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Gauge Run-To-Detonation Data and Failure/Dead Zone Modeling P. CLARK SOUERS, PETER VITELLO, KEVIN S. VANDERSALL, Energetic Materials Center, Lawrence Livermore National Laboratory, Livermore, CA 94550 — Previous shock initiation run-to-detonation experiments on energetic materials were plotted with distance and time to get a single distance/time to detonation. Modern shots utilize enough gauges so that the distance-time data can be differentiated, which shows not only the usual inflection pressure point before detonation, referred to here as P2, but also a second, low-pressure inflection, referred to here as P1, that marks rapid ramp-up of the initiation. An analysis of the TATB based LX-17 and PBX 9502 in addition to the LLM-105 based RX-55-AB data shows that both P1 and P2 increase linearly with the initiation pressure created by the sabot. This contradicts the current method in the Tarantula failure/dead zone model, which uses constant pressure boundaries between reaction regions. Modeling changes required by the new data will be considered.

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