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Quantifying the Hydrodynamic Performance of an Explosively-Driven Two-Shock Source MICHAEL FURLANETTO, AMY BAUER, ROBERT KING, WILLIAM BUTTLER, RUSSELL OLSON, CARL HAGELBERG, Los Alamos National Laboratory — An explosively-driven experimental package capable of generating a tunable two-shock drive would enable a host of experiments in shock physics. To make the best use of such a platform, though, its symmetry, reproducibility, and performance must be characterized thoroughly. We report on a series of experiments on a particular two-shock design that used shock reverberation between the sample and a heavy anvil to produce a second shock. Drive package diameters were varied between 50 and 76 mm in order to investigate release wave propagation. We used proton radiography to characterize the detonation and reverberation fronts within the high explosive elements of the packages, as well as surface velocimetry to measure the resulting shock structure in the sample under study. By fielding more than twenty channels of velocimetry per shot, we were able to quantify the symmetry and reproducibility of the drive.

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