Abstract Submitted for the SHOCK11 Meeting of The American Physical Society

On the importance of encapsulation environment for lateral gauges in Tantalum JONATHAN PAINTER, GARETH APPLEBY-THOMAS, PAUL HAZELL, Cranfield University, RONALD WINTER, ERNST HARRIS, GARETH OWEN, AWE, DAVID WOOD, Cranfield University — In principle, embedded wire-element lateral manganin pressure gauges allow the lateral component of stress during shock loading to be directly monitored. However, such gauges require target materials to be sectioned before gauge insertion into an encapsulating Mylar/epoxy layer, leading to debate over their interpretation. In particular, recent computational modelling has suggested, amongst other factors, gauge response may be linked to the nature of material flow within the gauge encapsulation under shock loading. Here, this phenomenon was experimentally investigated by variation of the geometric environment of embedded lateral T-gauges (Vishay Micro-Measurements® type J2M-SS-580SF-025) in Tantalum (Ta) targets. In particular, inclusion of cover and backing plates allowed restriction of encapsulation material flow under shock. Subsequent comparison to the response of "classicallyencapsulated" lateral gauges facilitated additional insights into lateral gauge interpretation.

> Gareth Appleby-Thomas Cranfield University

Date submitted: 02 Feb 2011

Electronic form version 1.4