

Public Page
Integrity Management for Wrinklebends and Buckles #132
Contract Number: DTRS56005-T-0003
Quarterly Report
April 1, 2007 – June 30, 2007
Battelle

In this period, the 80% SMYS pressure effect on the wrinklebend criteria was studied. Our investigation is focused on (a) developing a field-usable criterion for X52 pipeline steel with 24 inches diameter under the cyclic pressure of 80% - 10% SMYS, (b) extending the scope of wrinklebend criteria to cover diameters from 12 inches to 36 inches, (c) extending the scope of wrinklebend criteria to cover pipeline grades from Grade B to X60, (d) evaluating the wrinklebend criteria for the fixed upper pressure of 80% SMYS with varied lower pressure, (e) evaluating the wrinklebend criteria for the fixed lower pressure of 10% SMYS with varied upper pressure, (f) evaluating the global constraint effect on the wrinklebend criteria by investigating the free remote ends, the simply supported remote ends and the fixed remote ends, and (g) evaluating the hot-bending versus cold-bending process effect on the wrinklebend criteria. For all cases considered, our results indicated that in reference to the wrinklebend criteria obtained for the cyclic pressure of 72% - 10% SMYS, the fatigue damage increases and the service life decreases for a wrinkle under the cyclic pressure of 80% - 10% SMYS. As a result, a wrinklebend under the cyclic pressure of 80% - 10% SMYS has shorter service life than the cyclic pressure of 72% - 10% SMYS.