

MODEL SCALE EXPERIMENTS FOR THE DEVELOPMENT OF AN EXTENSION TO THE AWRE FOULNESS NUCLEAR BLAST SIMULATOR

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The requirement for an extension to the existing Nuclear Blast Simulator was required to provide a facility in which Military Vehicles in a side-ways orientation, and larger targets, could be subjected to blast effects.

A series of model scale tests was conducted to study the feasibility of such an extension and the methods in which the pressure/time characteristics of the blast wave could be improved and tailored to given requirements.

A 1/120 scale model of the simulator and extension was constructed in a compressed air driven shocktube. Similar pressure/time records to the full scale were achieved in the model 16 ft. section and the subsequent pressure distribution and wave shapes were studied in the model extension. Variations in current blast tunnel design were suggested, although the limitations in the size of the model proved difficult to study these ideas. The study was therefor continued with a 1/12 scale model using an explosively driven scaled tube representing the 16 ft. diameter test section and extension. The typical pressure/time characteristics were obtained in the model 16 ft. section and were studied in the model extension, these were improved by the use of aqueous foam to attenuate and smooth the blast wave and the development of variable blockage grids to tune and eliminate reflection pressures at the transition sections and at the end of the tunnel. Representation pressure, time curves and increased duration were obtained.

This information was used to design an extension to the existing facility and it is this work and the final design which will be the subject of this paper.