

Fragmentation Risks and Safety Hazards from VBIEDs and Large Calibre Munitions

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ABSTRACT

This presentation describes preliminary results from an explosive field trial of the detonation of Vehicle Borne Improvised Explosive Devices (VBIEDs). The purpose of the trials is replicate tests with identical car type and explosive mass to help probabilistically characterise the uncertainty and variability of blast pressures and fragment generation, trajectories, and density. These variabilities may be considerable, and it is important to recognise that the world is not deterministic. This presentation will also describe a simulation-based approach to assess individual casualty risks and safety distances from primary fragments generated by detonation of 155 mm high-explosive munitions in field storage. The method is demonstrated by a realistic case study estimating the fatality and injury risks for an individual in a standing position exposed to the detonation of a single 155 mm projectile. The analysis then considers casualty risks from stacked munitions, as well as the risk mitigating effect of protective structures. These probabilistic approaches will provide decision support for the determination of safety distance and risk reduction measures to prevent fatality and injury from blast pressure and fragmentation hazards.