

# UNCERTAINTY ANALYSIS IN BURIED LANDMINE BLAST CHARACTERIZATION

M. Ceh, T. Josey, W. Roberts

*Defence Research and Development Canada, Suffield Research Centre, PO Box 4000, Stn Main, Medicine Hat, Alberta, T1A 8K6, Canada*

## ABSTRACT

Detailed procedures for evaluating the protection levels for occupant survivability exist in Volume 2 of the Allied Engineering Publication 55 Procedures for Evaluating the Protection Level of Armoured Vehicles (AEP-55). Results in the past have shown an unexpectedly high variation in total impulse across similar test conditions. The variation in these results leaves questions about the type of explosive, experimental methods, and soil preparation procedures used in testing. Work was undertaken at the Suffield Research Centre of Defence Research and Development Canada to characterize this variation and to explore the test protocol so as to reduce this variability and improve understanding of the mechanisms affecting the repeatability of the impulse from a Level 2 blast test specified in AEP-55 Volume 2. In addition to field tests, a computer model was developed to provide a means to determine the most influential parameters that contribute to the variability seen in field tests. The developed computer model was used to determine the magnitude of the uncertainty associated with impulse from buried landmine blasts. These goals were achieved by combining a predictive model (Westine) and an uncertainty analysis framework (Monte Carlo Simulation).