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X-Ray Thomson Scattering and Radiography from Spherical Implosions on the OMEGA Laser[1] A. M. SAUNDERS, University of California Berkeley, A. LAZIKI-JENEI, T. DOEPPNER, O. L. LANDEN, Lawrence Livermore National Laboratory, M. MACDONALD, University of California Berkeley, J. NILSEN, D. SWIFT, Lawrence Livermore National Laboratory, R. W. FALCONE, University of California Berkeley — X-ray Thomson scattering (XRTS) is an experimental technique that directly probes the physics of warm dense matter by measuring electron density, electron temperature, and ionization state [1]. XRTS in combination with x-ray radiography offers a unique ability to measure an absolute equation of state (EOS) from material under compression [1,2]. Recent experiments highlight uncertainties in EOS models and the predicted ionization of compressed matter, suggesting more validation of models is needed [3,4]. We present XRTS and x-ray radiography measurements taken at the OMEGA Laser Facility from directly-driven solid carbon spheres at densities on the order of 1x10^{24} g cm^{-3} and temperatures on the order of 30 eV. The results shed light on the equations of state of matter under compression. [1] S. H. Glenzer and R. Redmer. Rev. Mod. Phys. **81**, 1625 (2009). [2] A. L. Kritcher et al., J. Phys. Conf., **688**, 102055 (2016). [3] D. Kraus et al., Phys. Rev. E. **94**, 011202(R) (2016). [4] L. B. Fletcher et al., Phys. Rev. Lett. **112**, 145004 (2014).

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