Abstract Submitted
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Shock initiation of the TATB based explosive PBX 9502 heated to $\sim$ 76°C RICHARD GUSTAVSEN, RUSSELL GEHR, Los Alamos National Laboratory, SCOTT BUCHOLTZ, Sandia National Laboratories, ADAM PACHECO, BRIAN BARTRAM, Los Alamos National Laboratory — Recently we reported on shock initiation of PBX 9502 (95 wt.% tri-amino-trinitro-benzene, 5 wt.% Kel-F800 binder) cooled to -55°C (J. Appl. Phys., 112, 74909 (2012)) and to 77K (J. Phys.: Conf. Ser. 500, 182014 (2014)) Shock waves were generated by gas-gun driven plate impacts and reactive flow in the cooled PBX 9502 was measured with embedded electromagnetic gauges. Here we use similar methods to warm the explosive to $\sim$ 76°C. The explosive sample is heated by warm air flowing through channels in an aluminum sample mounting plate and a copper tubing coil surrounding the sample. Temperature in the sample is monitored using six type-E thermocouples. Results show increased shock sensitivity; time and distance to detonation onset vs. initial shock pressure are shorter than when the sample is initially at ambient temperature. Our results are consistent with those reported by Dallman & Wackerle (10^{th} Int. Det. Symp., 130 (1993)). Particle velocity wave profiles were also obtained during the shock-to-detonation transition and will be presented.

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