Abstract Submitted
for the DFD08 Meeting of
The American Physical Society

Interaction between gas cylinder seeded with droplets and an oblique shock[1] EVAN JOHNSON, MARIO CHAVEZ, C. RANDALL TRUMAN, PETER VOROBIEFF, The University of New Mexico — The problem of a planar shock interaction with gas curtains (cylinders) whose plane (axis) of symmetry is parallel to the plane of the shock has been well studied both experimentally and numerically, and in this case, the flow evolution driven by Richtmyer-Meshkov instability is well characterized. However, for a similar *oblique* interaction, with the plane of the shock and the plane (axis) of the density interface being non-parallel, presently only numerical results exist. This problem, however, would be quite interesting to study experimentally both because of a variety of relevant applications and because oblique shock interaction adds large-scale three-dimensionality to the initial conditions. Here we report on the progress of our work on the development of a tiltable Mach 3 shock tube designed specifically to produce such oblique shock interactions and equipped with diagnostics suitable for studies of three-phase flow (light gas, heavy gas, and particles/droplets). The presence of the droplets (or particles) introduces several additional interesting issues here, including the possible effect of shock focusing on the non-gaseous phase carried by the flow.

[1]This work is supported by the US Defense Threat Reduction Agency (DTRA).

Peter Vorobieff
The University of New Mexico

Date submitted: 02 Aug 2008 Electronic form version 1.4