

Abstract Submitted  
for the SHOCK11 Meeting of  
The American Physical Society

**Evaluation of the dynamic properties of 30HGSA hardened steel experimentally subjected to shock in the region of solid-to-solid phase transformation** ALEXANDER PETROVTSEV, SERGEY BRICHIKOV, Russian Federal Nuclear Centre - Institute of Technical Physics, DENIS VARFOLOMEYEV, NATALYA ZHILYAEVA, EVGENII KOZLOV, VLADIMIR NOGIN, VLADISLAV TARZHANOV, DENIS SHALKOVSKY — The paper describes models of shear and spall strength for 30HGSA HRc35...40 hardened steel with allowance for the alpha-epsilon transition. The models are based on results of experiments where two- and three-stress-wave configurations were registered in the material. The paper provides some results from the simulation of shock experiments where wave profiles in 30HGSA steel were registered with laser interferometry and compares them with the measured wave profiles and characteristics of fracture visually seen on the cross-sectional photos of recovered samples. The complicated multi-wave pattern of wave profile formation in experiments with shells is discussed. The profile results from the local initiation of the HE-layer, and the evolution of the profiles as the wave converges with the increasing shell thickness.

Marvin Zocher  
Los Alamos National Laboratory

Date submitted: 16 Feb 2011

Electronic form version 1.4