

Abstract Submitted  
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**Testing the performance of a novel plane wave generator with a low explosive mass using a many channel PDV system.** JAMES RICHLEY, Atomic Weapons Establishment — The generation of an unsupported shockwave into a material can be used to investigate phenomena such as spall. An unsupported shock can be generated using novel flyer designs on gas guns or by using a high explosive to generate the shock. Ideally the source of the shockwave will result in an area where the material sees an approximately 1D shock. To produce such a shocked area in a target from a high explosive source a plane wave lens is typically used, however, these require precision machining of multiple explosives and typically contain more than 1 kg of HE. To reduce the explosive mass and remove the need for precision machining of high explosive a hybrid multi-detonator/explosive track system has been developed. To assess the simultaneity of the shock arrival and the pressure profile generated by the initiation train three experiments were conducted. Shock arrival times and the initial free surface velocities (after shock arrival) were recorded using up to 64 channels of PDV at the surface of a copper target placed at the output of the initiation train. The planarity of the shock generated by the initiation train in both time and pressure as a function of position are reported.

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