

Abstract Submitted  
for the SHOCK19 Meeting of  
The American Physical Society

**Shock initiation of Cyclotol (75/25) at both ambient temperature and 70 °C** MALCOLM BURNS, JUSTIN JONES, ANDREW HOULTON, BRIAN BARTRAM, Los Alamos National Laboratory — Six shock initiation experiments have been carried out to study the shock sensitivity and develop the unreacted Hugoniot for the Cyclotol composition 75%wt RDX, 25%wt TNT. The experiments were carried out both at ambient temperature, and elevated to 70 C, close to the TNT melt temperature of 80 C. Two sets experiments were fired at pressures of 4.1, 6.4 and 7.7 GPa. The experiments were performed using the single and two-stage gas guns at the Los Alamos National Laboratory. Embedded gauges were used to capture eleven Lagrangian positions producing particle velocity profiles and a measurement of the run-to-detonation coordinates. Comparison has been made to the previously studied (80%wt RDX, 20%wt TNT) composition and analysis shows that the decrease in RDX content has resulted in a significant increase in shock sensitivity. This could be due to the 0.7 % reduction in pressing density of the explosive studied in this work, resulting in an increase of void fraction from 1.7% to 2.0%. The increase in initial temperature, from ambient, has yielded a small increase in shock sensitivity, however this is small in comparison to the change in sensitivity due to the composition change. Wave profiles will be presented, along with a discussion of the unreacted Hugoniot and relative sensitivities presented in the Pop plot.

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Date submitted: 26 Feb 2019

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