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Near Absolute Equation of State Measurements of CH using Velocimetry and Radiography[1] DAYNE FRATANDUONO, PETER CELLIERS, AMY LAZICKI, JIM HAWRELIAK, GILBERT COLLINS, Lawrence Livermore National Laboratory — The OMEGA EP laser was used to conduct absolute near equation of state measurement along the principal Hugoniot of CH to 6 Mbar. A 6 ns long, 3700 J laser pulse in direct drive was used to launch a cylindrical shock in a multi-layered aluminum/CH target which was imaged using a Fe backlighter. The technique presented here incorporated VISAR shock velocity measurements with shock compression measured using side-on radiography to determine the Hugoniot. Experimental uncertainties of less than 10% in density were obtained in these experiments. The measured Hugoniot values of this study are consistent with previous measurements that were impedance matched to quartz (Barrios et al. PoP 2010). These experiments were conducted, as proof of principle, for future absolute EOS measurements on the NIF. Future experimental work will be discussed.

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