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Temperature Dependent Equations of State for HMX-based Composites MELVIN BAER, S. ROOT, Sandia National Laboratories, R. GUSTAVSEN, T. PIERCE, Los Alamos National Laboratory, S. DEFISHER, B. TRAVERS, U.S. Army ARDEC, SANDIA NATIONAL LABORATORIES COLLABORATION, LOS ALAMOS NATIONAL LABORATORY COLLABORATION, U.S. ARMY ARDEC COLLABORATION — In order to examine the temperature dependence of the equation of state (EOS) of two HMX-based explosives, PBX9501 and PBXN9, samples were subjected to shockless compression using the Sandia VELOCE magnetic compression system. Prior to compression, the energetic composites were heated to temperatures up to $155^{\circ}C$, just below the HMX $\beta - \delta$ phase transition at atmospheric pressure conditions. The phase transition is explored at higher stress conditions when subjected to near isentropic loading. A Velocity Interferometer System for Any Reflector (VISAR) was used to measure particle velocity of the transmitted compression wave. The velocity profile data was analyzed using forward/backward integration methods along with an optimization method to determine unreacted EOS parameters. Sandia National Laboratories is a multiprogram laboratory managed and operated by Sandia Corporation, a wholly owned subsidiary of Lockheed Martin Company, for the U. S. Department of Energy's National Nuclear Security Administration under contract DE-AC04-94AL85000.

Melvin Baer
Sandia National Laboratories

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