

Abstract Submitted  
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**The Incidental Effects of Gaps in Detonating PBX 9501<sup>1</sup>** TERRY SALYER, LARRY HILL, Los Alamos National Laboratory — The incidental effects of gaps in detonating explosives have been observed for many years, yet the root cause of peripheral damage due to these features has been a partial mystery. To evaluate such damage for PBX 9501, a test series has been performed that examines single and multiply-directed detonations both crossing and moving along gaps of varying widths, lengths, and angles relative to the detonation wave fronts. Damage is evaluated with steel witness plates and quantified through trench profiling, volume, and mass decrement measurements. In addition, streak camera traces are used to track detonation wave speeds along explosive material surfaces and across gaps. Such traces allow the quantification of timing delays due to gap reinitiation processes for both confined and unconfined explosives. For some reinitiation tests, a second detonation wave is directed to interfere at varying times with the post-gap run-up process of the first wave, thus allowing complex wave-wave interactions to be investigated in detail. With these cumulative observations, further insight into the mechanism of extrinsic damage due to gaps is gained.

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