

P16 Blast Injury Predictions in Complex Environments

Levine, J; Dionne, J-P; Makris A

Abstract:

The most common methodologies for quantifying overpressure injuries due to blast are Chest Overpressure Injury Curves by Bass et al directly inspired from Bowen et al., Stuhmiller et al. (INJURY 8.1) and Adjusted Severity of Injury Index (ASII) by Axelsson and Yelverton. The latter two injury models have been validated for complex environments with the use of a Blast Test Device (BTD), whereas the Bass Injury Curves are based on a free-field or Friedlander pressure profile. This paper seeks to combine and contrast the injury predictions from the Bass and ASII methodologies such that a *more conservative* injury estimate can be acquired. To accomplish this, the Bass Injury Curves were first transformed such that the peak pressure is now plotted with respect to the total maximum impulse of the pressure wave as opposed to the positive phase duration. This approach was chosen to better encompass the effects of complex blast on potential injury. Next, the injury indices were correlated to the scaled distance of the explosive configuration to provide a direct comparison between the injury predicting methodologies. Finally, by contrasting the results, the most conservative injury predictor (Bass or ASII), valid for both free-field and confined blast, was highlighted.

Notes: