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**Effect of Aluminium Confinement on ANFO Detonation** MARK SHORT, SCOTT JACKSON, CHARLES KIYANDA, MIKE SHINAS, STEVE HARE, MATT BRIGGS, Los Alamos National Lab — Detonations in confined non-ideal high explosives often have velocities below the confiner sound speed. The effect on detonation propagation of the resulting subsonic flow in the confiner (such as confiner stress waves traveling ahead of the main detonation front or upstream wall deflection into the HE) has yet to be fully understood. Previous work by Sharpe and Bdzil (J. Eng. Math, 2006) has shown that for subsonic confiner flow, there is no limiting thickness for which the detonation dynamics are uninfluenced by further increases in wall thickness. The critical parameters influencing detonation behavior are the wall thickness relative to the HE reaction zone size, and the difference in the detonation velocity and confiner sound speed. Additional possible outcomes of subsonic flow are that for increasing thickness, the confiner is increasingly deflected into the HE upstream of the detonation, and that for sufficiently thick confiners, the detonation speed could be driven up to the sound speed in the confiner. We report here on a further series of experiments in which a mixture of ammonium nitrate and fuel oil (ANFO) is detonated in aluminum confiners with varying HE charge diameter and confiner thickness, and compare the results with the outcomes suggested by Sharpe and Bdzil.

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