

Abstract Submitted  
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**Preliminary Investigations of HE Performance Characterization Using SWIFT** MICHAEL MURPHY, CARL JOHNSON, Los Alamos National Laboratory — Initial pseudo-aquarium experimentation is underway to assess the utility of using the shock wave image framing technique (SWIFT) to characterize HE performance on detonator length and time scales. SWIFT is employed to directly visualize shock waves driven into polymethylmethacrylate (PMMA) samples through detonation interaction in pseudo-aquarium test geometries. Columns of XTX 8004, an extrudable RDX-based high explosive, are either cured directly within PMMA dynamic witness plates or within confinement tubes of different materials with varying shock impedances that are then embedded within PMMA. For current experiments, the SWIFT system records 16-frame image sequences using 175 ns inter-frame delays to directly visualize the evolution of lead shock-front geometries as they are driven radially into PMMA by the detonating XTX column. Standard aquarium-test analysis is employed to calculate shock pressure evolution within PMMA, and detonation wave velocities are accurately calculated from the time-resolved images as well. The SWIFT system and numerous pseudo-aquarium experimental results will be presented and discussed.

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