

Public Page
Integrity Management for Wrinklebends and Buckles #132
Contract Number: DTRS56005-T-0003
1st Quarterly Report
December 8, 2004 – March 7, 2005
Battelle

The finite element numerical analysis of wrinklebends was performed during the first quarter. We first established simulation procedures for cold wrinklebend formation and application by internal pressure loading using finite element analysis. Special attention was given to the effects of the loading condition and input data of material tensile property on FEA numerical results. Our results indicate significant complexity develops during wrinklebend formation and during internal pressure loading. Based on the FEA results and material fatigue experimental data, we determined a defect free wrinklebend fatigue criteria for different fatigue loading ranges. Comparison shows that our proposed wrinklebend criterion can match reasonably with the field test data for 24" X42. Therefore, the proposed wrinklebend criterion without defects can be used for such wrinklebend integrity assessment.