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Studying multiply shocked states in HMX and TATB based explosives with a gas gun ring up geometry JAMES FERGUSON, SIMON FINNEGAN, JEREMY MILLETT, MICHAEL GOFF, AWE — A series of ring up shots investigating partially reacted and multiply shocked states in both HMX and TATB based explosives are reported on. Results of experiments using PCTFE and LiF in place of the explosives are also described. The experiments were performed using 50 mm diameter bore and 70 mm diameter bore single stage gas guns. By locating the target between a high impedance copper flyer and sapphire window, shocks of increasing magnitude are reflected into the target at each interface. The particle velocity at the target-window interface was measured using multiple points of HetV reflected from an 800 nm layer of gold sputtered onto the sapphire. The stress state at the target-flyer interface were observed using manganin gauges. A range of different input pressures were investigated, these were picked to either allow a comparison to double shock and particle velocity work, or to provide the maximum number of rings within the one dimensional time. For the inert shots input pressures matched the explosive shots.

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