

VALIDATION OF THE AUTODYN CODE TO PREDICT THE DYNAMIC PRESSURE FIELD RESULTING FROM AN EXPLOSION IN A BUNKER

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ABSTRACT

The design of munitions storage magazines – "bunkers", is traditionally based upon standards, which in many cases, are not adequate for the specific design of the bunker. A better design of a bunker, with a unique structure, should be based on strength and survivability structural analysis, taking into account the peak pressure and impulse applied on the bunker as a result of an explosion in an adjacent bunker.

In order to characterize these dynamic pressure parameters of the blast, without experimental data, a reliable numerical calculation is needed. In this paper we have demonstrated the validity of a 3 – D hydrocode named Autodyn, to predict these dynamic pressure parameters. We have used this code to simulate pressures measured in a well defined experiment called ESKIMO 6, in which 20 tons of TNT exploded in a bunker. We have found good agreement between the measured and the calculated parameters of the dynamic pressure field around this bunker.