

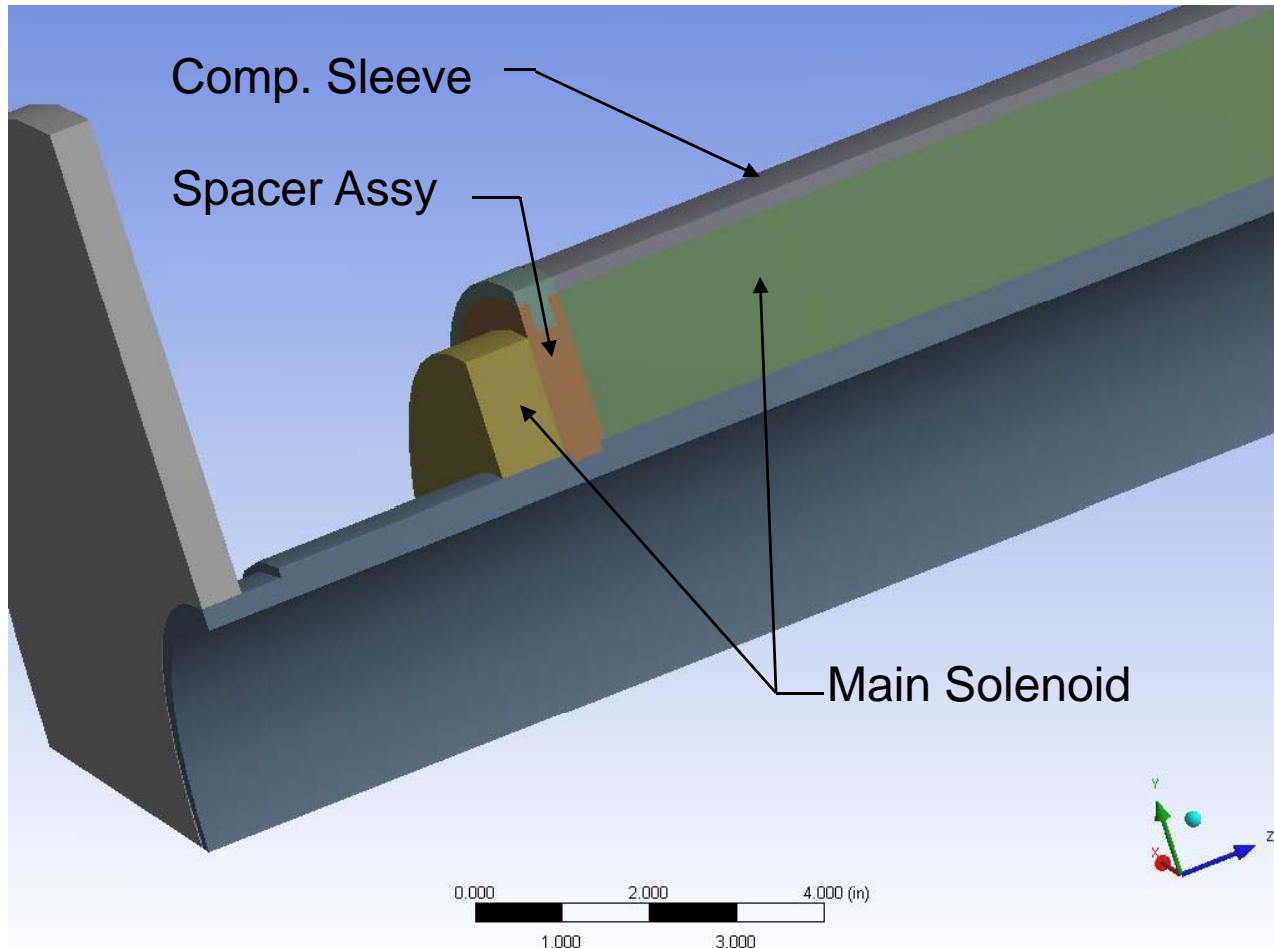
Main Solenoid Axial Force Retention

A.Marone

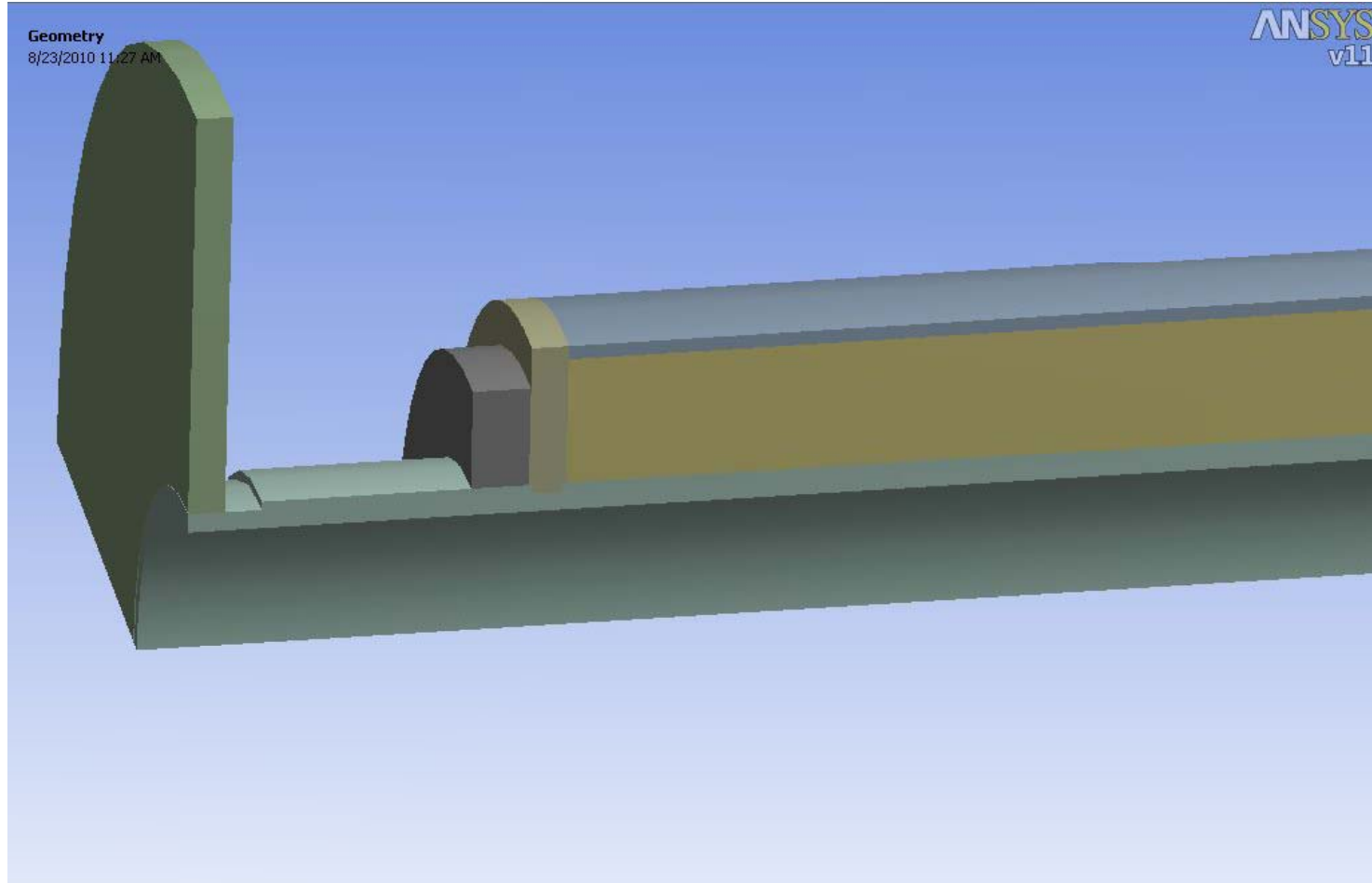
8/24/2010

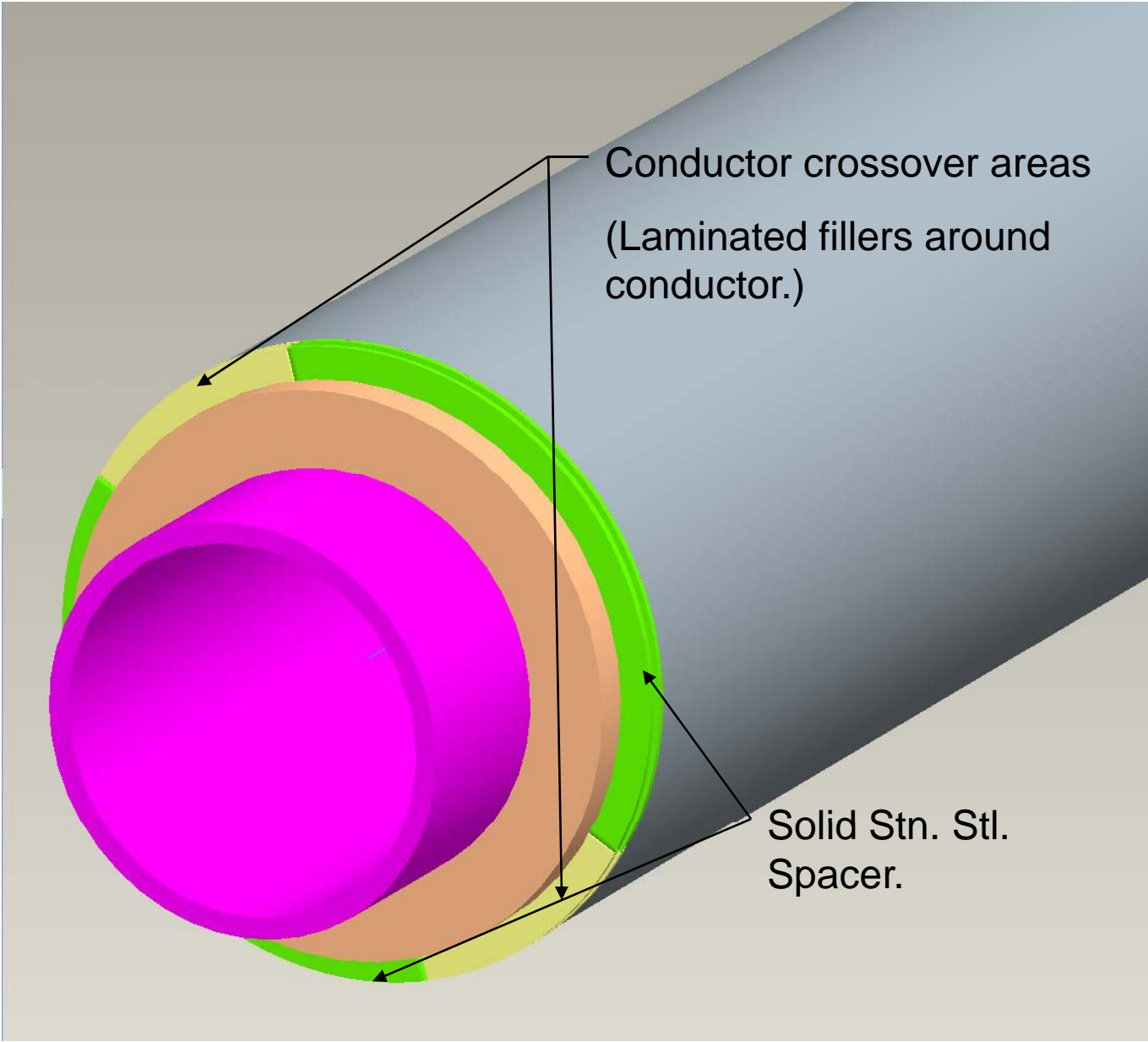
- Goal
 - To transmit the 133,000 LB. axial force from each outer coil section around the main coil body.
- Method
 - Separate the outer coil sections with a spacer designed to transmit the load through the compression sleeve and the support tube.
- Validation
 - Ansys analysis

Lead End Design



Non-Lead End Design





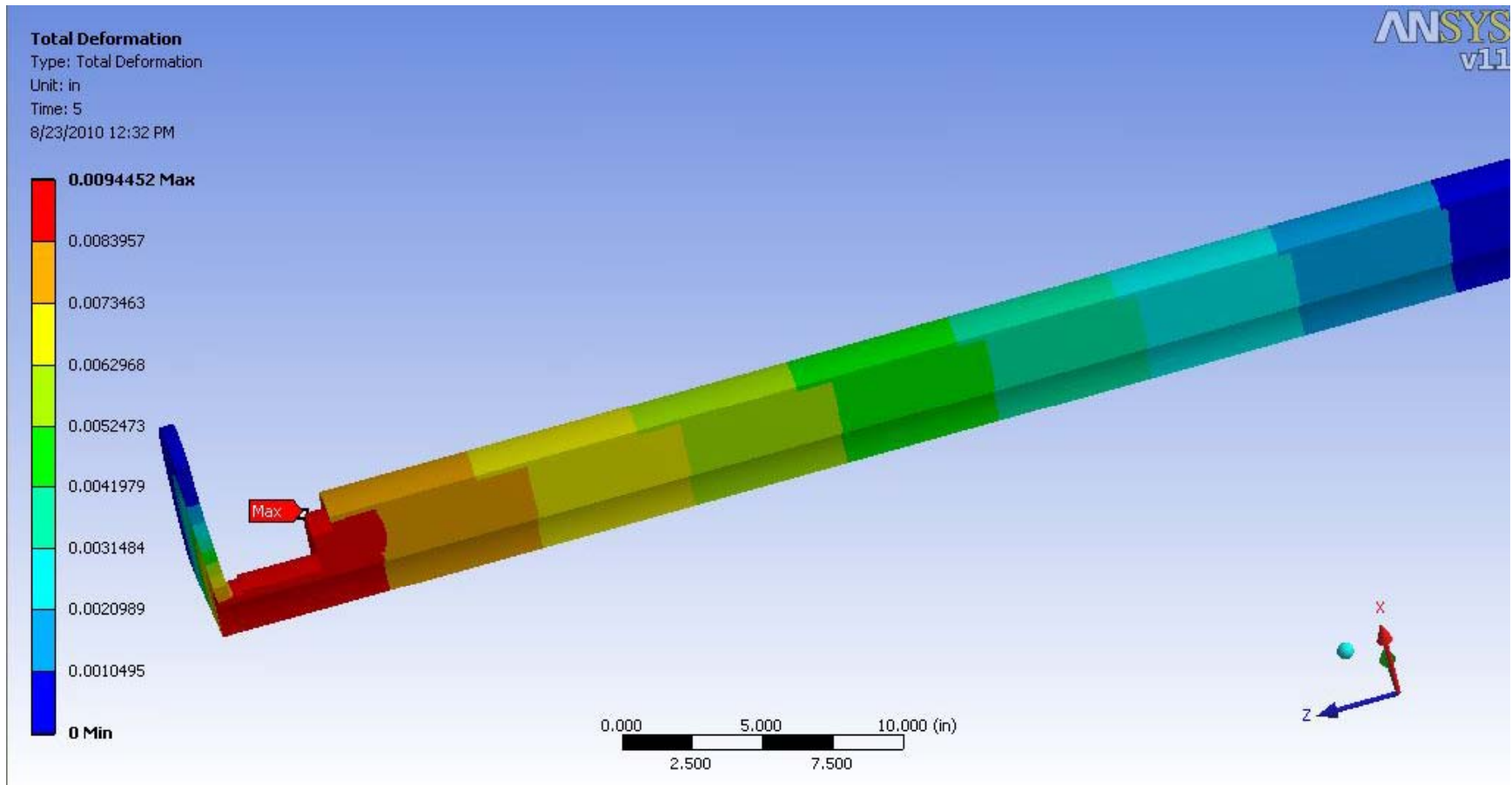
Conductor crossover areas
(Laminated fillers around
conductor.)

Solid Stn. Stl.
Spacer.

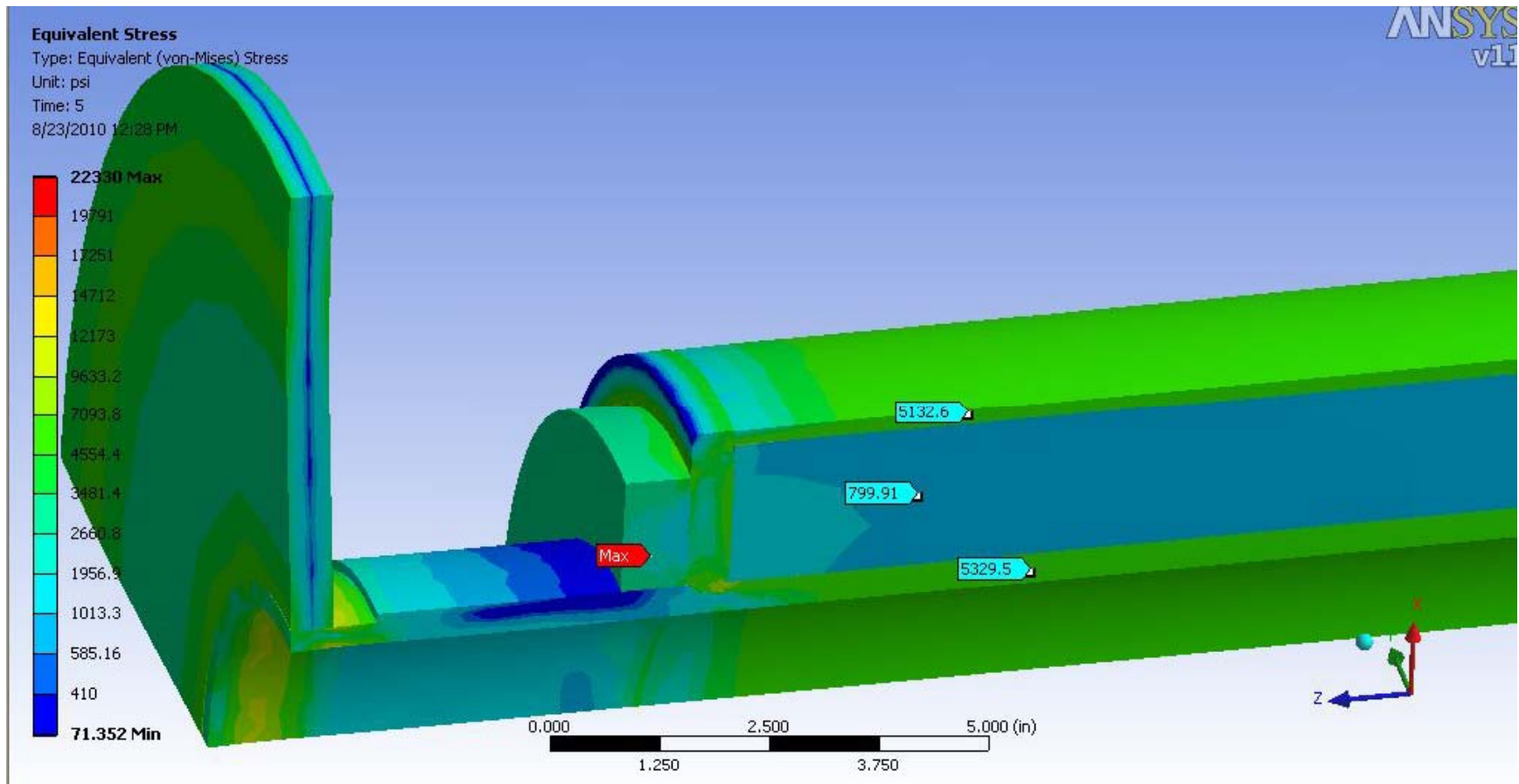
Analysis Results

- Desired effects are achieved with this design.
- Stresses are manageable with max. section stresses in spacer about 19,000 PSI. with a few singularities of 27 KPSI.
- Coil Assembly compresses about .0095” inward at each end.

Deflection

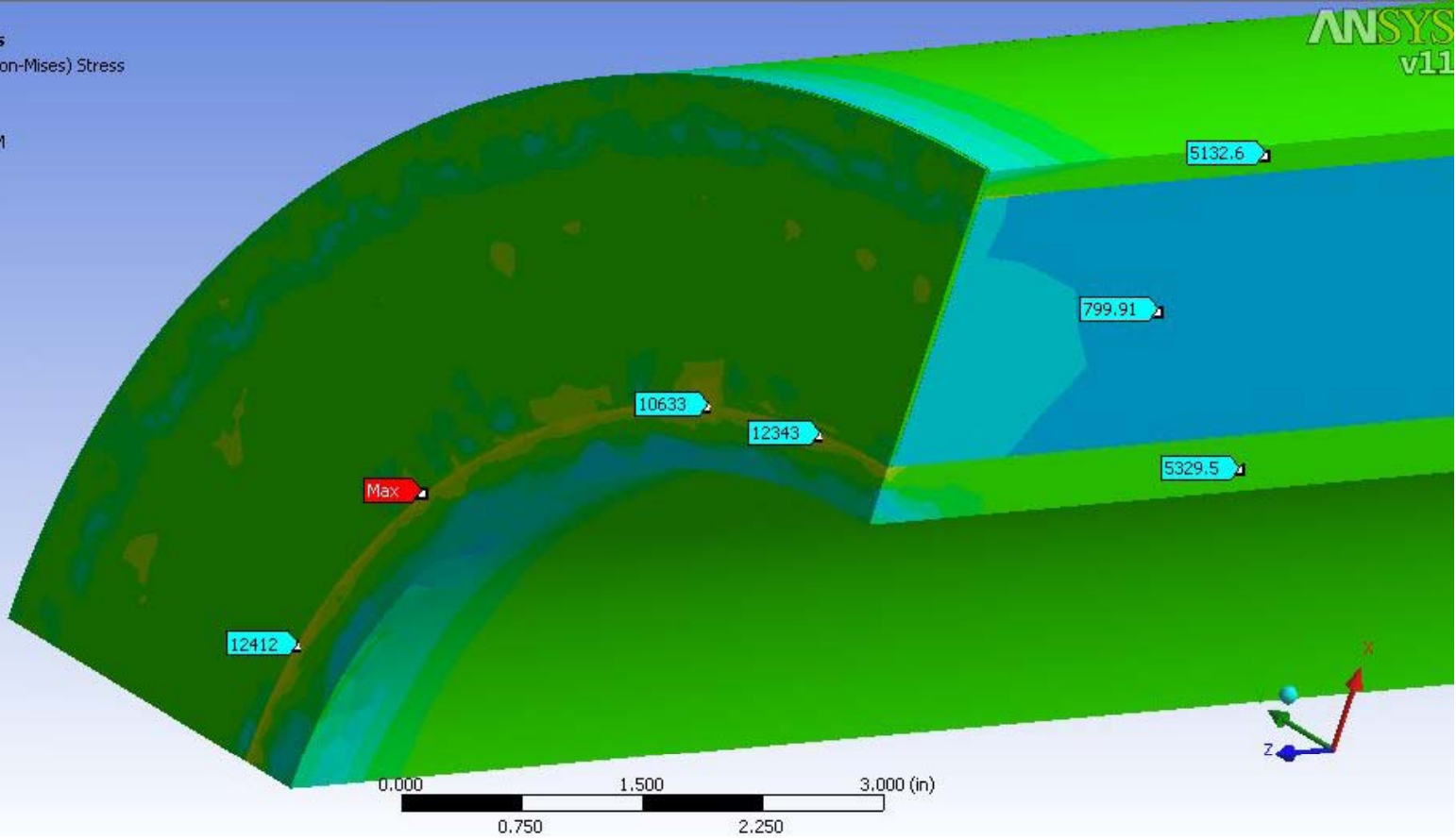
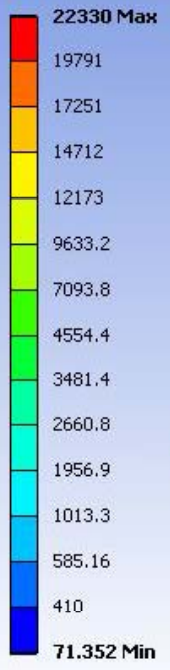


Non-Lead End Stresses

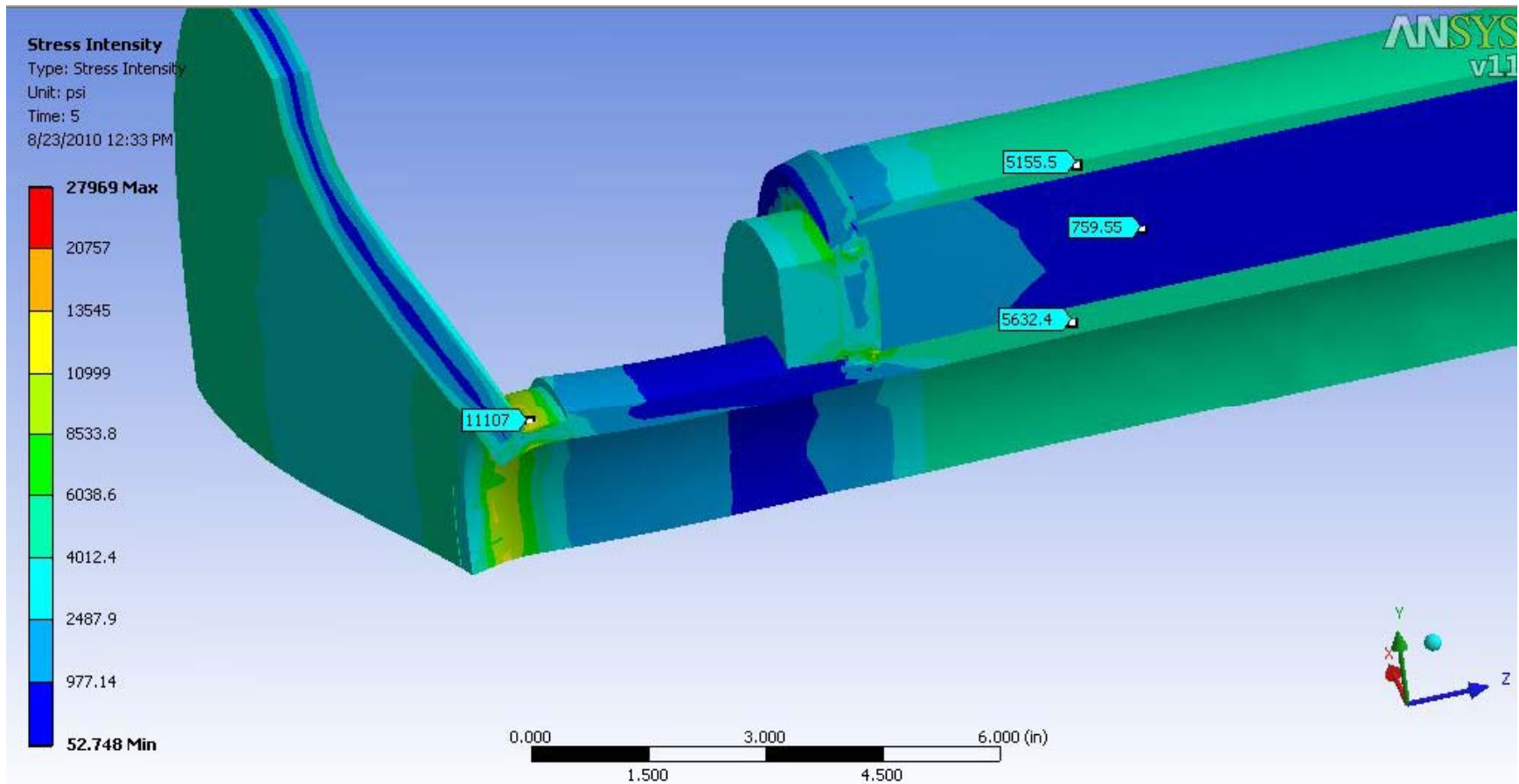


Equivalent Stress

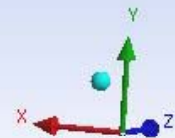
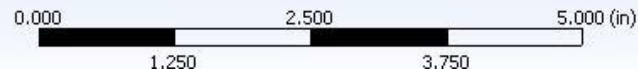
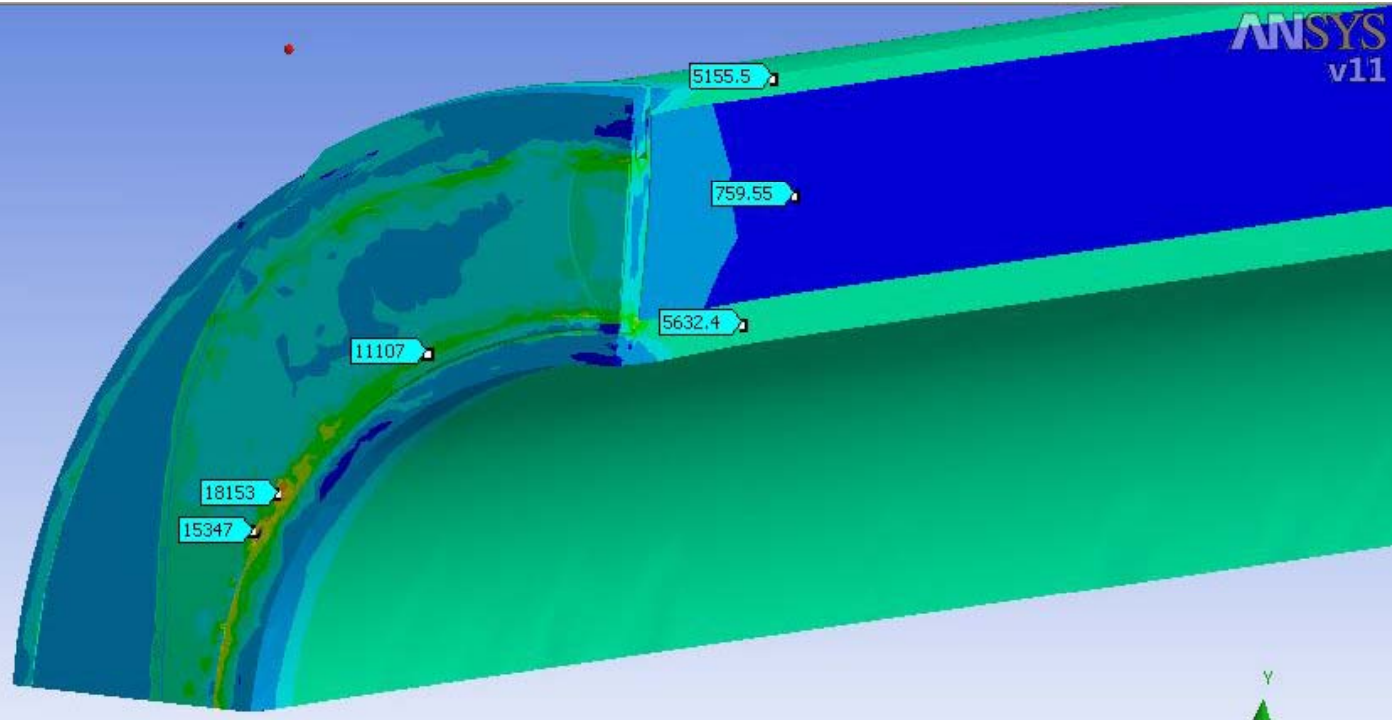
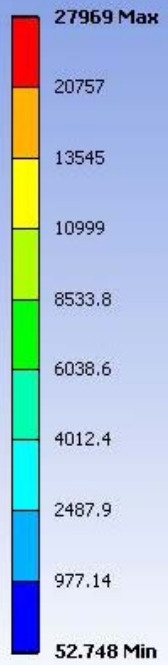
Type: Equivalent (von-Mises) Stress
Unit: psi
Time: 5
8/23/2010 12:30 PM



Lead End Stresses



Stress Intensity
Type: Stress Intensity
Unit: psi
Time: 5
8/23/2010 12:35 PM



- The next step is to incorporate the detailed design into the main model.