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Recent Research Efforts in Shock Initiation of Energetic Materials

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Research in the area of shock initiation of energetic materials has developed over the many years since it was introduced with many changes in the diagnostic techniques and the energetic materials being tested. Recent efforts in the last 10-15 years has been in the form of safety studies investigating the lower limit of initiation as well as studies performed at elevated temperatures to examine sensitivity changes in events such as a fire. Over the years, the techniques have improved from using pins or a streak camera image on a wedge to using in-situ gauges to measure the pressure or particle velocity. The ability of various models to reproduce the results has also advanced greatly. This work will briefly discuss the history of the field with the techniques utilized followed by highlights of recent work exploring the lower limit of initiation and at elevated temperatures and will conclude with a discussion of the various modeling efforts utilized to simulate the results. This work performed under the auspices of the U.S. Department of Energy by Lawrence Livermore National Laboratory under Contract DE-AC52-07NA27344.