# PRELIMINARY DESIGN OF THE 2.0 M DIAMETER FOE-DRIVEN BLAST SIMULATOR

HAVERDINGS,W.

Based upon experience with the 1.5 m diameter blast simulator a modification program was set up which should improve its present performance characteristics.
This program finally turned into the design of the new 2.0 m diameter simulator. Instead of the former gun driven facility this one will be driven by an Fuel-Oxygen-Explosive, originally contained in a detonation wave tube at the apex of the simulator. As a drivers explosive a mixture of an acetylene oxygen was chosen because of its wide detonability limits and low ignition energy required to initiate a direct detonation.

The detonation wave in the gaseous mixture ruptures the membrane and generates the blast wave due to its expansion. The blast wave propagates through conical and cylindrical expansion sections and finally arrives at the final 2.0 m diameter test section. In order to estimate the performance of this simulator the method of Brinkley-Kirkwood was employed for a one-dimensional unsteady flow problem with area change. The results were compared with a recently developed numerical code based on the Flux-Corrected-Transport algorithm of Boris and Book and seemed to be in reasonable agreement.
From these data the recoil forces during operation were calculated and simplified response studies were performed to get fundamental engineering data.

At the end of the open tunnel a movable reflector plate is envisaged to act as a reflection eliminator.
By using other flammable Fuel-Air-Explosives such as methane and air or propane and air possibly also non-ideal explosions (deflagrations) could be simulated, generating fundamental data for industrial purposes.

The new 2.0 m simulator is currently under construction and evaluation trials are scheduled to start by the end of 1980 and will continue through 1981.