Abstract Submitted for the SHOCK07 Meeting of The American Physical Society

**Pressure Dependence of Crack Growth and Plastic Flow Processes in Composite Plastic Bonded Explosives** DONALD WIEGAND, ARDEC, Picatinny ARSENAL, KEVIN ELLIS, AWE, UK — The stress-strain curves of composite plastic bonded explosives can be divided into two regions as a function of pressure. In a low pressure region stress as a function of increasing strain exhibits a maximum followed by work softening while in the higher pressure region yield followed by work hardening is observed. The results indicate that the work softening is due to crack growth damage and the work hardening is associated with plastic flow. In the low pressure region the compressive strength increases linearly with pressure and in the higher pressure region the flow stress (yield strength) increases approximately linearly with pressure but with a much lower slope. Therefore, the results indicate that in the low pressure region the stress required for plastic flow is higher than the stress for crack growth so crack processes dominate while in the higher pressure region the stress required for plastic flow is higher than the stress required for plastic flow is lower than the stress required for crack growth and so plastic flow dominates.

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Date submitted: 24 May 2007

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