Simulation of a Shock Recovery Experiment K. HUGHES, Cranfield University, UK, R. VIGNJEVIC, N.K. BOURNE — It is difficult to obtaining experimental data for the behaviour of material under shock loading due to dynamic nature of this process and finite time available in which measurement can be taken. As a result shock recovery technique have been developed to allow examination of a material after shock propagation. The main goal of this experimental technique is to examine material properties after a single, well-defined shock wave followed by a single release wave have been introduced. The process should be such that any change found in the sample after recovery can only be attributed to the shock process alone. In order to achieve this, the geometry and design of the target and the fixture play an important role. In this work the simulations were performed using the Lagrangian hydrocode DYNA3D in order to size lateral and longitudinal momentum traps for the material being investigated. The investigation of the shock wave propagation in the simulation entails examining the stress, and velocity time histories for the whole fixture as well as for the single element, or block of elements of interest. In addition residual velocity of the sample was minimised to reduce its damage in the process of sample catching.

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