Plasticity and Multimode Damage in Depleted Uranium¹ DAR-CIE D. KOLLER², ELLEN K. CERRETA, GEORGE T. GRAY III, Los Alamos National Laboratory — Recent damage studies on depleted uranium samples have revealed that the brittle type cracking typically observed in insipiently spalled depleted uranium samples contains a high level of plasticity as well. Experimental gas gun shock recovery results will be presented along with metallography from the recovered materials. Under dynamic tensile loading the nucleation and propagation of cracking is captured in the insipient state. Serial metallographic sectioning is performed and EBSD is used to observe the recovered state of the depleted uranium samples. Cracks appear to propagate in a mixed brittle and ductile mode. However, crack tips are shown to link up through regions of extremely localized plastic flow in the uni-axial loading direction.

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