

Abstract Submitted
for the SHOCK19 Meeting of
The American Physical Society

Small scale tests to determine divergence and spreading of explosive booster materials ELIZABETH FRANCOIS, PATRICK BOWDEN, BRYCE TAPPAN, LAURA SMILOWITZ, CHRISTINA SCOVEL, MICHAEL BOWDEN, Los Alamos National Laboratory — Initiation and propagation of various PBXs was investigated using two modified versions of the historic Floret test. Modification one involves replacement of the traditional dent block with a PMMA window capable of 1) transmitting axial shock parameters (pressure, particle velocity) via PDV and 2) orthogonal high speed backlit videography to evaluate wave shape and corner turning criteria. This test is focused on booster materials (PBX 9701, PBXN-7 and PBXN-5) that are challenged by the inherent features of the main charge which may be insensitive, slow to run to detonation, have asymmetric wave propagation, and be hampered by cold temperature. Modification two probes the notion that HE are inherently more sensitive when heated. By changing the geometry to allow a stand-off configuration between flyer and acceptor, minimum spot size criteria can be evaluated. Since spot size is correlated to critical diameter, increased temperature shows reduced spot size/critical diameter. This test focused on a variety of materials, but primarily is focused on IHEs such as PBX 9502 which have large ambient temperature critical diameters (~ 8 mm).

Elizabeth Francois
Los Alamos National Laboratory

Date submitted: 25 Feb 2019

Electronic form version 1.4