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Penetrator Nose Drag Measurements in Supersonic Flows[1] JOSEPH HOLLAND[2], PHILLIP SCHINETSKY, YESENIA TANNER, SEMIH OLCMEN[3], STANLEY JONES[4], University of Alabama — In the current study, a rigid body penetrator nose shape that is optimized for minimum penetration drag (Jones et al., 1998) has been tested to determine the aerodynamic drag of such a penetrator in comparison to three additional nose shapes. Other nose shapes tested were an ogive cylinder, a 3/4 power series nose, and a standard cone. Fineness ratio for the studied nose geometries was chosen as l/d = 1 to maximize variation of the aerodynamic drag forces acting on the nose shapes. The experiments were carried out in the University of Alabama's 6" x 6" supersonic wind tunnel, using a 4 component force balance system. Each of the nose shapes were tested at nine different Mach numbers ranging from 1.99 to 3.65. Results show that the nose shape optimized for penetration has the lowest drag coefficient of all the shapes at each Mach number within an uncertainty of 5.75 %.

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