SIMPLIFIED MODEL WHEN CALCULATING PRESSURE AND IMPULSE DENSITY FROM EXPLOSIONS

Rolf Dalenius

Swedish Fortifications Agency, SE-631 89 Eskilstuna, Sweden.

Key words: Kingery & Bulmash, Pressure, Impulse density, Explosion, Calculations

Kingery & Bulmash [1] formulas for calculating pressure, impulse density, duration etcetera from explosions are well known, widely used and accepted as state of the art when it comes to working with blast effects. One difficulty with these formulas – and most of the alternative methods – is that they all are rather complicated to use. If it is acceptable to use a smaller span of scaled distances with a relatively small error (up to 10 %) in the solution compared to the result using the Kingery & Bulmash equations, simpler methods can be formulated. Such methods have the advantage of easy to use and easy to remember. In this paper, simplified methods for calculating pressure and impulse density, both incident and reflected, from spherical and hemispherical dispersion will be discussed.

[1]   Kingery, C.N. & Bulmash, G., (1984). *Airblast Parameters from TNT Spherical Air Burst and Hemispherical Surface Burst, US Technical Report ARBRL-TR-02555*. Ballistics Research Laboratory, Aberdeen Proving Ground, Maryland, USA.