

Abstract Submitted  
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**Relationship between Exploding Bridgewire & Spark Initiation of Low Density PETN** ELIZABETH LEE, ROD DRAKE, Atomic Weapons Establishment — Recent work has shown that the energy delivered after bridgewire burst affects the function time of an EBW detonator. The spark which is formed post bridgewire burst is the means by which the remaining fireset energy is delivered into the detonator. Therefore, by studying the characteristics of spark-gap detonators insight into the contribution of spark initiation to the functioning of EBW detonators may be achieved. Spark initiation of low density explosives consists of; (i) spark formation, (ii) spark interaction with the bed, and (iii) ignition and growth of reaction. Experiments were performed in which beds of an inert simulant were used to study the formation and propagation of sparks. The effect of the spark on inert porous beds was studied over a limited delivered energy range. The disruption of the bed was found to be dependent on the particle size / pore structure of the bed. The effect of spark initiation on a low density PETN bed was then examined, the relationship between delivered energy and function time was found to be the same as for EBW detonators. This necessitated the development of electrical diagnostic techniques to measure the energy delivered to the spark.

Elizabeth Lee  
Atomic Weapons Establishment

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