

Abstract Submitted  
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**Characterization of Dense Plasma Targets for Equation of State Experiments.**<sup>1</sup> TOM HURRY, JOHN BENAGE, JIM COBBLE, EVAN DODD, HANS HERRMANN, TOM ORTIZ, JONATHAN WORKMAN, Los Alamos National Laboratory — The measurement of the Equation of State (EOS) of materials in the dense-plasma state is difficult. The standard method for measuring EOS relies on the shock driven Hugoniot technique, where the material is initially at standard temperature and pressure and is shocked using a flyer plate. The locus of states produced using this technique is called the standard Hugoniot. However, the states produced do not fall into the regime of dense plasmas, where the EOS of the material is quite uncertain. We are developing a technique for measuring the EOS in a dense plasma, conditions far away from the standard Hugoniot. This technique requires that the initial condition of the material be at densities well below and temperatures well above standard. We have completed initial experiments producing and characterizing the plasma targets using visible spectroscopy and imaging. We have also begun development of a dynamic phase contrast imaging system required for measuring the shock velocity in the plasma. Simulations of these initial measurements and of the laser drive necessary to produce a uniform shock in the material are also shown. The conditions that we calculate to be produced by this shock are then compared to models for the EOS of this material.

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