Abstract Submitted for the SHOCK07 Meeting of The American Physical Society

Shock Initiation Experiments on PBX 9501 Explosive at Pressures Below 3 GPa with Associated Ignition and Growth Modeling STEVEN K. CHIDESTER, DARLA G. THOMPSON, KEVIN S. VANDER-SALL, DEANNE J. IDAR, CRAIG M. TARVER, FRANK GARCIA, PAUL A. URTIEW, LAWRENCE LIVERMORE NATIONAL LABORATORY COLLAB-ORATION, LOS ALAMOS NATIONAL LABORATORY COLLABORATION — Shock initiation experiments on the explosive PBX 9501 (95% HMX, 2.5% estane, and 2.5% nitroplasticizer by weight) were performed at pressures below 3 GPa to obtain in-situ pressure gauge data, run-distance-to-detonation thresholds, and Ignition and Growth modeling parameters. A 101 mm diameter propellant driven gas gun was utilized to initiate the PBX 9501 explosive with manganin piezoresistive pressure gauge packages placed between sample slices. The run-distance-to-detonation points on the Pop-plot for these experiments showed agreement with previously published data and Ignition and Growth modeling parameters were obtained with a good fit to the experimental data. This parameter set will allow accurate code predictions to be calculated for safety scenarios in the low-pressure regime (below 3 GPa) involving PBX 9501 explosive. This work was performed under the auspices of the U. S. Department of Energy by the University of California, Lawrence Livermore National Laboratory under Contract No. W-7405-Eng-48.

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Date submitted: 26 Feb 2007

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