

ASSESSMENT OF NON-IDEAL AIR BLAST SIMULATORS

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The DNA currently uses shock tubes, high explosive field tests, and computer simulations to investigate the non ideal air blast phenomenon. Each simulator has advantages and disadvantages over the other simulation techniques. The purpose of this paper will be to establish a qualitative assessment of the non ideal air blast simulators used by the DNA. Shock tubes ranging in size from 6 feet to 20 feet in diameter, field tests using between 1000 and 5400 lb of HE, and computer simulations which solve the Euler equations through the complete Navier-Stokes equations will all be assessed. The paper will evaluate the fidelity of the different simulators by comparing overall pressure wave forms, phasing of dynamic and static pressures, peak pressures, and total impulses. Operational testing issues such as repeatability, cost, and frequency of tests will be considered.