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Dual Fragment Impact of PBX Charges PETER HASKINS, RICHARD BRIGGS, DAVID LEEMING, Ordnance Test Solutions Ltd, NATHAN WHITE, PHILIP CHEESE, DE&S MoD UK, DE&S MOD UK TEAM, ORDNANCE TEST SOLUTIONS LTD TEAM — Fragment impact can pose a significant hazard to many systems containing explosives or propellants. Testing for this threat is most commonly carried out using a single fragment. However, it can be argued that an initial fragment strike (or strikes) could sensitise the energetic material to subsequent impacts, which may then lead to a more violent reaction than would have been predicted based upon single fragment studies. To explore this potential hazard we have developed the capability to launch 2 fragments from the same gun at a range of velocities, and achieve impacts on an acceptor charge with good control over the spatial and temporal separation of the strikes. In this paper we will describe in detail the experimental techniques we have used, both to achieve the dual fragment launch and observe the acceptor charge response. In addition, we will describe the results obtained against PBX filled explosive targets; discuss the mechanisms controlling the target response and their significance for vulnerability assessment. Results of these tests have clearly indicated the potential for detonation upon the second strike, at velocities well below those needed for shock initiation by a single fragment.

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