Abstract Submitted
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Shock Initiation and Detonation Properties of Bis-fluorodinitroethyl formal (FEFO) L.L. GIBSON, S.A. SHEFFIELD, D.M. DATTELBAUM, D.B. STAHL, R. ENGELKE, Los Alamos National Laboratory, SHOCK AND DETONATION PHYSICS TEAM — FEFO is a liquid explosive with a density of 1.6 g/cm^3 and an energy output somewhat higher than trinitrotoluene (TNT), making it one of the more energetic liquid explosives. Shock initiation experiments were conducted on a two-stage, gas gun using magnetic gauges to measure the wave profiles during a shock-to-detonation transition. Both unreacted Hugoniot data, as well as run-to-detonation measurements were obtained, along with the reactive wave profiles. FEFO was found to initiate by the homogeneous initiation model, as do all other liquid explosives we have studied. The new unreacted Hugoniot points agree with other published data and a universal liquid Hugoniot estimates the Hugoniot data quite well. It is quite insensitive, with about the same shock sensitivity as the triamino-trinitro-benzene-based explosives PBX9502 and LX-17. In addition to the shock initiation experiments, one experiment was done on the gun providing a reasonably accurate detonation velocity and a detonation wave profile. These are compared to the waveforms from the in-situ magnetic gauges, as well as to other data available in the literature.

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