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Development of the Small Scale Violence Thermal Test SUSAN SORBER, AWE Plc — When developing new explosive formulations, one of the most important safety goals is to characterise the formulations' scale of response to thermal insults. Established tests provide indications of violence of response from thermal stimuli through dent/fragment analysis of heater anvils and visual observations. Utilising recent advances in diagnostic technologies, a test is under development to obtain a numerical value for the violence of response to thermal stimuli on a small explosive sample. Furthermore, the test has been designed so that it can accept pressed explosive pellets. This enables the test to be conducted at the small-scale development stage and thus is anticipated to be if use in the screening of new materials. In continuation of previously published work describing the test development, twenty-seven new cook-off experiments have been conducted. Eleven explosive compositions were subjected to the same slow heat input profile. As a sample rapidly decomposed, part of the steel confinement was designed to produce a pellet whose velocity was measured using a Heterodyne Velocimeter (Het-V). Temperatures of the confinement unit were also recorded. A development aim is to interpret this data to provide useful information on the violence of decomposition. This is discussed in the paper and leads to the data from these experiments being presented in order of increasing violence of response.

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