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Shock Response and Explosive Launch of Compacted Reactive Material¹ JOHN D. MOLITORIS, ALEXANDER E. GASH, RAUL G. GARZA, FRANCO J. GAGLIARDI, JOSEPH W. TRINGE, JAN D. BATTEUX, P. CLARK SOUERS, Energetic Materials Center, Lawrence Livermore National Laboratory, HEAF TEAM — We have performed a series of experiments investigating the detailed dynamic response of compacted reactive material to shock and blast. Here a granular reactive formulation (Fe_2O_3 /Al based thermite) was pressed into a solid cylinder of material and mated to a high-explosive charge of the same diameter. Detonation of the charge transmitted a shock wave to the thermite cylinder and imparted momentum launching it in the direction of the detonation. High-resolution time sequence radiography was used to image the dynamic response of the thermite. This technique allowed a detailed investigation of material deformation in addition to changes in the internal structure and indications of reactivity. The effect of variations in the initial density of the pressed thermite was also examined. We find that these pressed thermites behave much like solid metals during shock transit, then respond much differently.

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