Modified Reaction Detection Methods on the Drop Weight Impact Machine DANIEL PRESTON, GEOFFREY BROWN, JOSEPH KOBY, LANL — High explosives small-scale sensitivity testing has been a hallmark of safety screening since WWII. Sensitivity testing was once as crude as using the end of a broom stick to scrape explosives on the floor, looking, listening, and smelling for signs of reaction. Since then, a wide variety of testing apparatus have been developed to explore the effects of different stimuli on explosives. In concert with the development of the machines themselves the reaction detection methods have also evolved. Some modern detection devices include sound level meters, high speed cameras, and light detection sensors to name a few. For this paper, the viability of new and modified reaction detection methods employed on the LANL Explosives Research Laboratory (ERL) Type 12 Drop Weight Impact Machine is explored. A large bandwidth microphone and a series of strain gauges were installed on the machine and, with an oscilloscope, were able to capture the acoustic and mechanical wave forms during an impact event. These data were then used as a metric for developing reaction criteria for explosives on drop weight impact.

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