

COMMISSIONING OF THE AUSTRALIAN NATIONAL FACILITY FOR PHYSICAL BLAST SIMULATION

A. Remennikov¹, S. Parks², D.V. Ritzel³, S. Cimpoeu⁴, B. Uy¹

¹*School of Civil, Mining, and Environmental Engineering, University of Wollongong, Wollongong, NSW 2522, Australia;* ²*ORA Inc, PO Box 759, Marion, NC 28752, USA;*

³*Dyn-FX Consulting Ltd, 19 Laird Ave North, Amherstburg, ON N9V 2T5, Canada;*

⁴*Defence Science & Technology Group, 506 Lorimer St, Fishermans Bend, Melbourne, VIC 3207, Australia*

Key words : blast, simulator, facility, Australia, experiment

The National Facility for Physical Blast Simulation (NFPBS) is a large-scale blast simulator recently established at the University of Wollongong which led a consortium of 8 Australian universities and DST Group on the project. The design is a special variant of Advanced Blast Simulator¹ with 1.5 x 2m Test Section and features a dual-mode Driver capable of operations using oxy-acetylene gaseous detonation or compressed-gas with diaphragm. The Diaphragm Station is unique for facilities of this size and does not require use of problematic metal diaphragms. The facility has a large Reaction Housing for mounting of full-reflection wall targets as well as for studies of behind-wall and blast-ingress effects. As with other ABS designs, the NFPBS also includes an End-Wave Eliminator to preclude reflected waves affecting studies of diffraction targets and specially activated louvered venting near the Driver to preclude re-reflection of waves from wall targets. The paper describes the key features of the design, preliminary experimental results for waveforms, and computational modelling of the blast simulation performance.

Corresponding Author: D. V. Ritzel, dritz@dyn-fx.com, 61-431-747-895