Abstract Submitted
for the SHOCK17 Meeting of
The American Physical Society

Double Shock Experiments Performed at -55C on LX-17 with Reactive Flow Modeling to Understand the Reacted Equation of State[1]
MARTIN R. DEHAVEN, KEVIN S. VANDERSALL, SHAWN L. STRICKLAND, LAURENCE E. FRIED, CRAIG M. TARVER, Lawrence Livermore National Laboratory — Experiments were performed at -55C to measure the reacted state of LX-17 (92.5% TATB and 7.5% Kel-F by weight) using a double shock technique using two flyer materials (with known properties) mounted on a projectile that send an initial shock through the material close to the Chapman-Jouguet (CJ) state followed by a second shock at a higher magnitude into the detonated material. Information on the reacted state is obtained by measuring the relative timing and magnitude of the first and second shock waves. The LX-17 detonation reaction zone profiles plus the arrival times and amplitudes of reflected shocks in LX-17 detonation reaction products were measured using Photonic Doppler Velocimetry (PDV) probes and an aluminum foil coated LiF window. A discussion of this work will include a comparison to prior work at ambient temperature, the experimental parameters, velocimetry profiles, data interpretation, reactive CHEETAH and Ignition and Growth modeling, as well as detail on possible future experiments.

[1]This work performed under the auspices of the U.S. Department of Energy by Lawrence Livermore National Laboratory under Contract DE-AC52-07NA27344.

Kevin Vandersall
Lawrence Livermore Natl Lab

Date submitted: 27 Feb 2017 Electronic form version 1.4