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**Detonation Reaction Zone Measurements of PBX 9501 and PBX 9502** SAMUEL VINCENT, MARK SHORT, SCOTT JACKSON, Los Alamos National Laboratory — Explosives are often confined by inert materials. During detonation, the high pressures associated with the detonation reaction zone and expansion of products induce motion in the confiner. Classical programmed burn models for conventional high explosives (CHEs) performance do not aim to accurately capture the contribution to CHE drive from the short (100-200 micron) detonation reaction zone, as the drive is dominated by expansion of detonation products. However, the reaction zone lengths of insensitive (millimeter-scale) and non-ideal explosives (millimeter-to-centimeter-scale) are long enough that a significant contribution to the HE work on the confiner occurs within the reaction zone. Thus accurate prediction of the reaction zone flow structure and mechanical state is crucial to accurately model the motion of confiners driven by insensitive and non-ideal explosives. In this work, we have measured particle velocity profiles of detonation reaction zones in PBX 9501 and PBX 9502 slab geometries at the breakout surface using PDV imaging through LiF windows. We compare this data to model predictions in the slab geometry using the Wescott-Stewart-Davis reactive burn model and comment on the model performance.

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