Abstract Submitted
for the SHOCK11 Meeting of
The American Physical Society

Response of HMX-based HE to low-velocity loading by steel cylindrical impactor VICTOR PUSHKOV, Russian Federal Nuclear Center-VNIIEF — Studies of explosive transformations have been actively performed under low-velocity mechanical effect since the previous century. The studies were performed with HE subjection to effect by a bullet, a spherical fragment, planar and others impactors. Obtained results were numerically simulated with good agreement of numerical and experimental data. However, because of complicity of the explosive transformation process, there are presently no comprehensive data on conditions of its initiation. Among various low-velocity mechanical effects on HE, effects of elements as a bar or an extended impactor are possible. This paper presents a technique and some results of experimental study how hemispherical samples (with external diameter of about 100 mm) made of retarded HMX response to low-velocity mechanical effect of steel impactor at impact velocities V=55-75 m/s. In the experiments, radiointerferometer was used to record the process of impactor penetration into HE sample. Basing on the experimental results, quantitative data were determined on the conditions of explosive transformation beginning for retarded HMX and kinematics of motion of explosive transformation products.

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Date submitted: 01 Feb 2011 Electronic form version 1.4