Modeling and Simulations of High-Speed Impact Experiments Project

Lab 1b Report

ME: 4116 Mfg Processes Simulations and Automation

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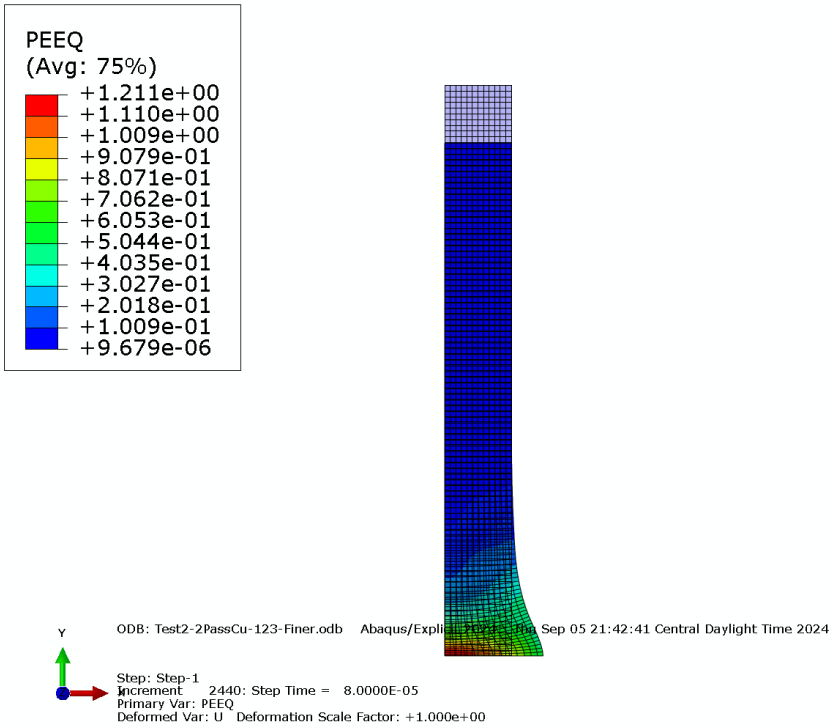

Figure 1. PEEQ for Test 2

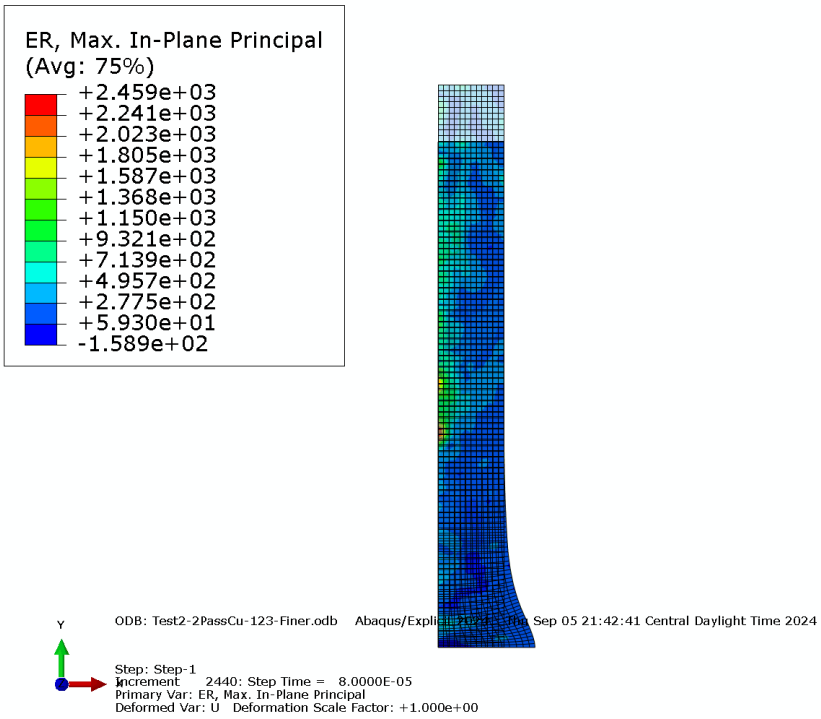

Figure 2. ER for Test 2

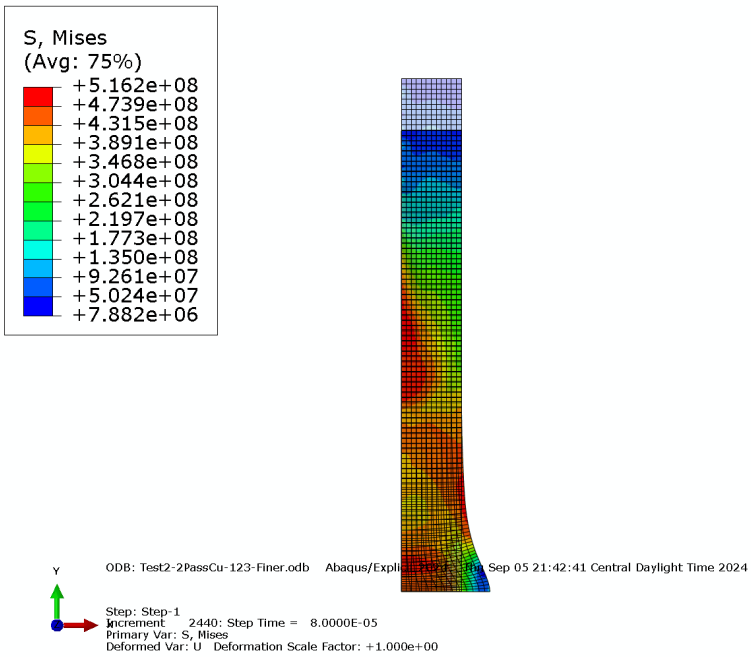

Figure 3. Stress for Test 2

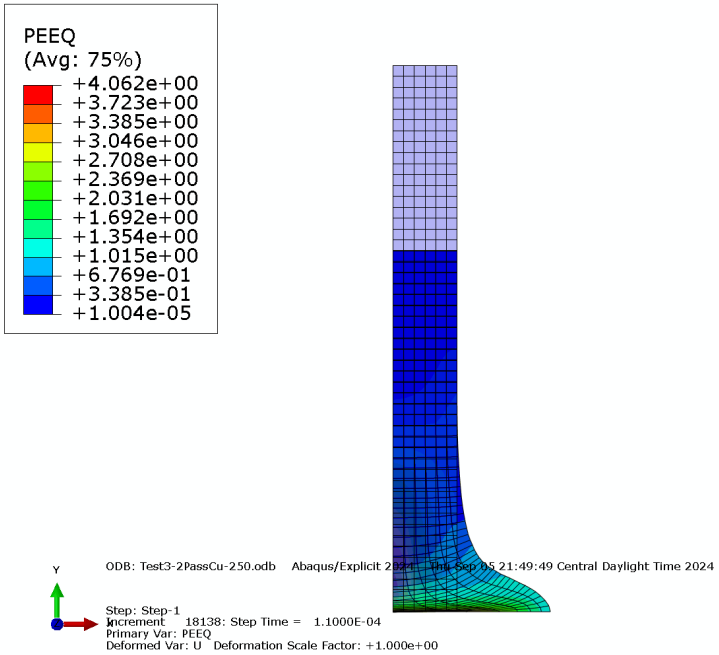

Figure 4. PEEQ for Test 3

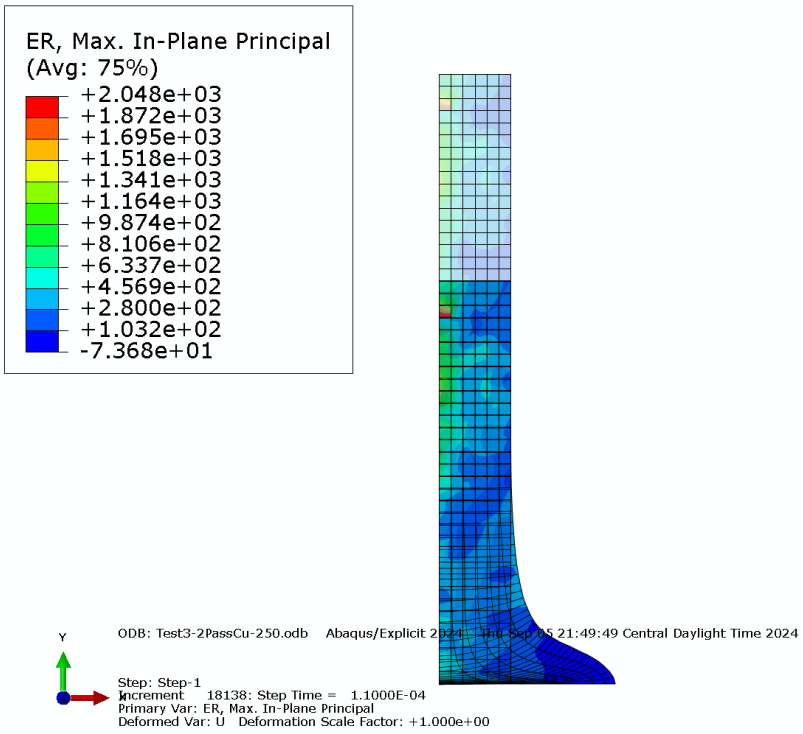

Figure 5. ER for Test 3

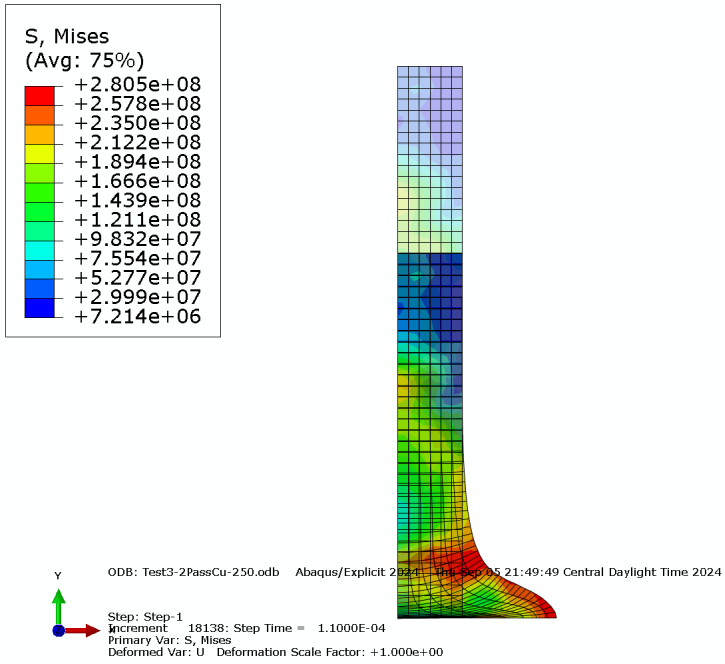

Figure 6. Stress for Test 3

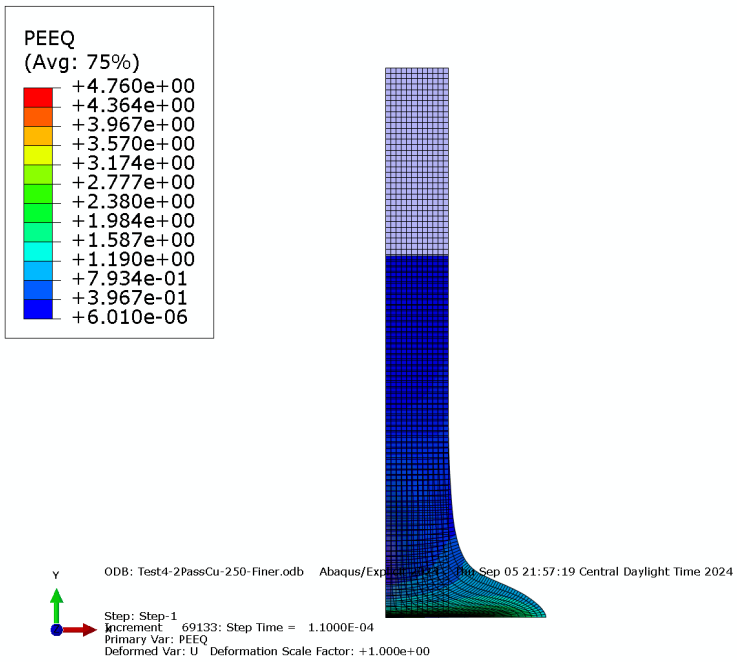

Figure 7. PEEQ for Test 4

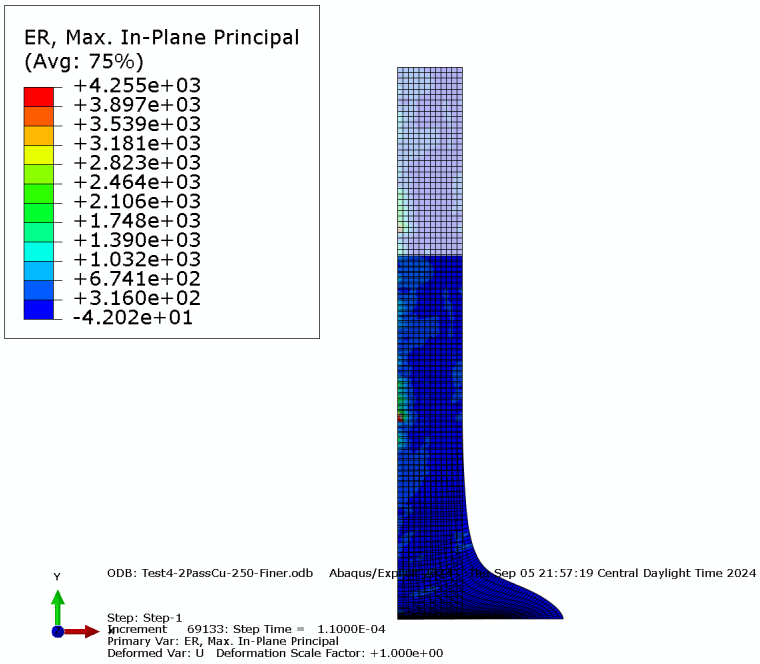

Figure 8. ER for Test 4

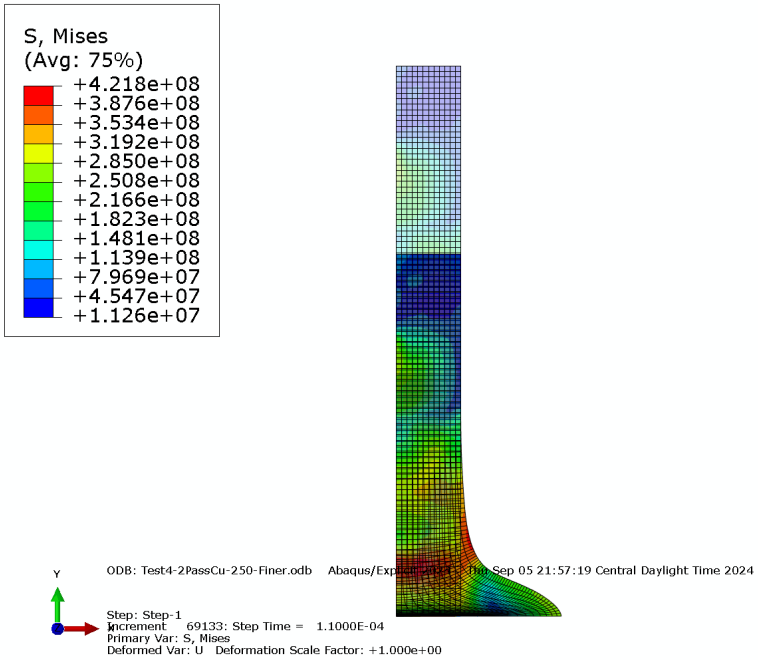

Figure 9. Stress for Test 4

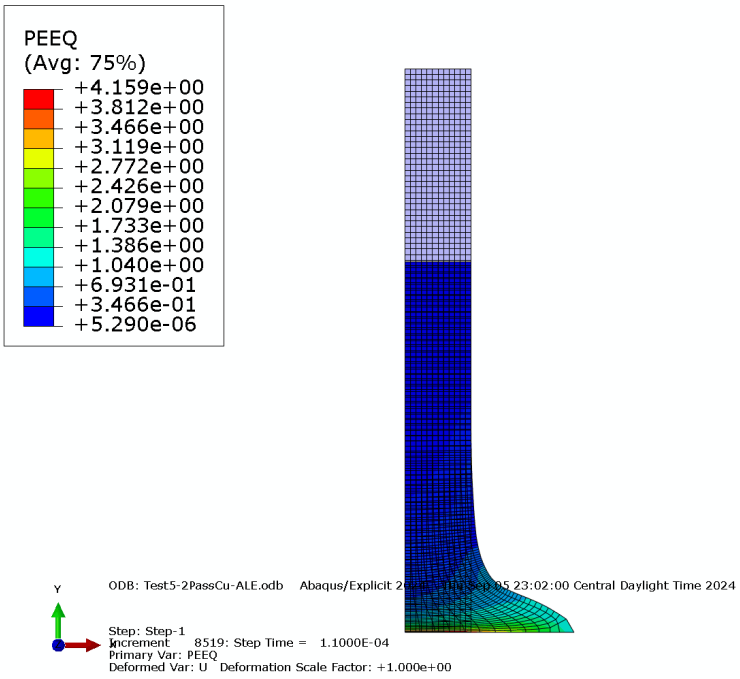

Figure 10. PEEQ for Test 5

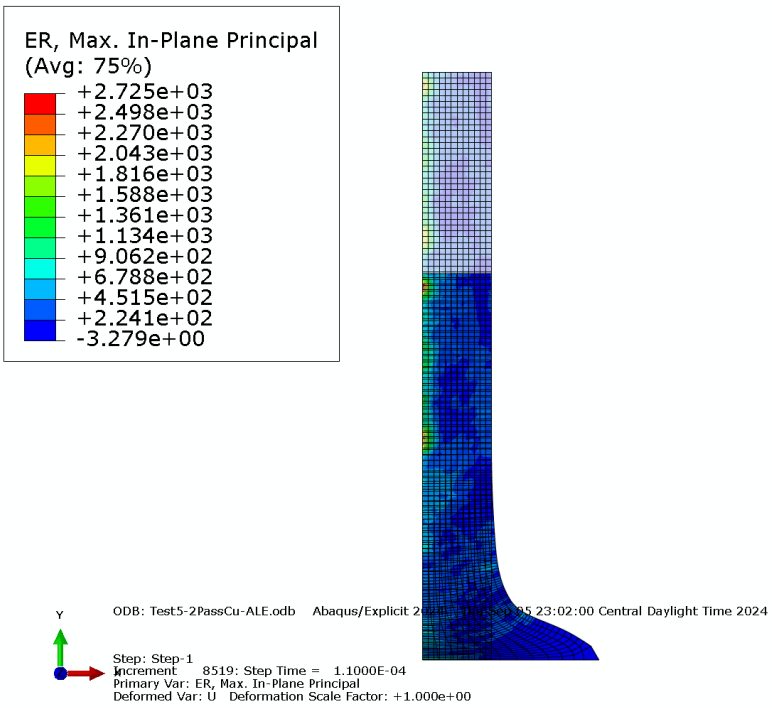

Figure 11. ER for Test 5

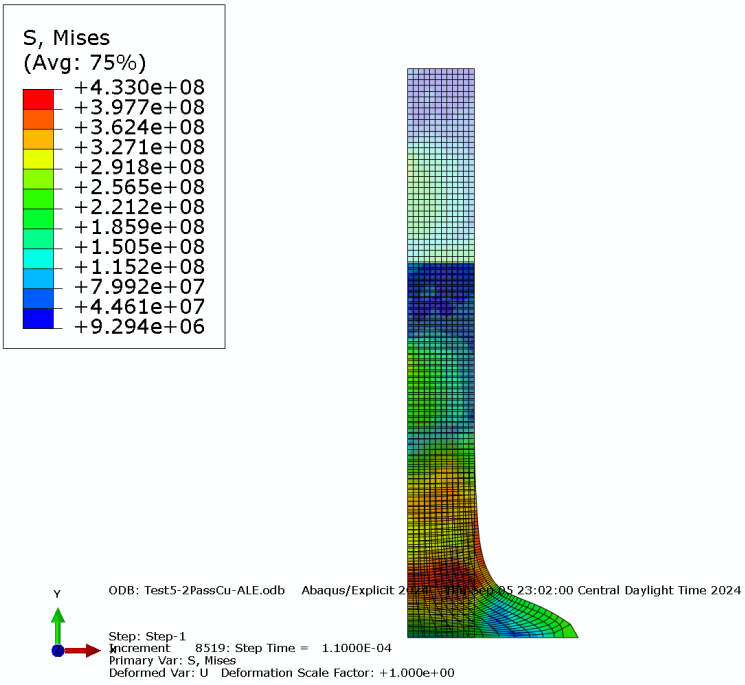

Figure 12. Stress for Test 5

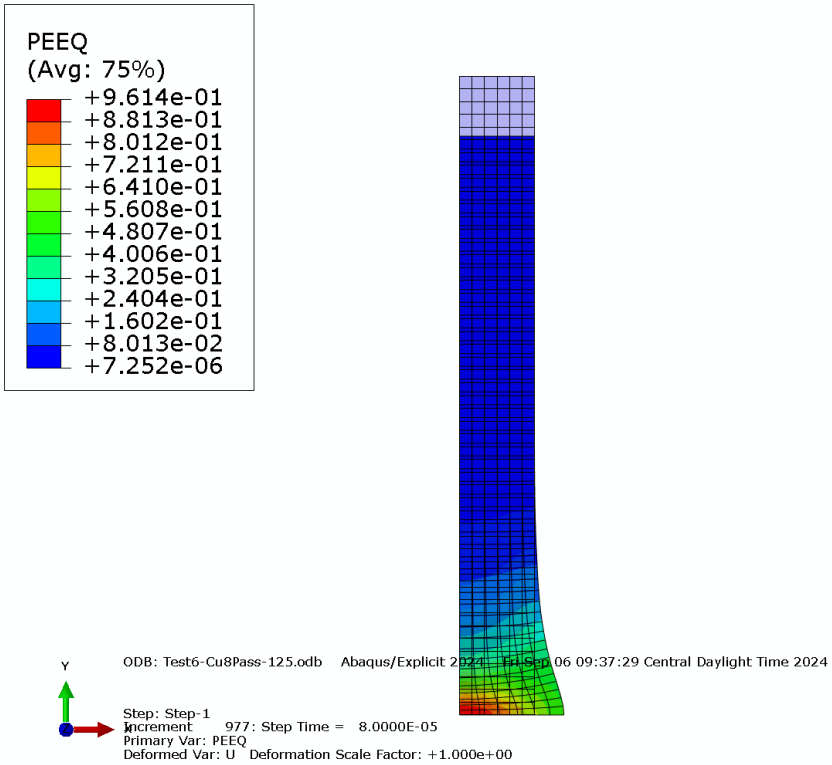

Figure 13. PEEQ for Test 6

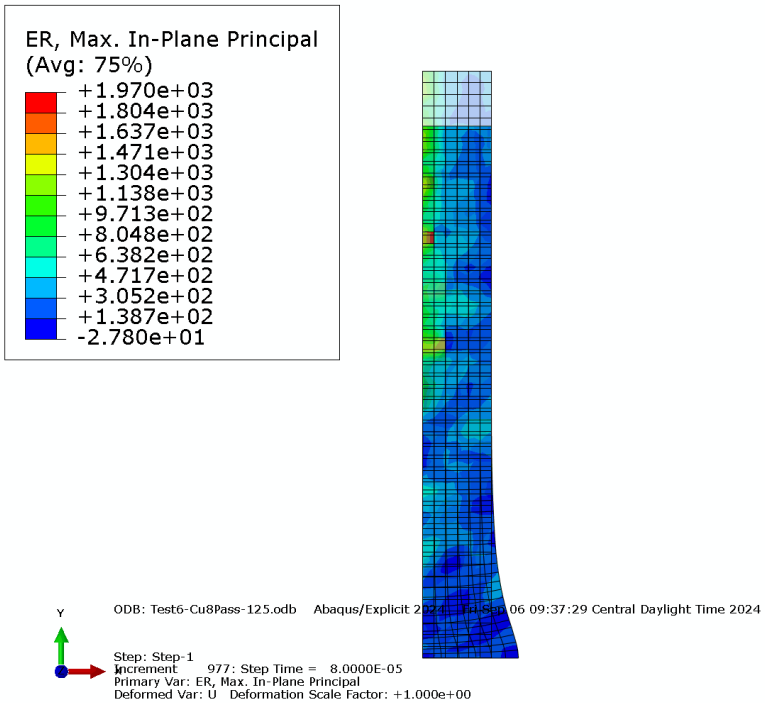

Figure 14. ER for Test 6

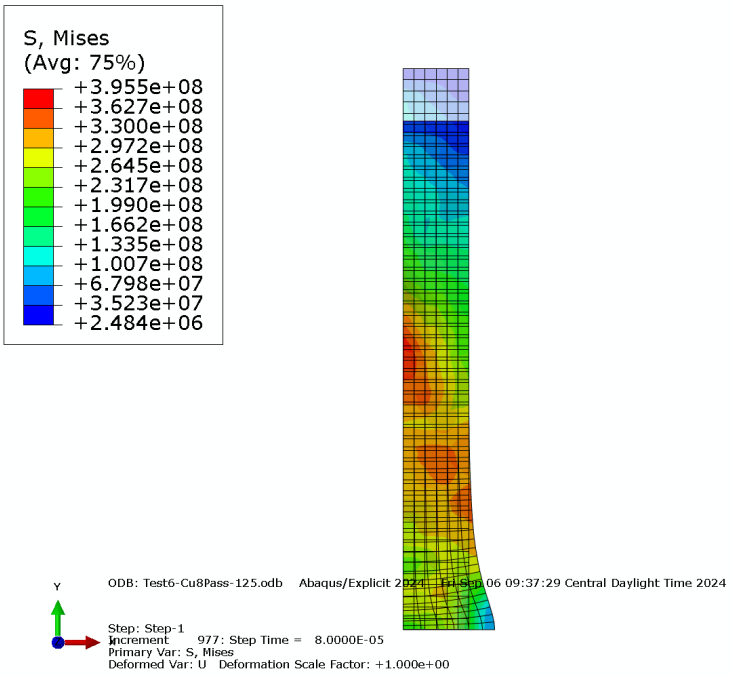

Figure 15. Stress for Test 6

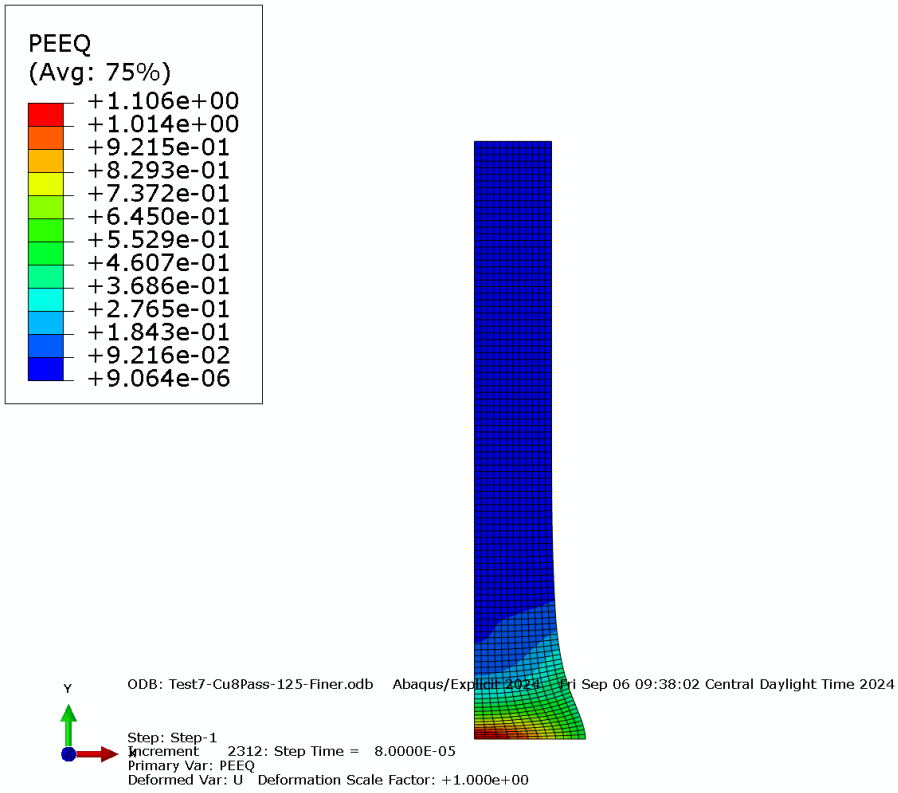

Figure 16. PEEQ for Test 7

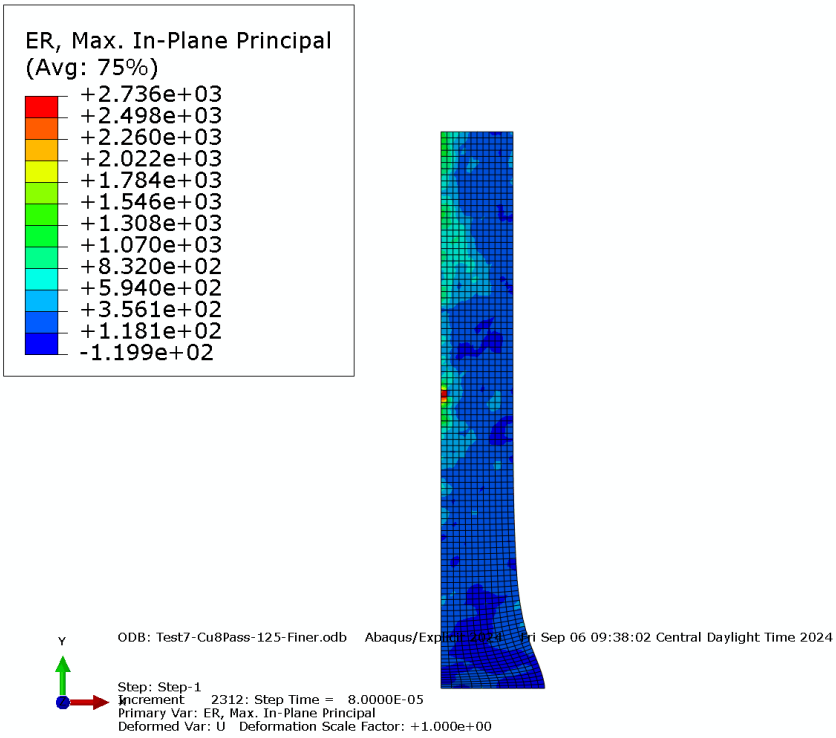

Figure 17. ER for Test 7

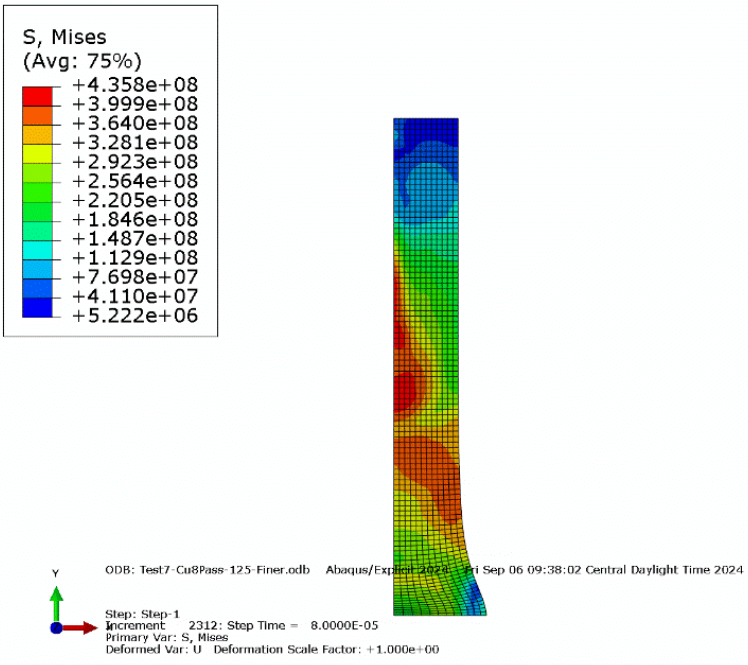

Figure 18. Stress for Test 7

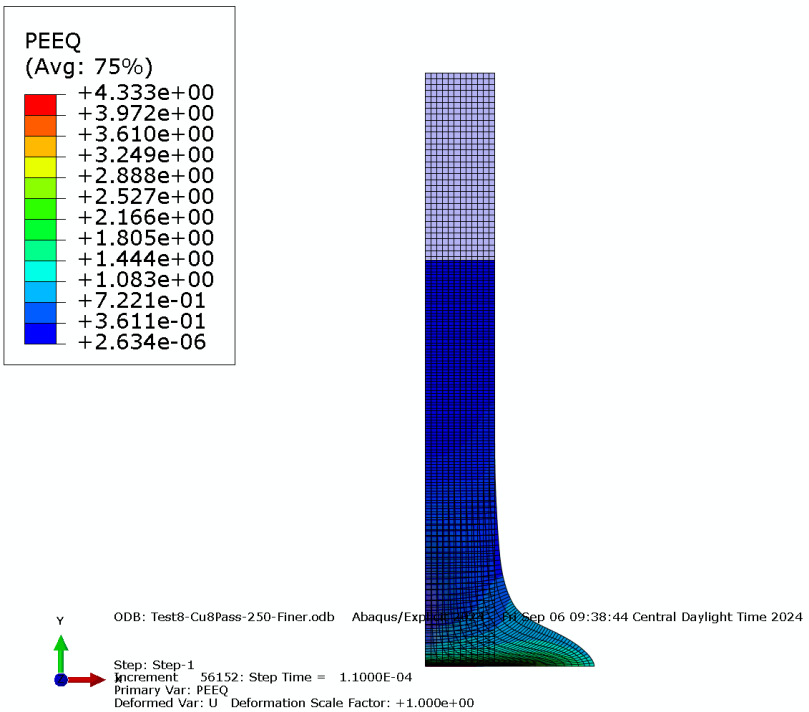

Figure 19. PEEQ for Test 8

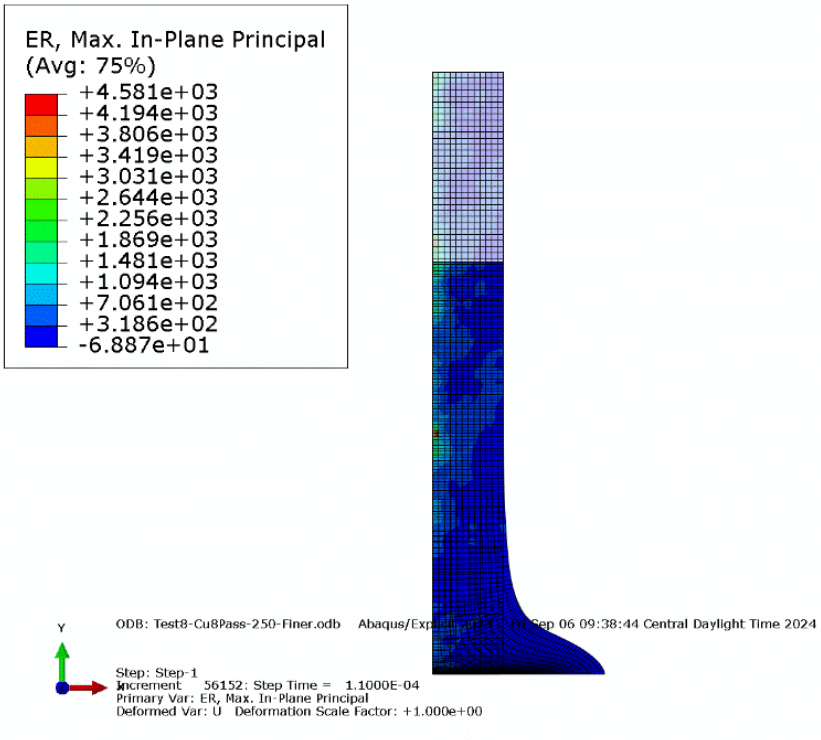

Figure 20. ER for Test 8

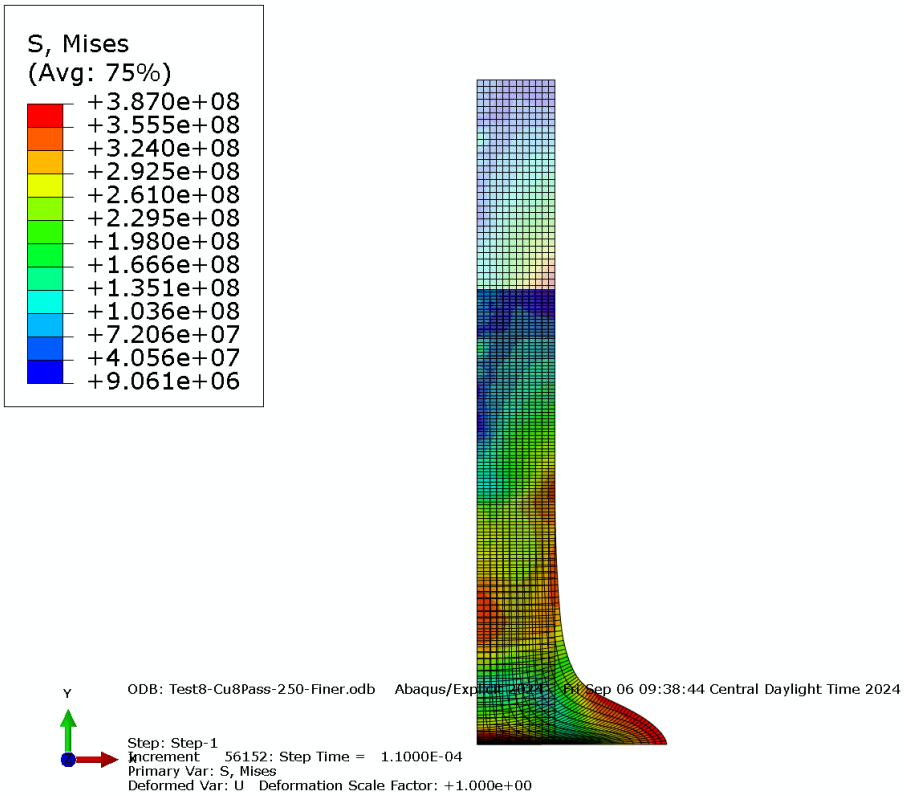

Figure 21. PEEQ for Test 8

When comparing tests 4 and 5, the ALE model “cleans up” the bottom of the mesh. In test 4, the bottom of the mesh has several elements and nodes that are being compressed. Using the ALE in test 5, this creates a cleaner model without the nodes and elements being compressed. By definition: ALE stands for Arbitrary Lagrangian Eulerian in which this method is a remeshing method to prevent distortion of the meshing along with preventing the distortion of the elements when looking at the results.