

IM Response of PAX-44 (I-TNT) in 155mm HE Rounds

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PAX-44 is a low-cost, insensitive, energetic material developed by ATK for use in legacy and emerging melt-cast systems. The IM testing conducted to date on large-scale test articles has demonstrated a significantly improved IM signature over legacy systems, which typically fail all standard 2105C tests. In order to demonstrate the systems level efficacy of using PAX-44 in legacy systems the US Government contracted ATK to conduct an expanded series of MIL-STD 2105C based IM tests on M795 artillery rounds. M795 rounds are a standard 155mm unitary HE munitions whose standard configuration has 23.8 pounds of melt-poured TNT. The test series will be conducted at a qualified commercial test range, NTS-Camden, in late 2005, early 2006. The planned testing will also serve as a benchmark for expanded Threat Hazards including 7.62 AP rounds and 81mm shaped charges as RPG surrogates. This paper includes all the applicable experimental results and the resulting determination of type of IM response for the conducted tests. The tests conducted as a part of this demonstration are: 6000 fps conical fragment impact test, 7.62 AP bullet impact test, 0.50 caliber AP bullet impact test, 81mm shaped charge jet impact test, fuel fire fast cook-off, enclosed oven slow cook-off and package level sympathetic detonation testing.