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Mix and Instability Growth from Oblique Shock[1] JOHN D. MOLITORIS, JAN D. BATTEUX, RAUL G. GARZA, JOSEPH W. TRINGE, P. CLARK SOUERS, Lawrence Livermore National Laboratory, ENERGETIC MATERIALS CENTER TEAM — We have studied the formation and evolution of shock-induced turbulent mix resulting from pre-emplaced interface features in a cylindrical geometry. In this research a solid cylindrical core of high-explosive was detonated to create an oblique shock wave that is driven through a cylindrical interface. Pre-emplaced surface features in plastic and aluminum were studied. Time sequence radiographic imaging was utilized to observe the resulting instability formation from the growth phase to onset of mix and turbulence. Different types of pre-emplaced structures at the interface resulted in a range of mix and instability conditions, with some much more effective at creating a well-mixed region. The plastic used here was porous polyethylene. Interfaces studied were between the high-explosive/aluminum, aluminum/plastic, and finally plastic/air. Radiographic image data will be compared with numerical simulations of the experiments. Partial support for this research was obtained from the Advanced Energetics Program, Defense Threat Reduction Agency.

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