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Oblique shock acceleration of cylindrical gaseous interfaces and interaction with boundary layers[1] EVAN JOHNSON, MARIO CHAVEZ, PETER VOROBIEFF, C. RANDALL TRUMAN, The University of New Mexico — We present experimental results obtained by shock acceleration of a gravity- and co-flow-stabilized cylindrical heavy gas (SF_6) jet embedded in lighter gas (air). The angle between the plane of the shock and the axis of the cylinder was varied between zero (planar interaction) and fifteen degrees (oblique interaction). The Mach number M varied from 1.2 to 2.4, with most of the data acquired at $M = 2$. We simultaneously acquired two views of the resulting flow – top and side, using diffuse white light to visualize Mie scattering in submicron-sized droplets carried by the cylindrical jet. Our observations show that in the case of the planar shock-jet interaction, the boundary layers on the walls of the shock tube where the experiment was conducted do not appear to play a dramatic role. In the case of the oblique interaction, however, vorticity deposition produced by the shock interaction with the density gradients apparently leads to the jet material visibly interacting with one of the wall boundary layers.

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