

Comparison of Measured Component Responses to Blast Loads with Single-Degree-of-Freedom Analyses

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ABSTRACT

Numerous comparisons of blast-loaded component response to SDOF analyses have been made in the past, but these comparisons have primarily been for given a test program on one type of structural component. In this paper, comparisons from over one hundred tests on a variety of structural component types are presented together so that overall trends can be identified. Only data that includes information on the blast loads, structural component properties, and maximum component deflections are used. These tests are modeled using equivalent SDOF systems to represent the blast-loaded components and the calculated maximum component deflections are compared to measured values. The SBEDS (SDOF Blast Effects Design Spreadsheets) software is used for the SDOF analyses. This study found that the calculated maximum deflection was 1.25 times greater than the measured maximum deflection, on the average.