

Abstract Submitted
for the SHOCK05 Meeting of
The American Physical Society

The Effect of Precursor Shocks on Growth to Detonation of HMX based Explosives SUSAN SORBER, RON WINTER, Hydrodynamics, AWE, HYDRODYNAMICS DEPARTMENT, AWE, ALDERMASTON, READING, UK, RG7 4PR TEAM — The response of the HMX-based explosive EDC37 to shock loading has been studied using electromagnetic particle-velocity gauges. One of the aims of the work was to determine the effect of a relatively weak pre-shock on the growth to detonation of a following, stronger, shock. Ideally this requires a comparison between the response of the sample when shocked by a simple sustained shock with that generated by a shock of the same amplitude, but preceded by a weaker pre-shock. Although our limited results do not allow a direct comparison, a normalisation technique has been developed which allows us to interpolate the growth-of-reaction curves for any chosen input shock. Comparison then allows the effective origin of the main shock in the pre-shock experiments, that is the plane at which the reaction starts to grow, to be located. It is found that this growth origin is located slightly before the plane at which the main, and the slower-moving pre-cursor shocks, coalesce. The distance between the effective growth origin of the main shock and the coalescence point depends on the stress of the pre-cursor shock.

Susan Sorber
Hydrodynamics, AWE

Date submitted: 09 Feb 2005

Electronic form version 1.4