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Cookoff of Non-Traditional Detonators JONATHAN ZUCKER, BRYCE TAPPAN, VIRGINIA MANNER, ALAN NOVAK, Los Alamos National Laboratory — Significant work has gone into understanding the cookoff behavior of a variety of explosives, primarily for safety and surety reasons. However, current times require similar knowledge on a new suite of explosives that are readily attainable or made, and are easily initiated without expensive firesets or controlled materials. Homemade explosives (HMEs) are simple to synthesize from readily available precursor materials. Two of these HMEs, triacetone triperoxide (TATP) and hexamethylene triperoxide diamine (HMTD) are not only simple to prepare, but have sufficient output and sensitivity to act as primary explosives in an initiation train. Previous work has shown that detonators may be an integral vulnerability in a cookoff scenario. This poster contains the results of cookoff experiments performed on detonators made with TATP and HMTD. We found that the less chemically stable TATP decomposed during heating, while the more chemically stable HMTD acted like a traditional primary explosive, namely reaction violence and time-to-ignition were independent of confinement.

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