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Characterization of a halfraum x-ray drive using VISAR at the National Ignition Facility S.A. MACLAREN, H.-S. PARK, P.M. CELLIERS, A.R. COOPER, M.E. FOORD, M.B. SCHNEIDER, R.M. SEUGLING, R.J. WALLACE, P.E. YOUNG, LLNL, T.R. BOEHLI, University of Rochester LLE, A.S. MOORE, AWE — Laser hohlraums driven from one side, or “halfraums,” are a convenient method for obtaining a planar x-ray drive in order to study radiation-hydrodynamics phenomena in simplified geometries. The VISAR diagnostic at the National Ignition Facility (NIF) was recently used to characterize the x-ray drive at the mid-plane of a NIF vacuum halfraum. The experiment used a 400 micron thick quartz window with a 70 micron aluminum ablator located at the mid-plane of a 5 mm diameter halfraum driven by 80 beams from the NIF laser. The pulse shape was a ramp with a peak power of 35.5 TW delivering a total of 210 kJ. The VISAR data details the speed of the shock resulting from the 9 ns laser pulse as it traverses the quartz window. The spatial dimension of the VISAR field of view captures the radial uniformity of the drive pressure over 1.5 mm from the center of the halfraum. 2-D integrated simulations calculating the drive temperature, shock speed and pressure uniformity, and results will be compared with data. This work performed under the auspices of the U.S. Department of Energy by Lawrence Livermore National Laboratory under Contract DE-AC52-07NA27344.

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