Abstract Submitted
for the SHOCK07 Meeting of
The American Physical Society

Dynamic Response of 5083-H131 Aluminum Alloy JOHN BOTELER, NSWC-Indian Head, DATTATRAYA DANDEKAR, Army Research Laboratory — The material response of 5083-H131 aluminum alloy subjected to dynamic loading has been investigated. In the work reported here we examine the spall strength, Hugoniot EOS, and Hugoniot Elastic Limit (HEL) over the stress range 1.5-8.0 GPa. Measurement of these dynamic properties provide hydrocode modelers with critical information required for accurate modeling of material response to intense loading. Experiments were performed on the Army Research Laboratory 102 mm bore single-stage light gas gun. Impact conditions were uniaxial and planar to within 1 mrad of tilt. VISAR was used to record particle velocity histories with 0.5 ns temporal resolution. The shock Hugoniot for 5083-H131 is extrapolated to 50 GPa and compared to the previous high pressure results of Hauver (1973). The dynamic response including HEL and spall strength of 5083-H131 is compared to other commonly used aluminum alloys.

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Date submitted: 13 Feb 2007 Electronic form version 1.4