

Abstract Submitted
for the SHOCK07 Meeting of
The American Physical Society

Experimental and Theoretical Assessment of a Device Used for Evaluation of Blast and Fragmentation Effects ANATOLY RESNYANSKY, SAMUEL WECKERT, Weapons Systems Division, Defence Science and Technology Organisation — An alternative to traditional momentum pendulum and pressure gages is sought to resolve an improved temporal response to blast and fragmentation and protect the evaluation device from damage when positioned closely to the source of blast. Evaluation concepts based on the use of strain gages have been used for some time in the scientific community. However, those devices either produce extensive parasitic oscillations or are restricted for use in close proximity to the source of the blast and during a short time only. An alternative design is suggested and analysed that can extend the analysis time to several milliseconds and can be used both in close proximity and at relatively large stand-off distances from the source of the blast. The device employs conventional strain gauges that are heavily protected from the blast and fragmentation. Numerical analysis demonstrates ways to minimise the system oscillations and these ways were partly implemented in the present system. A gas gun fitted with a diverging nozzle has been used to validate a version of the system, which was tested in the range of pressures representative of those occurring several meters from a moderate size explosive charge. The test results and simulation demonstrate the potential for using this type of devices in the field trial settings that involve the blast and fragmentation effects.

Anatoly Resnyansky
Weapons Systems Division, Defence Science and Technology Organisation

Date submitted: 22 Feb 2007

Electronic form version 1.4