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The Piecewise Linear Reactive Flow Rate Model PETER VITELLO, P. CLARK SOUERS, Lawerence Livermore National Lab — For non-ideal explosives a wide range of behavior is observed in experiments dealing with differing sizes and geometries. A good predictive detonation model must be able to reproduce many phenomena including such effects as: variations in the detonation velocity with the radial diameter of rate sticks; slowing of the detonation velocity around gentle corners; production of dead zones for abrupt corner turning; failure of small diameter rate sticks; and failure for rate sticks with sufficiently wide cracks. Most models have been developed to explain one effect at a time. Often, changes are made in the input parameters used to fit each succeeding case with the implication that this is sufficient for the model to be valid over differing regimes. We feel that it is important to develop a model that is able to fit experiments with one set of parameters. To address this we are creating a new generation of models that are able to produce better fitting to individual data sets than prior models and to simultaneous fit distinctly different regimes of experiments. Presented here are details of our new Piecewise Linear Fit reactive flow model applied to LX-17. Auspices Statement: 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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