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**Characterization of Fracture, Dispersion and Energy Dissipation due to High Velocity Fragment Impacts on Warhead Cases and Armor Materials** DANIEL PUDLAK, KEVIN MIERS, CCDC-AC — Many munitions react violently when subject to Fragment Impact (FI) threats. Previous efforts have identified materials that mitigate / partially mitigate munition FI response at 6000fps, but have had shortfalls at 8300fps. While existing materials are known to improve / mitigate FI response at 8300fps, the materials / configurations are costly, both logistically and financially. One facet of successful mitigation that has proven to result in less violent reactions is the break-up and dispersion of the steel fragment, resulting in reduced velocity, spreading the imparted kinetic energy into the explosive, thereby reducing the power density. It is conceived that high density and layered protection materials provide the ballistic properties needed to fracture and disperse the fragment projectile. There is a shortfall in empirical data demonstrating this fragment break up as a result of different protection schemes. This paper will discuss the methodology for the parametric study and the data analysis and results of the break-up and dispersion of an 8300fps standard NATO mild steel fragment (IAW STANAG 4496), after impacting baseline and armor targets at specified thickness, based on experimental testing and comparative modeling.

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