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**A view on the functioning mechanism of EBW detonation - Part 2: Exploding Bridgewire Output** ELIZABETH LEE, RODNEY DRAKE, JOHN RICHARDSON, AWE Plc — This paper is the second of three looking at the initiation of PETN in an exploding bridgewire detonator. The first study examined the interactions between the fireset and bridgewire. This second study focuses on quantifying the effect of bridgewire burst energy on the output from the bridgewire at burst. A suite of experimental tests have been performed to characterise the output from the bridgewire in terms of the stimulus it would apply to the surrounding PETN in an EBW detonator. The expansion speed of the bridgewire at burst as a function of input energy has been measured using Photonic Doppler Velocimetry (PDV). This work has enabled an estimate to be made of the duration of the shock generated by the bridgewire explosion. To compliment these measurements an aquarium test was performed to measure the shock pressure, also as a function of input energy. In addition to a variable input energy, a number of bridgewire materials were studied. This suite of experimental tests has indicated a relationship between the ionisation energy of the bridgewire material and the detonator threshold energy. The results of the experimental work will be presented, together with the EBW detonator conceptual model developed as a result.

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