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One dimensional shock ring up of a TATB based explosive. MALCOLM BURNS, Los Alamos National Laboratory — Complex shock initiation of explosives is a gas gun technique that has been used for many years to explore shock sensitivity under various loading regimes. This body of work studies the shock initiation of a TATB-based explosive using a gas gun driven multiple shock technique somewhat between a double shock and ramp loading. In these experiments a shock wave rings up in a low impedance disc sandwiched between a high impedance flyer and anvil. The explosive sample under study has been placed in contact with the anvil and therefore each ring up is transmitted through the anvil into the explosive. This has created a stepped multiple shock input into the explosive, which can be tailored by varying both the dimensions within the ring up stage, and the flyer velocity. Typically the explosive sample will experience four to five stepped pulses before shock convergence. Two distinct shock initiation regimes have been studied; in the first the reactive growth in the explosive commences after shock coalescence and in the second the reactive growth commences within the first shocked state. In both cases the run distance to detonation, and growth of reaction has been measured using embedded particle velocity gauges.

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