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Small-Scale Thermal Violence Cook Off Test MALCOLM COOK, JOHN CURTIS, AWE, CHRISTOPHER STENNETT, Cranfield University — The Small-Scale thermal Violence Test (SSVT) is designed to quantify the violence (explosiveness) of test materials by means of observing the velocity history of a metal burst disk that forms one end of a strong thick-walled cylindrical test vehicle. A copper heating block is placed to the rear of, but in contact with, the sample and provides sealing. The difference in thermal conductivity between copper and steel is sufficient that thermal runaway is induced near to the explosive / copper interface in an unlagged test. A series of experiments has been made, in which explosive specimens were confined and heated to explosion. A high-accuracy velocity measurement system was used to record the motion of the bursting disk. These experiments have shown that the early-time motion of the bursting disk corresponds qualitatively to the onset of thermal explosion and growth of reaction within the explosive specimens. However, the velocity history traces are more complex than had been anticipated. In particular, unexplained shoulders were observed in the Phase-Doppler Velocimeter (PDV) data. Some preliminary modelling studies have been carried out in order to shed light on the complex shapes of the projectile velocity histories.

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