

A MODIFIED PRESSURE-IMPULSE BLAST DAMAGE MODEL

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This report describes the validation of a new analytical technique which relates blast time histories to empirically determined structural damage levels. Its basis lies in two concepts:

- 1: Pressure-impulse iso-damage criteria
- 2: Youngdahls characterization of inelastic structural response in time integrals of loading

The technique applies to, and relates to, damage done by HE or nuclear blast damage done by FAE. It minimizes the problem of relating theoretical blast time histories to their empirical counterparts. Its application provides an in-depth physical explanation for the relation between cube root charge weight/radius scaling laws and the O.T. Johnson damage scaling law. Application of the proposed analysis model to digital simulations of structural response confirms that time history loading effects may be characterized in a two-parameter set.