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Development of the Small-Scale Shock Sensitivity Test (SSST) JOSHUA FELTS, HAROLD SANDUSKY, RICHARD GRANHOLM, IHDIV, NSWC — This effort is to develop a small-scale test to measure shock sensitivity that only needs a half gram sample at most. The test will screen new energetic compositions before the need for costly scale-up. The concept is to merge aspects of the Small-Scale Shock Reactivity Test (SSRT) developed at IHDIV, NSWC with that of gap tests. The SSRT measures the shock reactivity (explosiveness) of samples well-below critical diameter without requiring a transition to detonation. Gap tests are used to gage shock sensitivity of explosives, but require a sample size large enough for steady or near-steady detonation. The new test arrangement will combine the shock-attenuating gap before the sample and the air gap after the sample found in gap tests with the small sample size and high confinement of the SSRT. Our results for two plastic-bonded explosives formulated with either a regular or insensitive RDX confirm the difference in sensitivities observed in gap tests. More samples need to be tested to fully characterize the new test and to develop relations with shock sensitivity data from gap tests.

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