EXPERIMENTAL AND THEORETICAL PERFORMANCE OF LARGE BLAST SIMULATOR MODELS

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An axisymmetric model to approximately 1737 scale of the Centre d'Etude de Gramat, France (CEG), large blast simulator LBS) facility is used to obtain shock pressures over an extended range 3.1 to 31 psi (21.4 214 kPa). These and other measurements supply useful data with which to assess the ability of codes to predict the performance of shock tubes or complicated geometry and to assess their usefulness for LBS design. The BRL quasi-1D code is used to generate pressure time histories for comparison, given tube geometry and run conditions. Also an examination, theoretically and/or experimentally, of several issues associated with tube operation is presented, e.g. smoothing a dynamic pressure with driver heating, temperature effects in driver during pressurizing, use of detonators to rupture diaphragm, and nozzle throat blockage by (thick) diaphragms. Finally, preliminary results in a multi-driver scale replica of the CEG facility are also presented. The model allows obtaining, economically, higher shock pressures than currently exist, and will supplement the data base for LBS design.