 1, Strain Contour, Analysis To 3.6 Pd



Horizontal Stress

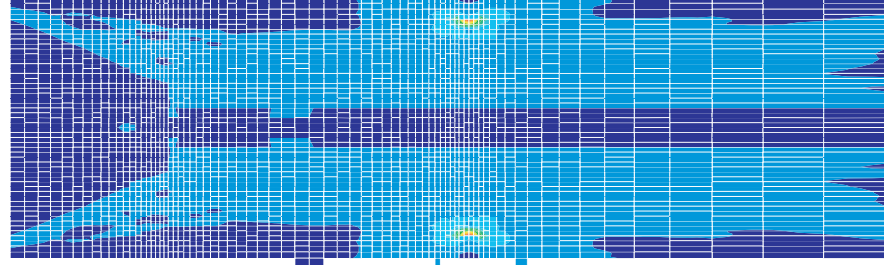
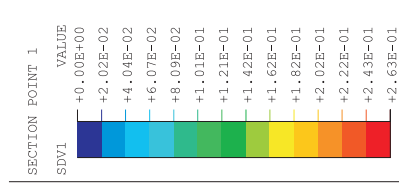
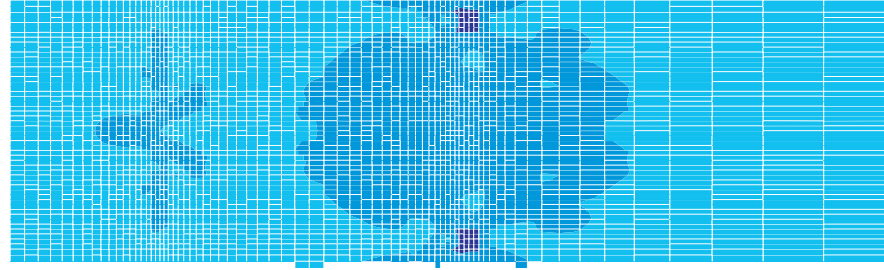
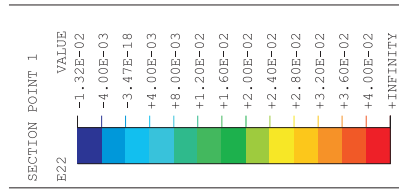
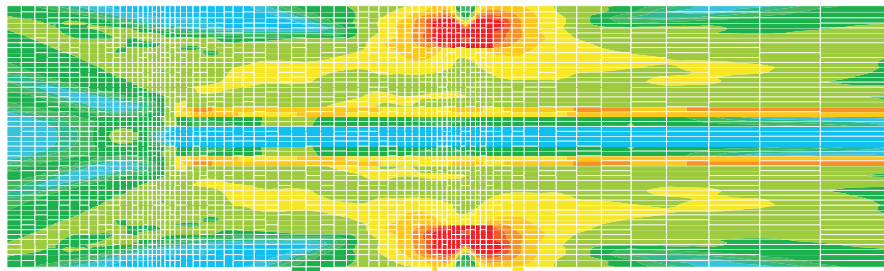
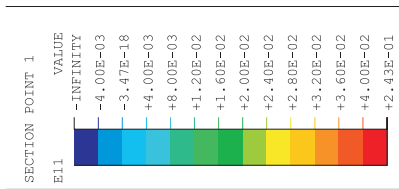


Vertical Stress



Mises Stress

Figure 8-65. PCCV Liner Model, Liner Seam Rat-Hole Study Case 4, Stress Contour, Analysis To 3.4 Pd
(Stresses in psi; Multiply by 0.00690 for MPa)

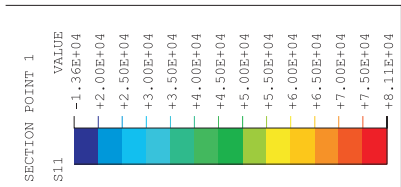
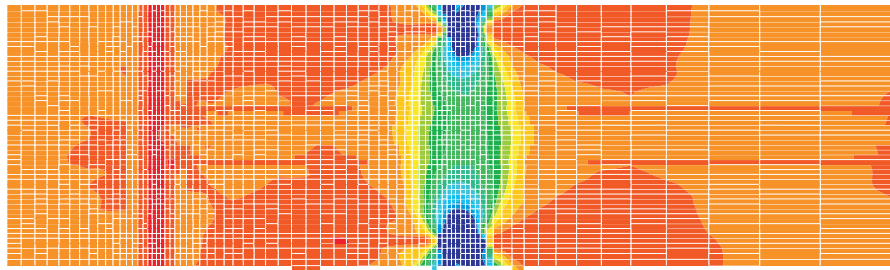
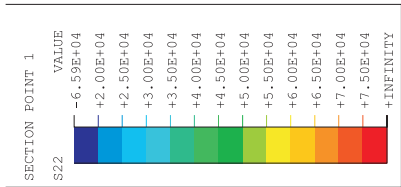
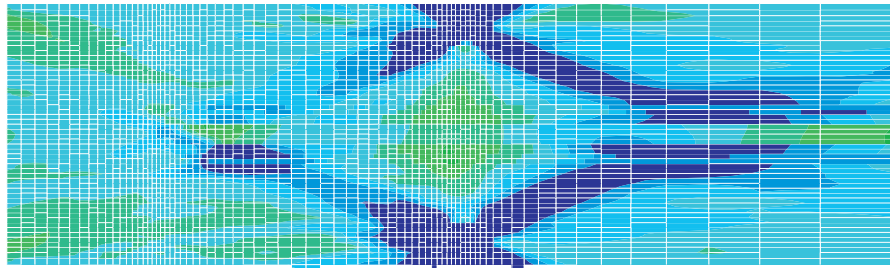
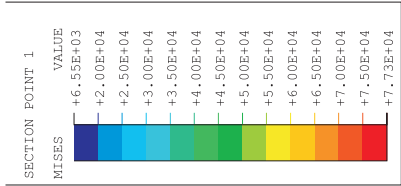
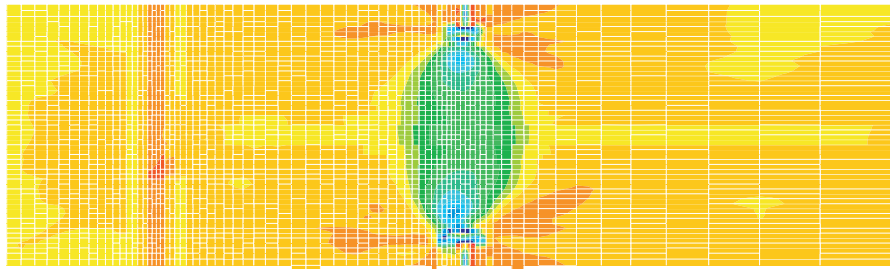


Horizontal Strain

Vertical Strain

Effective Plastic Strain

Figure 8-66. PCCV Liner Model, Liner Seam Rat-Hole Study Case 4, Strain Contour, Analysis To 3.4 Pd

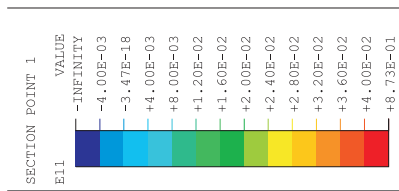


Horizontal Stress

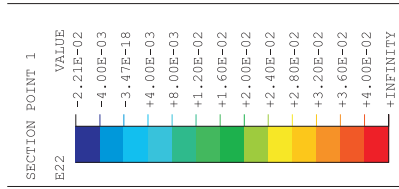
Vertical Stress

Mises Stress

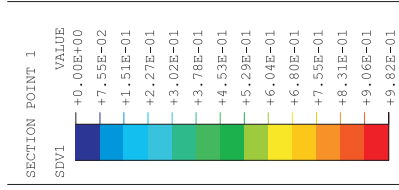
Figure 8-67. PCCV Liner Model, Liner Seam Rat-Hole Study Case 4, Stress Contour, Analysis To 3.6 Pd
(Stresses in psi; Multiply by 0.00690 for MPa)



Horizontal Strain



Vertical Strain



Effective Plastic Strain

Figure 8-68. PCCV Liner Model, Liner Seam Rat-Hole Study Case 4, Strain Contour, Analysis To 3.6 Pd

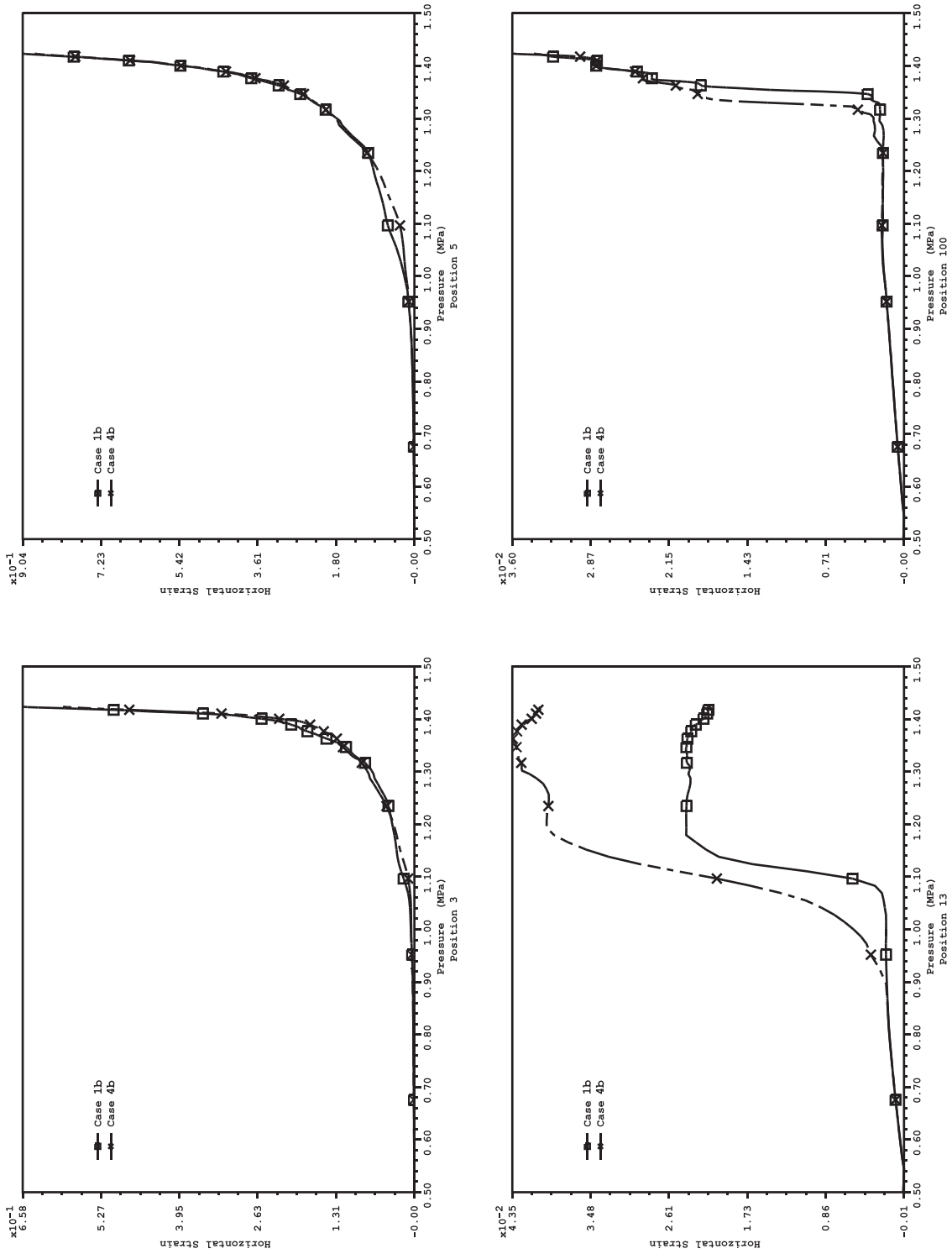


Figure 8-69. PCCV Liner Weld/Rat-Hole Study; Horizontal Strain Comparisons

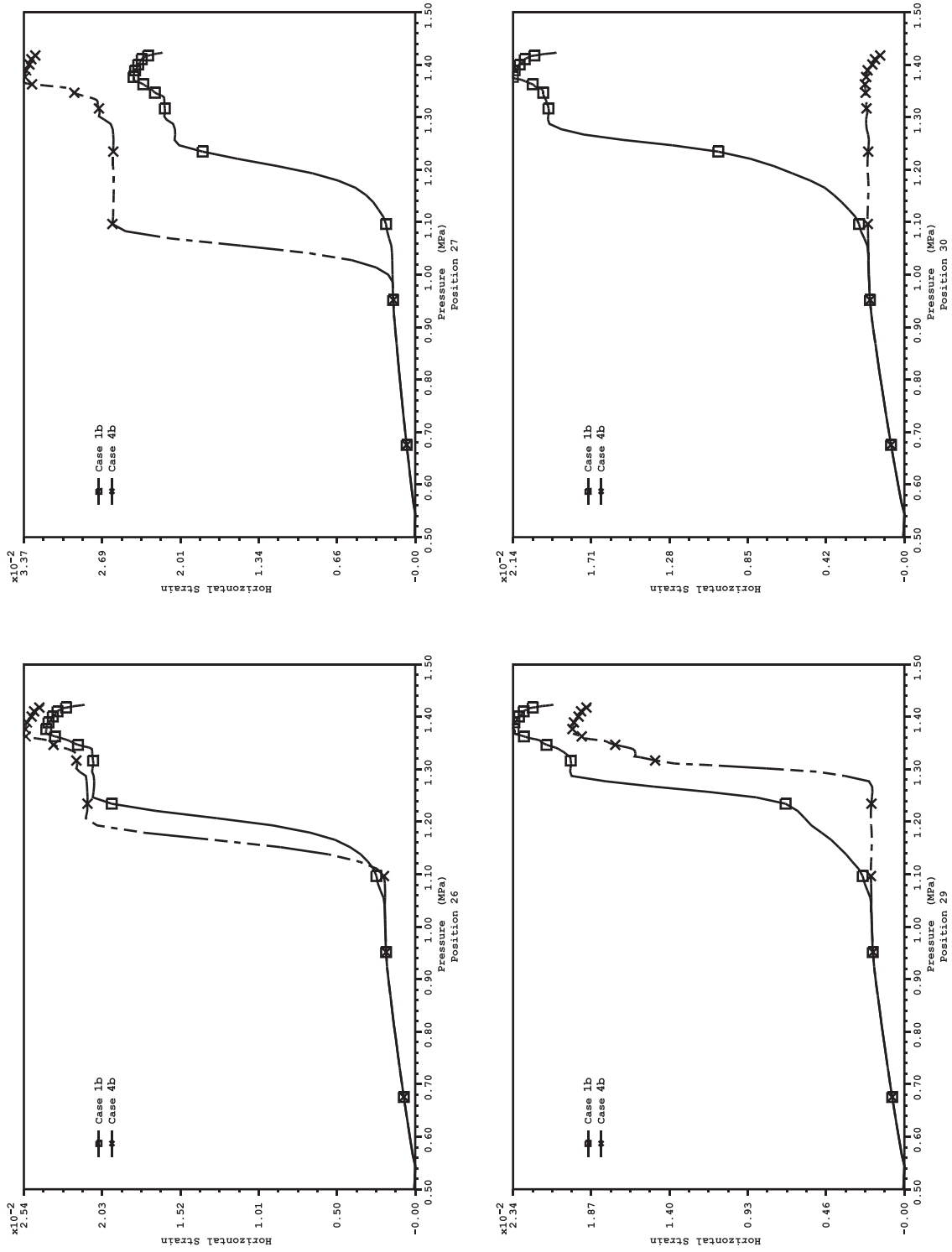


Figure 8-70. PCCV Liner Weld/Rat-Hole Study; Horizontal Strain Comparisons

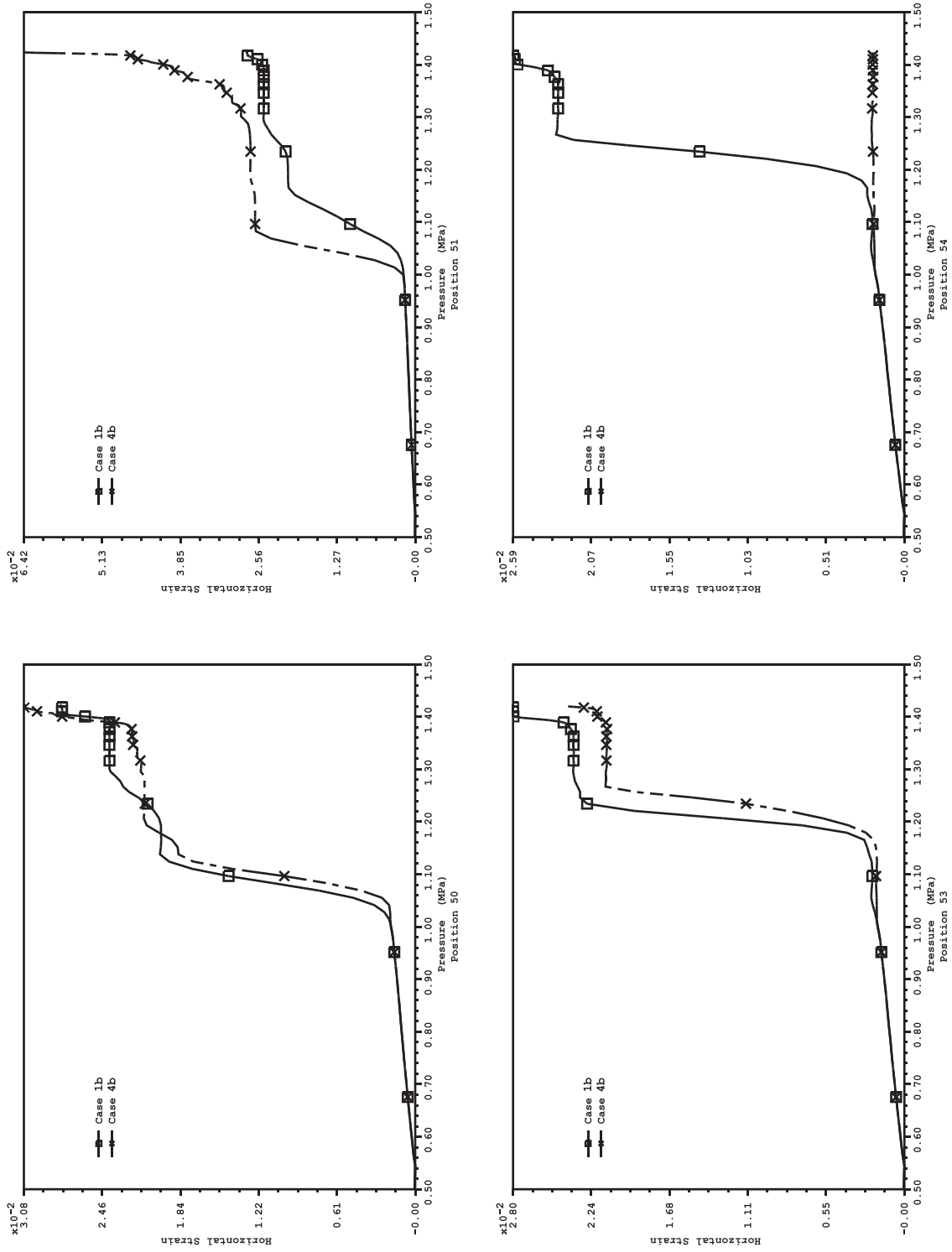


Figure 8-71. PCCV Liner Weld/Rat-Hole Study; Horizontal Strain Comparisons

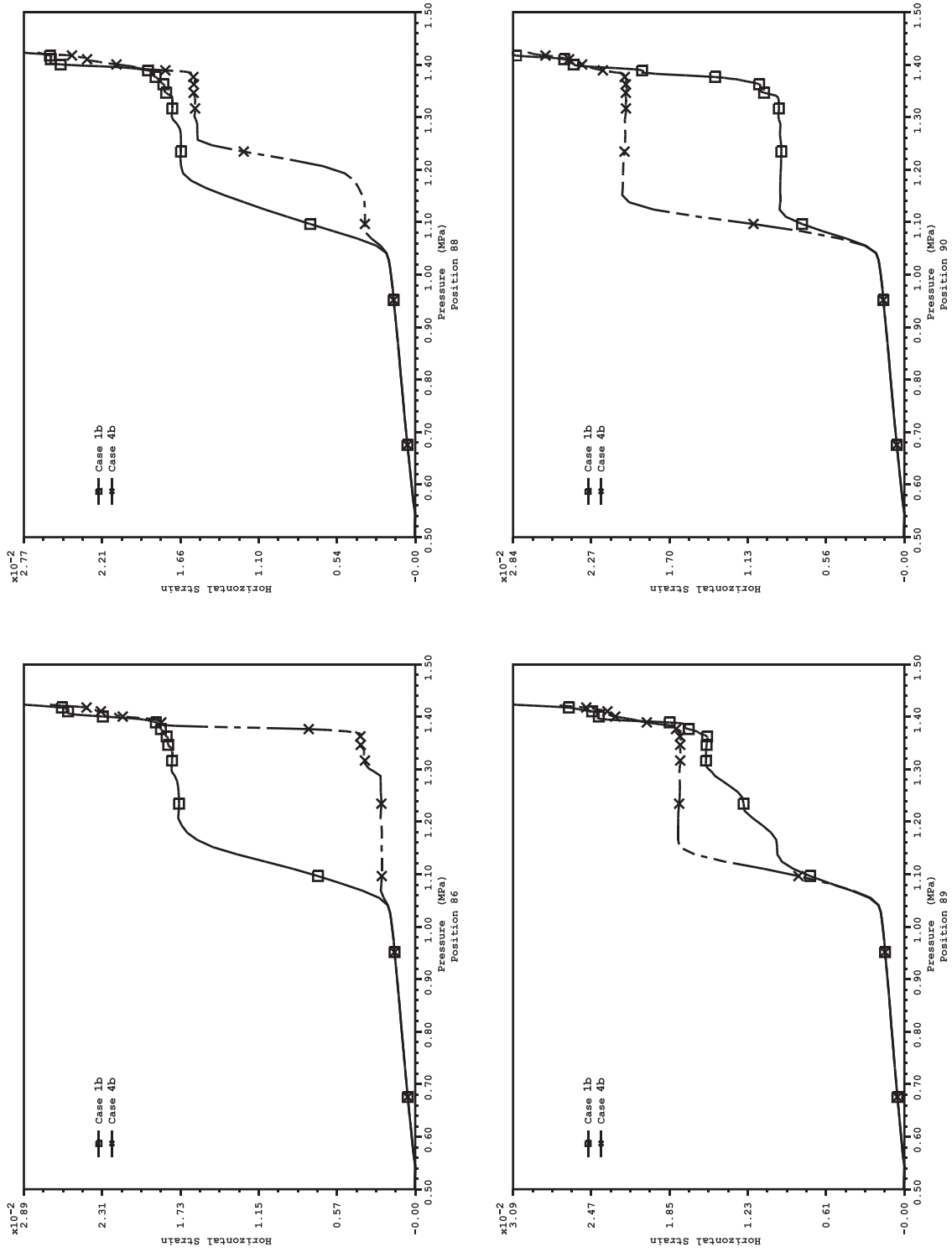


Figure 8-72. PCCV Liner Weld/Rat-Hole Study; Horizontal Strain Comparisons

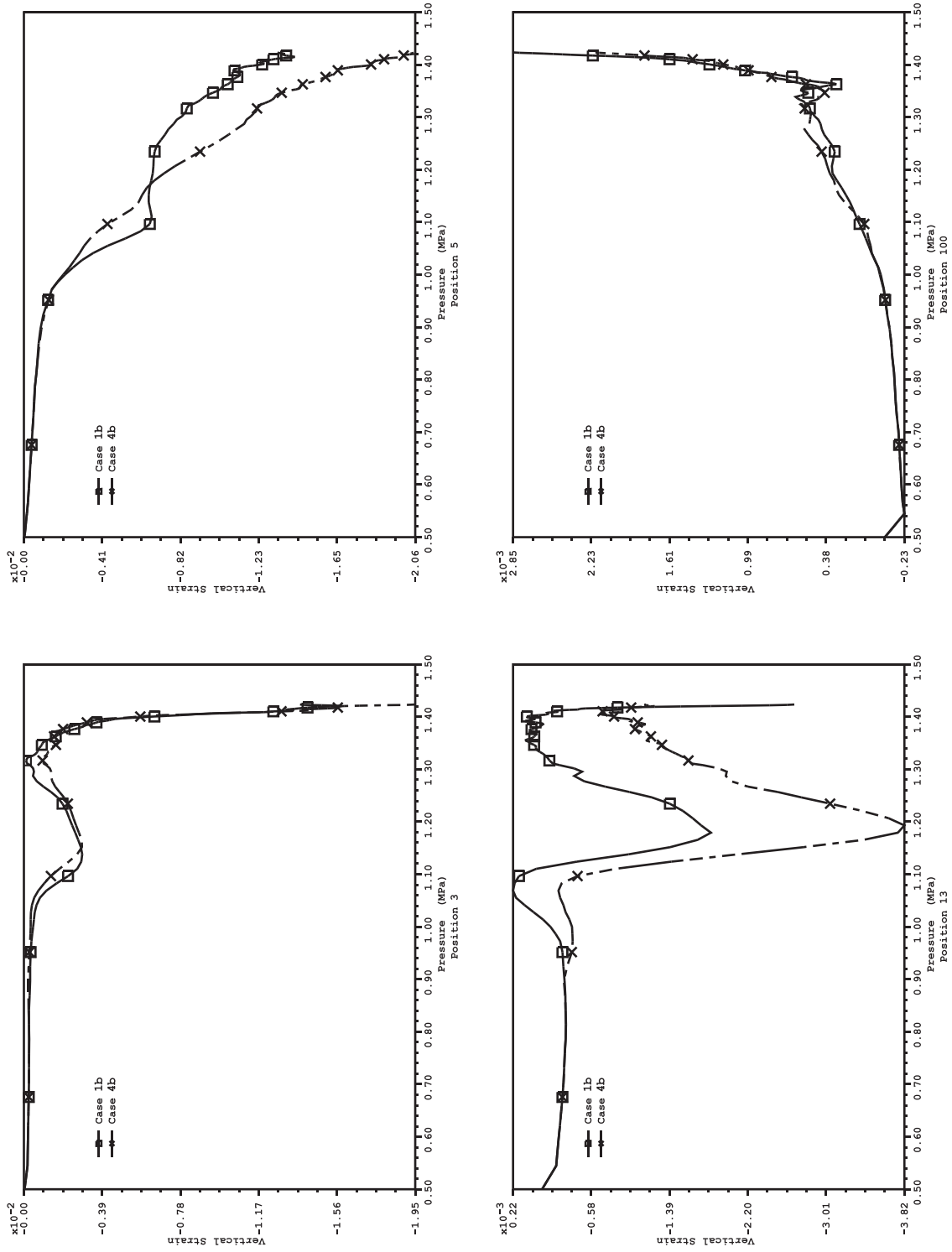


Figure 8-73. PCCV Liner Weld/Rat-Hole Study; Vertical Strain Comparisons

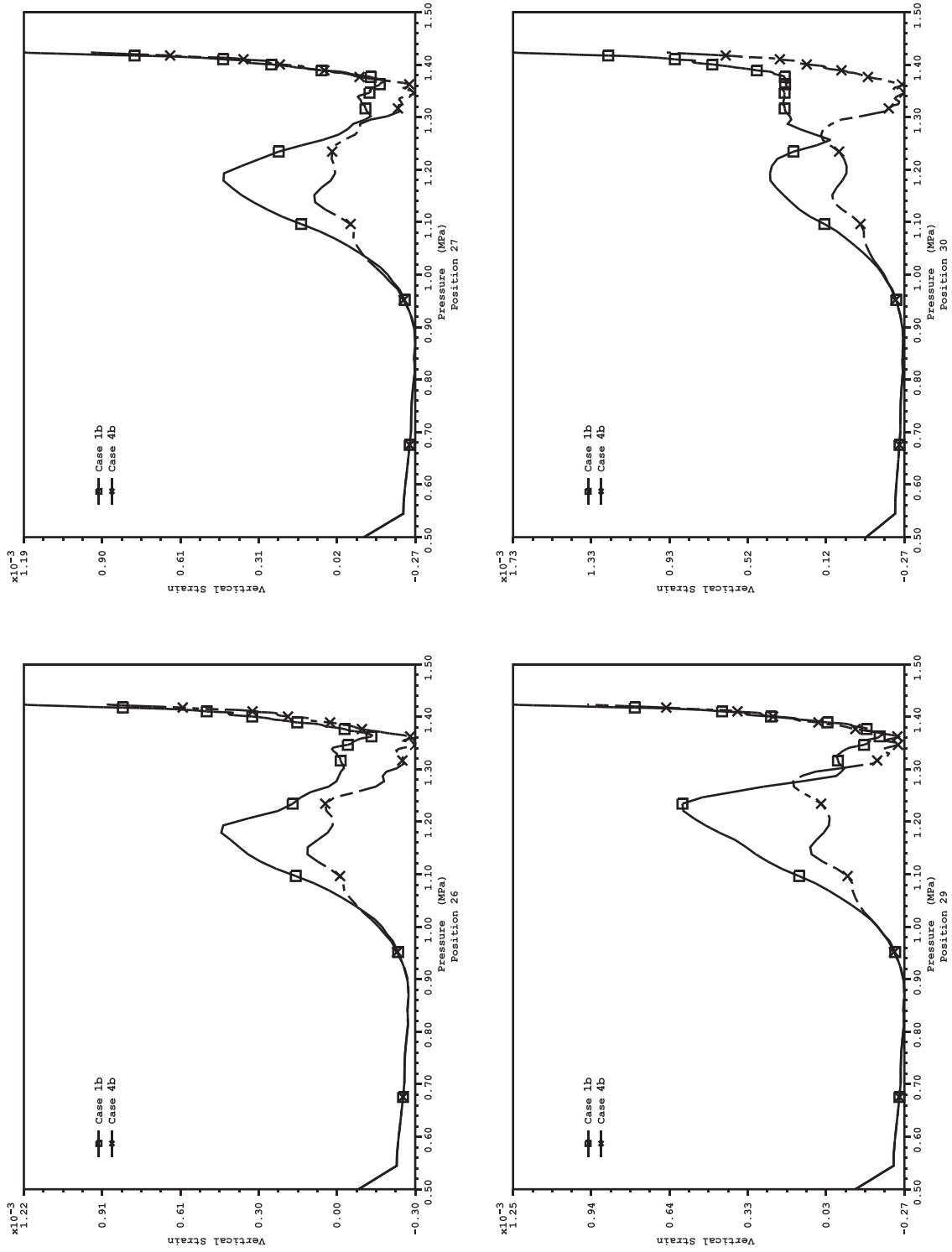


Figure 8-74. PCCV Liner Weld/Rat-Hole Study; Vertical Strain Comparisons

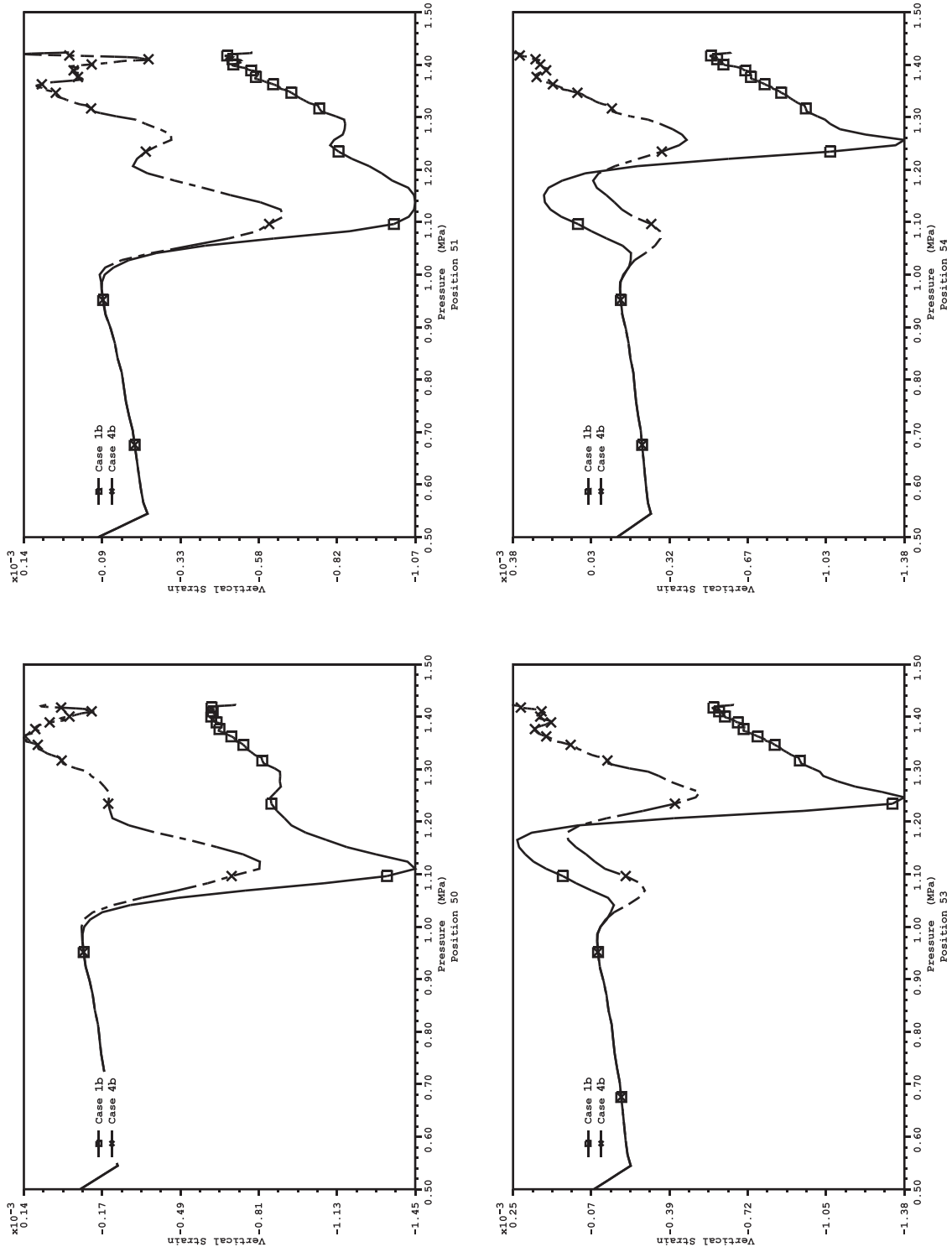


Figure 8-75. PCCV Liner Weld/Rat-Hole Study; Vertical Strain Comparisons

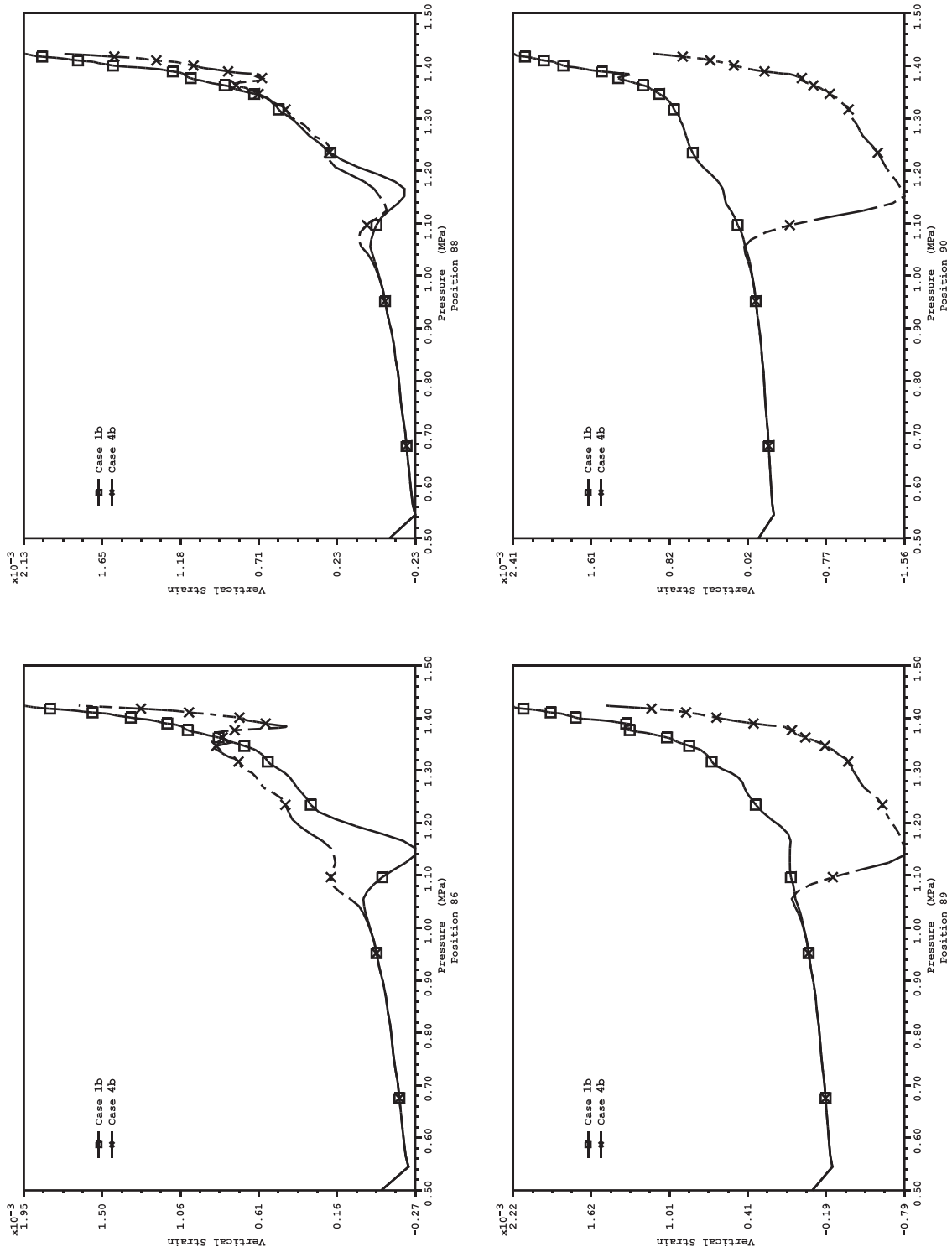
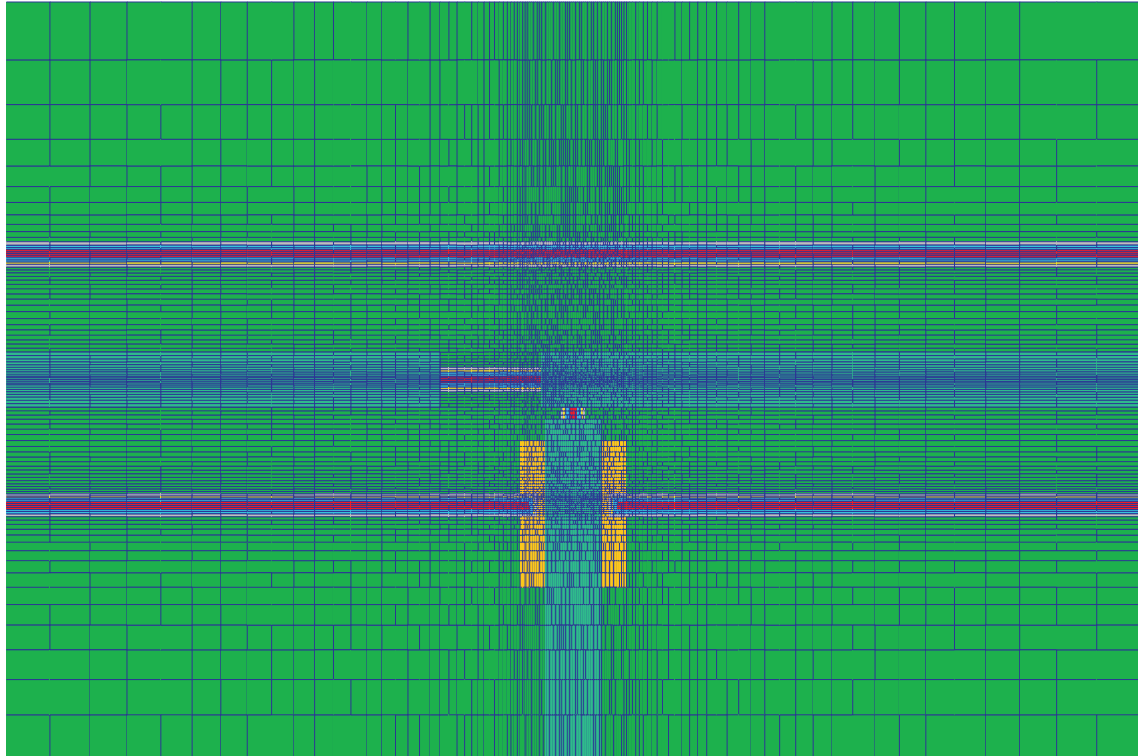
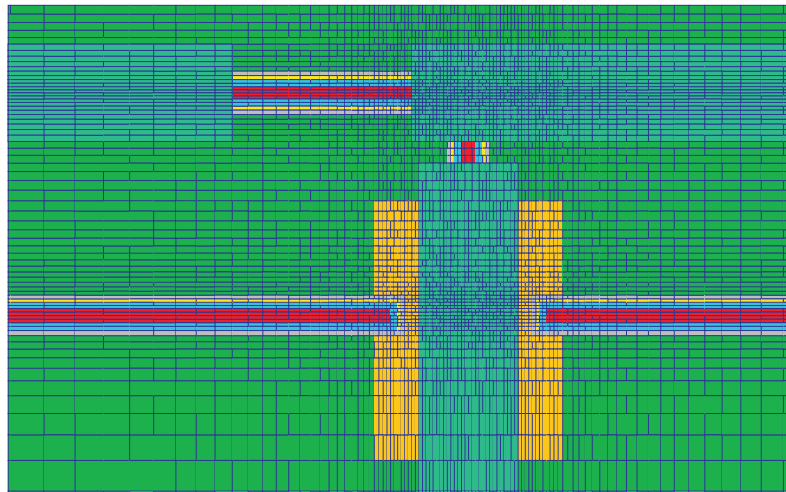


Figure 8-76. PCCV Liner Weld/Rat-Hole Study; Vertical Strain Comparisons



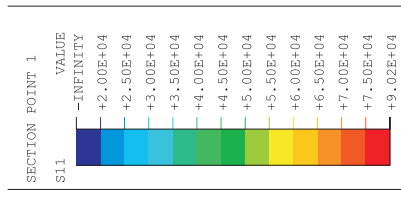
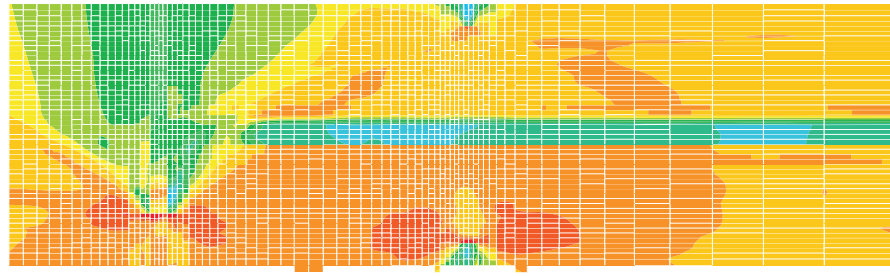
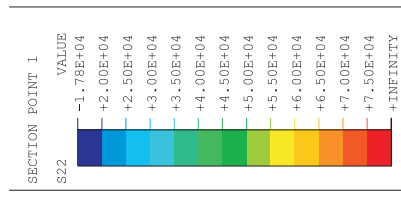
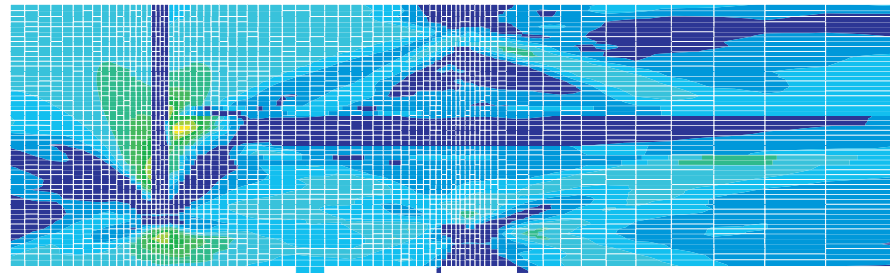
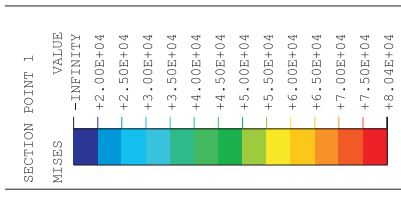
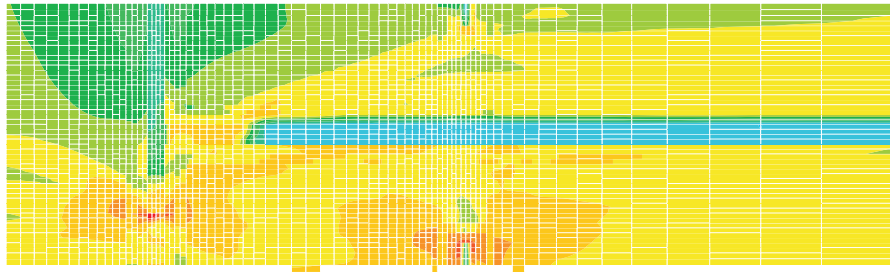
- Base
- Fine HAZ
- Medium HAZ
- Coarse HAZ
- Fusion
- Back Up Bar



~ +/- 10 mm either side of
weld fusion zone along vertical weld
Thinning at Gap equal to width
of Back Up Bar

Thickness Reduction
of 45% along Vertical Seam Weld
and 20% at Horizontal Back Up Bar Gap
No Reduction in Fusion Zone

Figure 8-77. PCCV Liner Weld Seam Rat-Hole Study, Base, HAZ, and Fusion Regions, Extent of Thinning Zones, Back Up Bars and Horizontal Gap

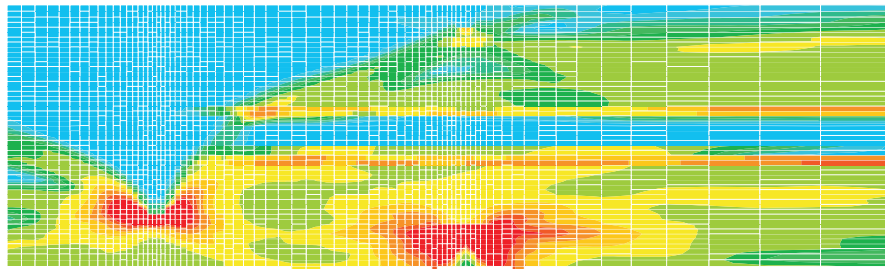
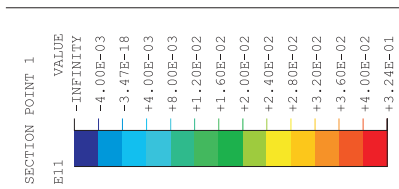


Horizontal Stress

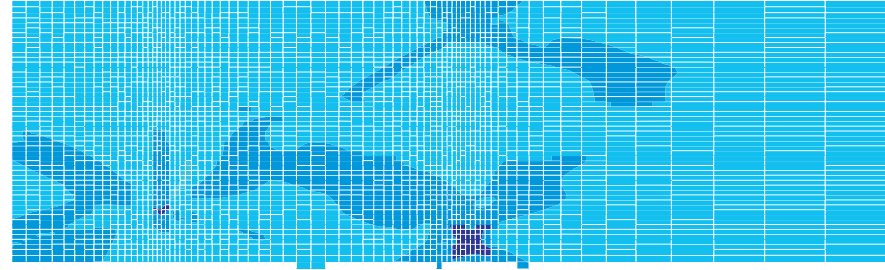
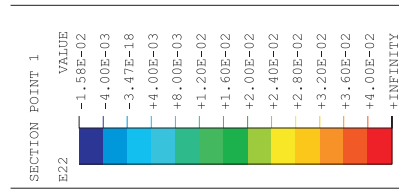
Vertical Stress

Mises Stress

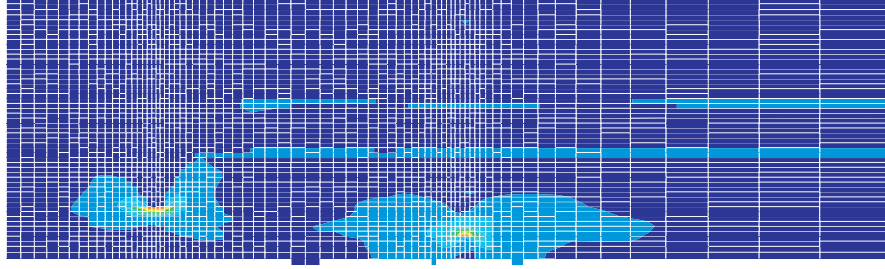
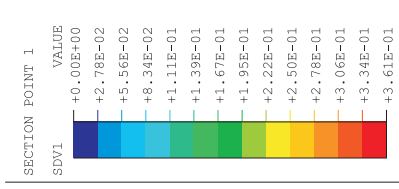
Figure 8-78. PCCV Liner Model, Liner Seam Rat-Hole Study Case 3c, Stress Contour, Vertical and Horizontal Back-Up Bars With Horizontal Gap, Similar to Case 4b, No Thinning In Gap Region (Stresses in psi; Multiply by 0.00690 for MPa)



Horizontal Strain

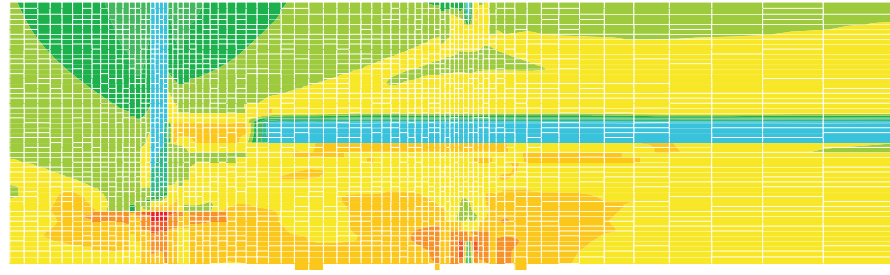


Vertical Strain

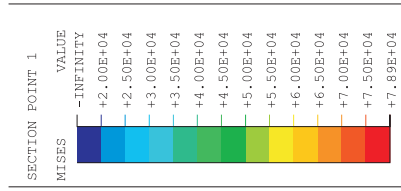


Effective Plastic Strain

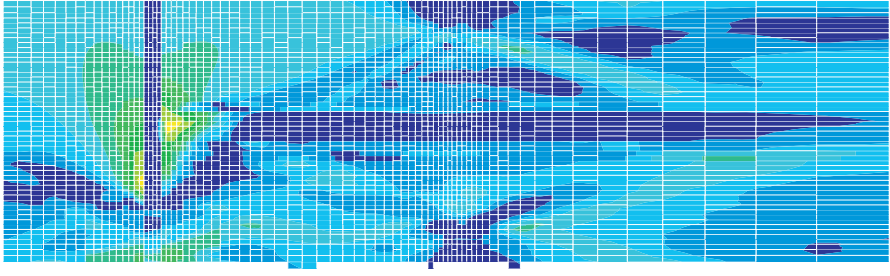
Figure 8-79. PCCV Liner Model, Liner Seam Rat-Hole Study Case 3c, Strain Contour, Vertical and Horizontal Back-Up Bars With Horizontal Gap, Similar to Case 4b, No Thinning In Gap Region



Horizontal Stress

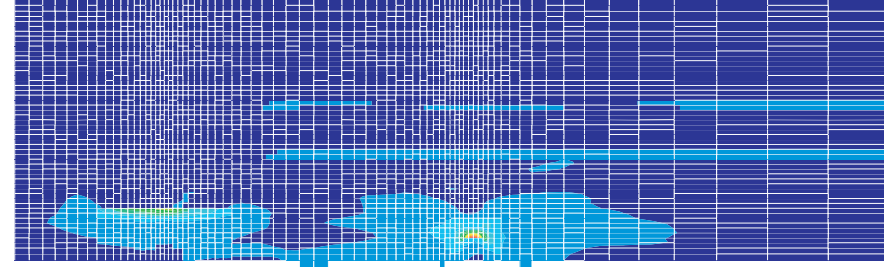
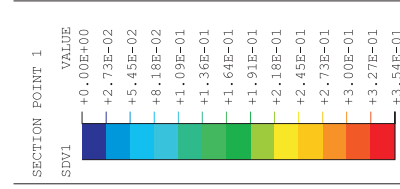
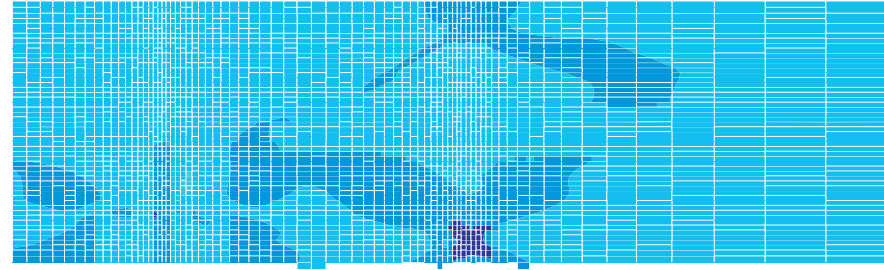
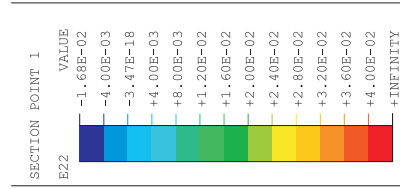
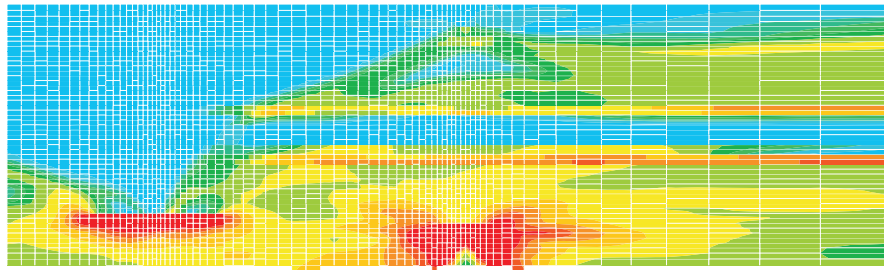
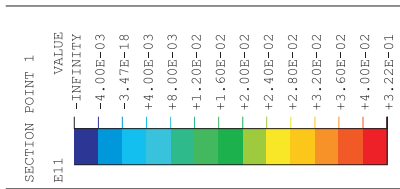


Vertical Stress



Mises Stress

Figure 8-80. PCCV Liner Model, Liner Seam Rat-Hole Study Case 4c, Stress Contour, Vertical and Horizontal Back-Up Bars With Horizontal Gap, Similar to Case 4b, Thinning In Gap Region (Stresses in psi; Multiply by 0.00690 for MPa)

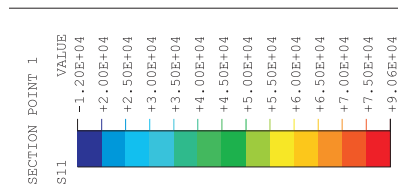
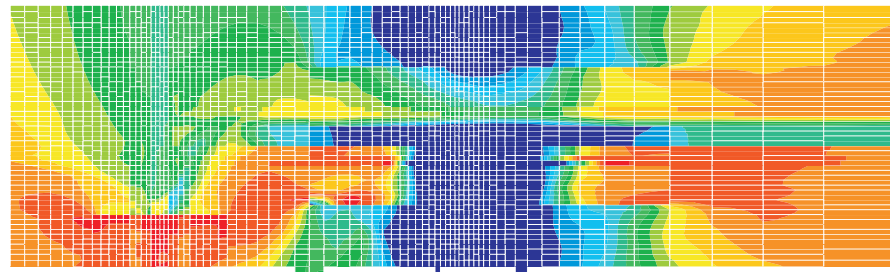
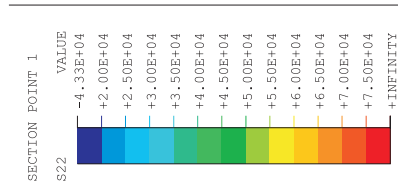
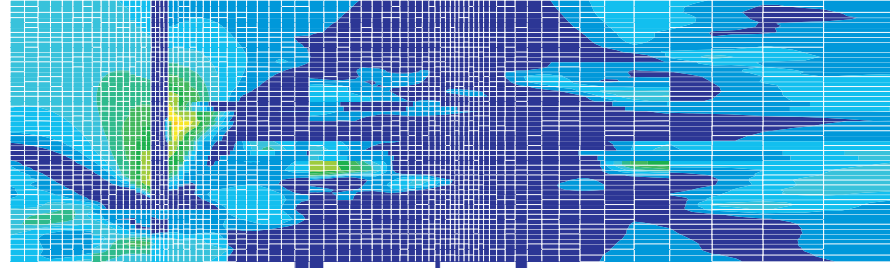
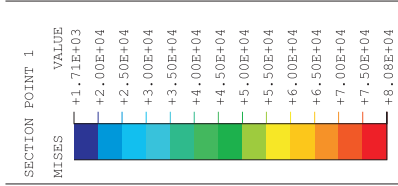
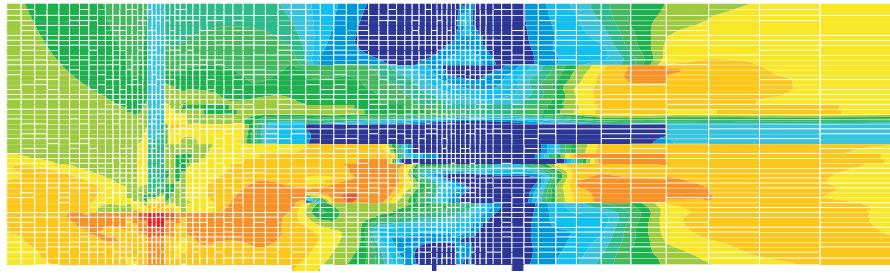


Horizontal Strain

Vertical Strain

Effective Plastic Strain

Figure 8-81. PCCV Liner Model, Liner Seam Rat-Hole Study Case 4c, Strain Contour, Vertical and Horizontal Back-Up Bars With Horizontal Gap, Similar to Case 4b, Thinning In Gap Region

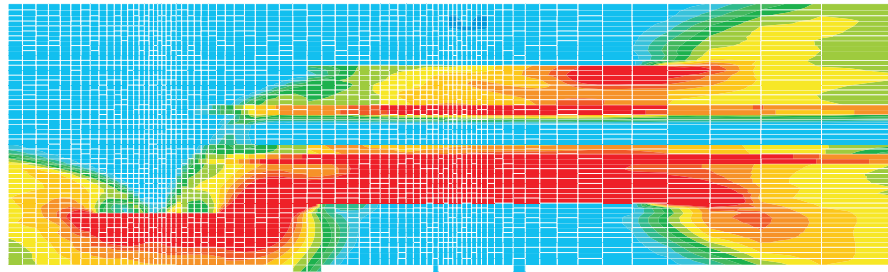
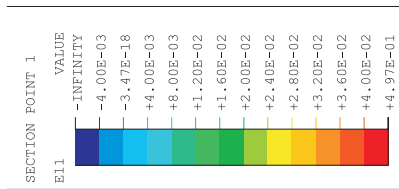


Horizontal Stress

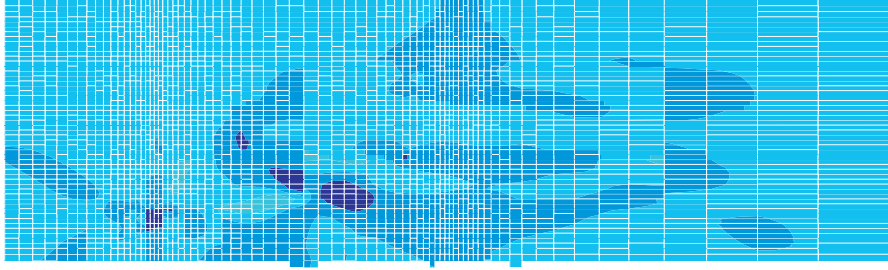
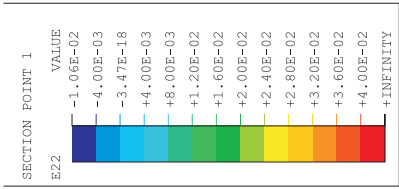
Vertical Stress

Mises Stress

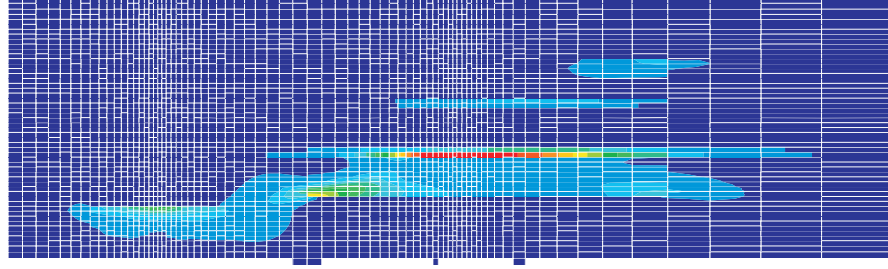
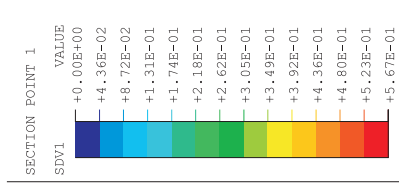
Figure 8-82. PCCV Liner Model, Liner Seam Rat-Hole Study Case 5c, Stress Contour, Vertical and Horizontal Back-Up Bars With Horizontal Gap, Similar to Case 10b, Thinning In Gap Region (Stresses in psi; Multiply by 0.00690 for MPa)



Horizontal Strain

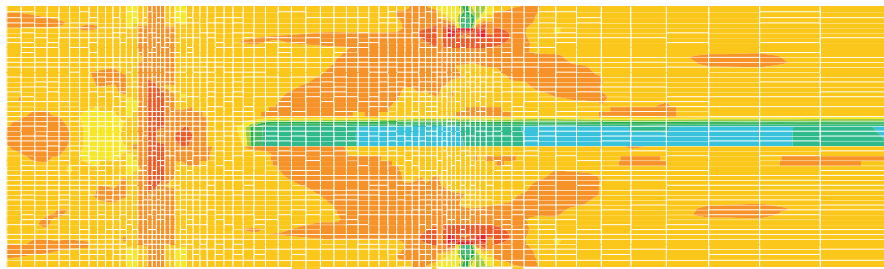
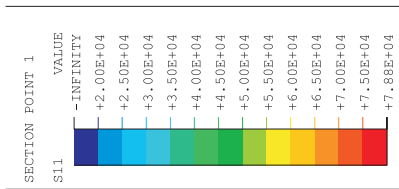


Vertical Strain

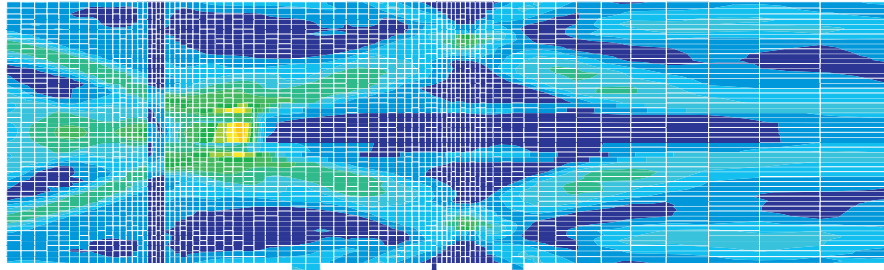
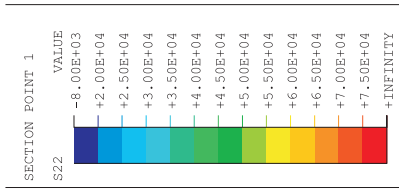


Effective Plastic Strain

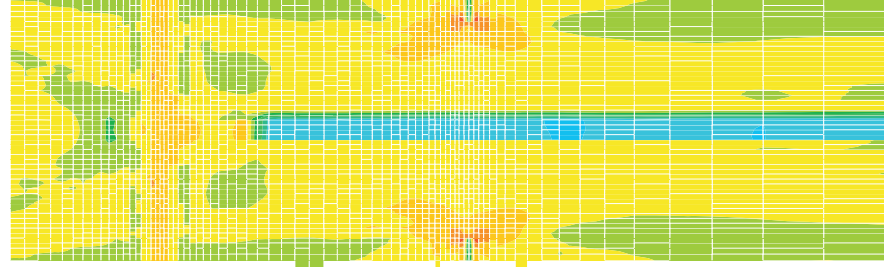
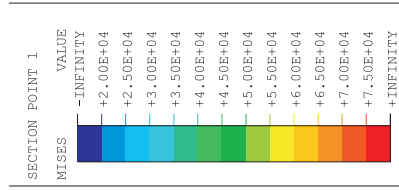
Figure 8-83. PCCV Liner Model, Liner Seam Rat-Hole Study Case 5c, Strain Contour, Vertical and Horizontal Back-Up Bars With Horizontal Gap, Similar to Case 10b, Thinning In Gap Region



Horizontal Stress

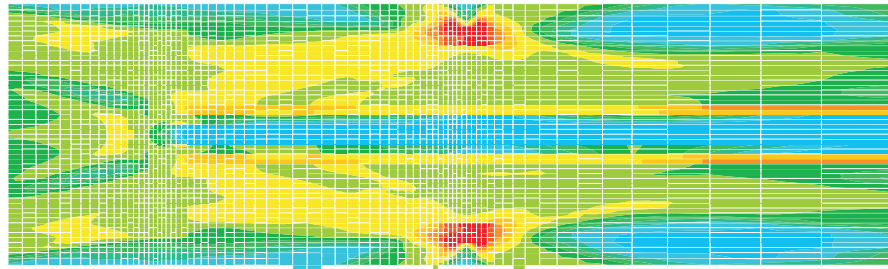
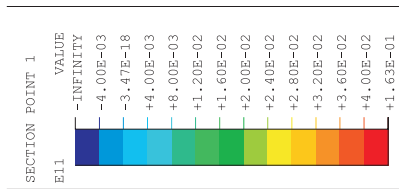


Vertical Stress

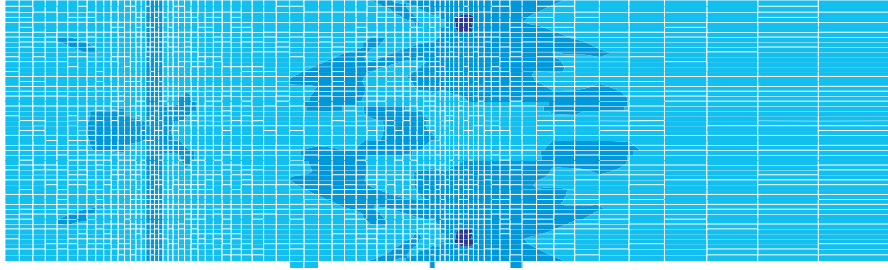
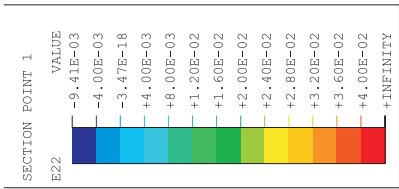


Mises Stress

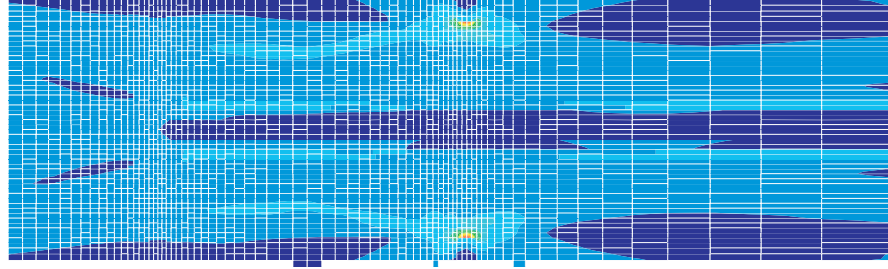
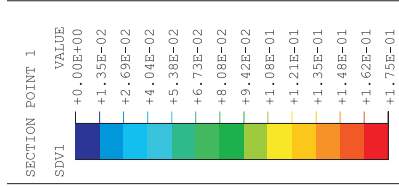
Figure 8-84. PCCV Liner Model, Liner Seam Rat-Hole Study Case 6c, Stress Contour, Vertical and Horizontal Back-Up Bars, No Horizontal Gap, Similar to Case 4b, No Thinning in Gap Region (Stresses in psi; Multiply by 0.00690 for MPa)



Horizontal Strain

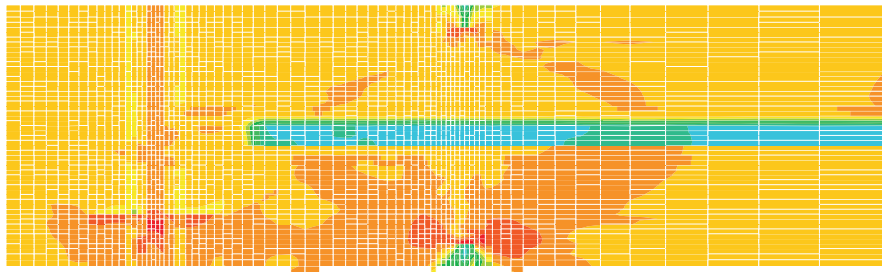
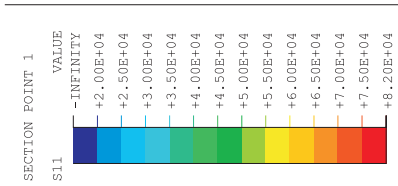


Vertical Strain

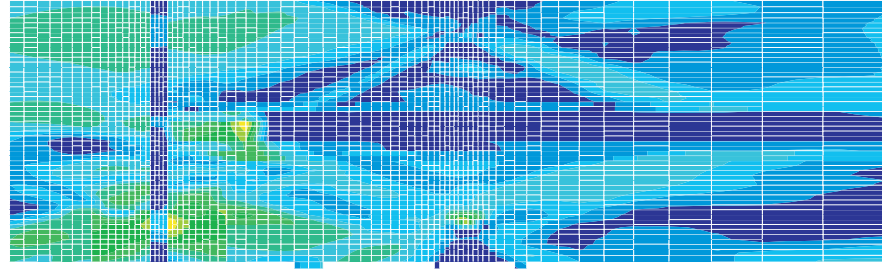
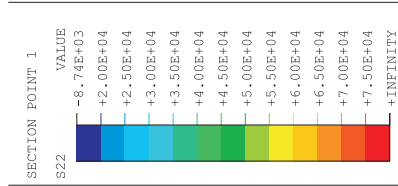


Effective Plastic Strain

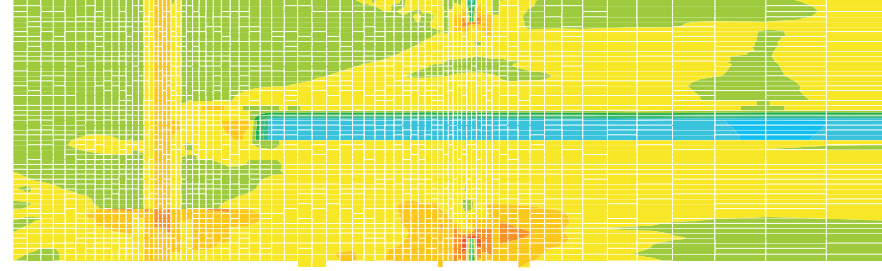
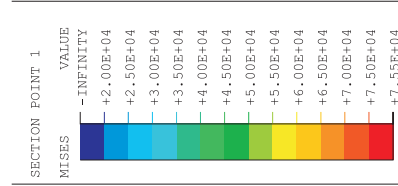
Figure 8-85. PCCV Liner Model, Liner Seam Rat-Hole Study Case 6c, Stress Contour, Vertical and Horizontal Back-Up Bars, No Horizontal Gap, Similar to Case 4b, No Thinning in Gap Region



Horizontal Stress



Vertical Stress



Mises Stress

Figure 8-86. PCCV Liner Model, Liner Seam Rat-Hole Study Case 7c, Stress Contour, Vertical and Horizontal Back-Up Bars, No Horizontal Gap, Similar to Case 4b, Thinning in Gap Region (Stresses in psi; Multiply by 0.00690 for MPa)