

NUMERICAL SIMULATION OF CONFINED BLAST

Jan Arild Teland¹, Knut Ove Hauge², Svein Olav Christensen², Steinar Børve¹

¹*Norwegian Defence Research Establishment (FFI), Postboks 25, 2027 Kjeller, Norway;* ²*Norwegian Defence Estates Agency, Postboks 405 Sentrum, 0103 Oslo, Norway;*

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Numerical simulations have generally been successful in predicting the behaviour of blast waves from detonations. However, in some cases, especially involving reflections and confined blast, some inconsistencies with experiments have been observed, in particular regarding the arrival times of reflected waves. Also, for detonations of very large explosive charges, there has been a tendency for the numerical codes to overestimate the amplitude of the ensuing shock wave, sometimes considerably so. In this work, experiments with detonation of small charges inside a scaled-down ammunition storage were performed. The blast wave was measured using pressure sensors distributed at various locations in the chamber, as well as in an exit tunnel leading out of the chamber. To investigate how to best model such situations, numerical simulations of these experiments were then performed using a variety of numerical codes (AUTODYN, REGULUS and CHINOOK), different computational techniques (Euler and SPH) and various equations of state for the air and detonation products.