Abstract Submitted
for the SHOCK17 Meeting of
The American Physical Society

Development of an Explosively-Driven 10-Degree Conical Shock Tube JOEL STEWART, U.S. Army Research Laboratory — Shock tubes have been used for more than a century to provide a controlled, repeatable environment to investigate shock waves traveling through various media and the interaction of these shock waves with other structures. The work presented in this paper will focus on the development of an explosively-driven conical shock tube for propagating air blast. The current work seeks to build upon previous shock tube work done by the author through increasing the efficiency of the shock tube (i.e., obtaining greater pressures/impulses at the test section while using smaller explosive charges inside the shock tube). This increased efficiency is obtained both by decreasing the cone angle and by modifying the driver section of the shock tube, which is the portion of the tube that confines the explosive charge and transitions to the air-blast-confining portion of the tube. The influence of these modifications on the air blast downstream of the shock tubes driver section will be investigated. A comparison will be made between the computational predictions of the air blast resulting from a detonating explosive charge inside the shock tube and experimental data, and discrepancies between the computational and experimental results will be discussed.

Gerrit Sutherland
U.S. Army Research Laboratory

Date submitted: 18 Jan 2017 Electronic form version 1.4