

Abstract Submitted
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The Effect of Failure Diameter on the Initiation of Explosives by Shaped Charge Jet. HUGH JAMES, CHRISTOPHER MELLOR, MICHAEL GOFF, AWE, Aldermaston, AWE COLLABORATION — Experiments on two explosives, where the shaped charge jet had a diameter that was much larger than the failure diameter for the HMX-based explosive, but much smaller than the failure diameter of the TATB-based explosive, show marked differences in the initiation behavior generated by the impact shock. In this “prompt” shock initiation regime the HMX-based explosive tended to run to detonation in a distance that was mainly comparable to its Pop Plot while the TATB took much longer despite the very high impact pressures. Theoretical investigations using the CREST reactive burn model showed that reaction started reasonably promptly across the diameter of the jet in both explosives, and the differences were due to the delay in corner turning out of this restricted diameter experienced by the detonation in the TATB.

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