Abstract Submitted for the SHOCK07 Meeting of The American Physical Society

Using Schlieren Visualization to Track Detonator Performance STEVEN CLARKE, KEITH THOMAS, MICHAEL MARTINEZ, ADRIAN AK-INCI, Los Alamos National Lab, MICHAEL MURPHY, RONALD ADRIAN, Arizona State University — Several experiments that are part of a phased plan to understand the evolution of detonation in a detonator from initiation shock through run to detonation to full detonation to transition to booster and booster detonation will be presented. High Speed Laser Schlieren Movies have been used to study several explosive initiation events, such as exploding bridgewires (EBW), Exploding Foil Initiators (EFI) (or slappers), Direct Optical Initiation (DOI), and ElectroStatic Discharge (ESD). Additionally, a series of tests have been performed on "cut-back" detonators with varying initial pressing (IP) heights. We have also used this diagnostic to visualize a range of EBW, EFI, and DOI full-up detonators. Future applications to other explosive events such as boosters and IHE booster evaluation will be discussed. EPIC Hydrodynamic code has been used to analyze the shock fronts from the Schlieren images to reverse calculate likely boundary or initial conditions to determine the temporal-spatial pressure profile across the output face of the detonator. LA-UR-07-1229

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Date submitted: 23 Feb 2007 Electronic form version 1.4