

Abstract Submitted  
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**Modelling IHE Main Charge Initiation Trains based on HMX and TATB based Booster Charges** RODNEY DRAKE, MATTHEW MAISEY, Atomic Weapons Establishment — There is always a requirement to reduce the size of initiation trains. However, as the size is reduced the performance characteristics may be compromised. To enable compact and robust initiation trains to be designed requires a detailed science-based understanding of the processes (for example, growth to detonation) which determine the performance characteristics. A numerical modelling study has been performed to understand the designs of initiation trains comprising flyer plate detonator, booster charge and an IHE main charge. The effect of the flyer plate diameter on the distance required to establish uniformly diverging detonation waves in HMX and TATB based booster charges has been studied. Numerical simulations have also examined the effect of the relative sizes of the booster and IHE main charge on the distance required for a stable detonation front to be established in the main charge for both HMX and TATB based booster charges. The implications of the numerical simulations are discussed in terms of the design of initiation trains for IHE main charge systems.

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