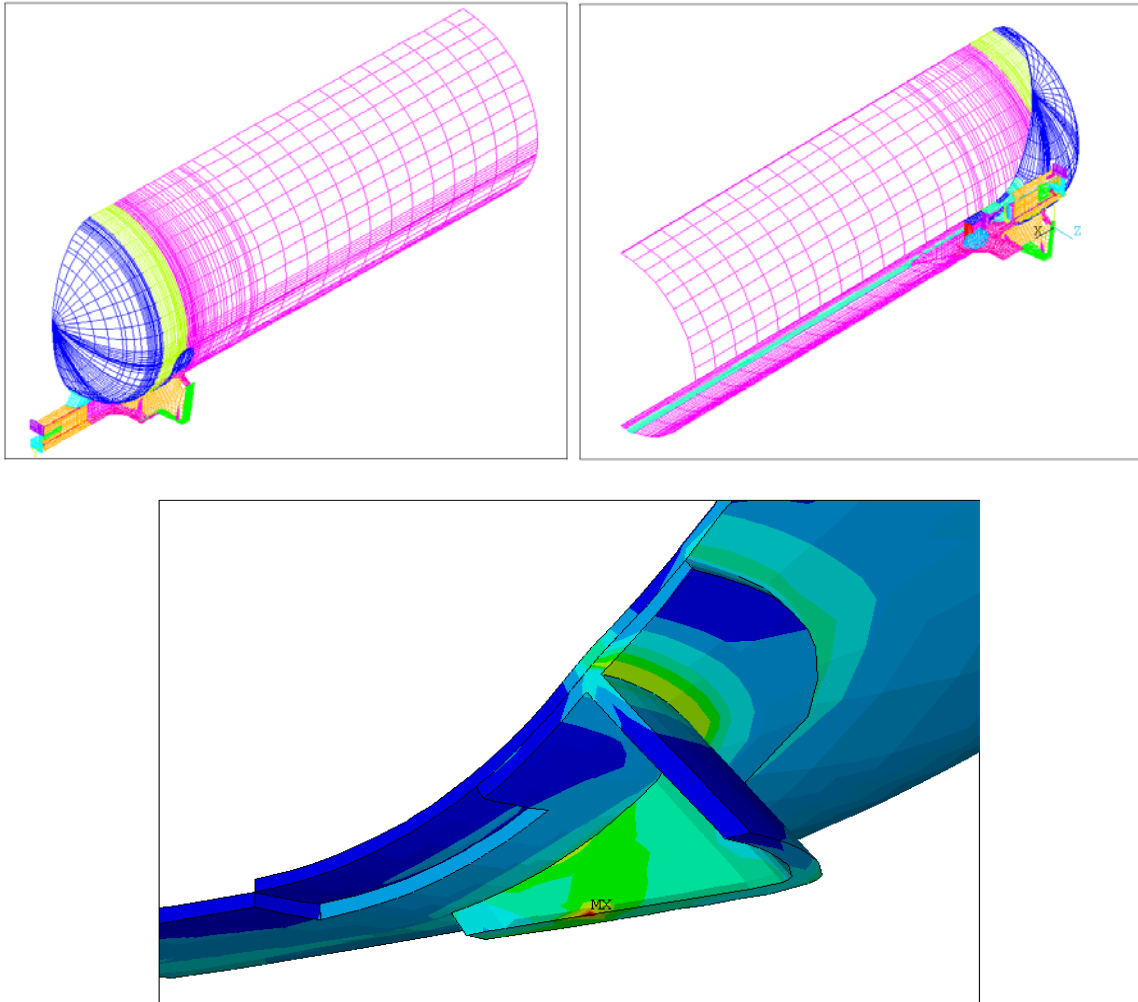


STRUCTURAL AND FATIGUE ANALYSIS OF A STUB SILL TANKCAR

PURPOSE: Evaluate the Structural Stresses and Fatigue Performance of a Rail Road Tank Car under AAR prescribed loads.

An FEA Simulation was performed for a Tank Car. Standard AAR (American Association of Railroads) Loads as prescribed in M-1001 Specifications were applied and critical stresses were checked for the attachments in the structure. Following the stress analysis, a fatigue life prediction of weld locations was performed using the Strain-Life Low Cycle Fatigue Analysis methods. AAR 100 Ton Tank Car spectrums were used with multiplication factors for 286 GRL Cars. Using the stress analysis as the basis, Fatigue Critical locations in the car attachments were identified for each load case. Nominal Stresses were obtained for each FCL. The stress distribution ahead of the weld toe locations were extrapolated to the Toe of the weld. Using Nueber Rule, Notch Root Strains were computed and a Strain-Life Fatigue Life was computed for the FCL.



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