Abstract Submitted for the SHOCK19 Meeting of The American Physical Society

Initiation Studies on Exploding Bridgewires and Spark Gaps NATHANIEL SANCHEZ, Los Alamos National Laboratory, WILL NEAL, Atomic Weapons Establishment , DOUG MCHUGH, BRIAN JENSEN , Los Alamos National Laboratory, LOS ALAMOS NATIONAL LABORATORY COLLABORATION, ATOMIC WEAPONS ESTABLISHMENT COLLABORATION — The exploding bridgewire detonator has been studied extensively since its invention in the 1940's, however details of the initiation mechanism are still not fully understood. This is further complicated with spark gap initiation devices. Recent advances in diagnostics coupled with synchrotron sources have allowed the in-situ investigation of bridgewires and interactions with porous media. This work utilizes Phase Contrast X-ray imaging (PCI) at the Advanced Photon Source (APS) to dynamically image bridgewire burst and the subsequent events leading towards initiation. This data coupled with the magnetohydrodynamic code Alegra, have led towards a better understanding of the complex initiation mechanism pathways that exist for various configurations.

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Date submitted: 01 Mar 2019 Electronic form version 1.4