# THE SIMULATION OF WEAPON BLAST USING A BURNING PROPELLANT SOURCE

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In order to predict the noise characteristics of a new weapon design, it is essential to understand the factors which influence the development of blast waves from such weapons.

In the past it has proved difficult to replicate some of the propellant gas properties, for instance temperature, in a simulator. A new facility has been developed at RMCS which uses a small, commercially available, solid propellant rocket motor to generate burning propellant driven blast waves. The motor has been adapted to hold a diaphragm and to drive any one of a number of interchangeable nozzles. By changing diaphragm thickness the strength of the generated blast wave was varied.

A photographic study of the developing blast wave has been made using an Image Converter camera framing at up to a million frames per second to record early blast growth and double and multiple spark shadowgraph techniques to determine velocities, displacements and blast wave strengths over a longer time interval. The blast overpressures around the motor have been measured using miniature blast gauges.
These results have been compared with similar results obtained when the identical nozzles were used on the RMCS compressed gas blast simulator.