Abstract Submitted
for the MAR16 Meeting of
The American Physical Society

Development of safety containment system for experiments on radioactive and other hazardous materials with large volume Paris-Edinburgh press at APS and first measurements on depleted-uranium MATTHEW JACOBSEN, NENAD VELISAVLJEVIC, Los Alamos National Laboratory — Recent technical developments using the large volume Paris-Edinburgh press platform have enabled x-ray synchrotron studies at high pressure and temperature conditions (Kono, Y. *et al. Rev. Sci. Instrum.* **83,** 033905 (2012)). However, application for hazardous materials requires special handling due to safety issues, reactivity, or other challenges. Facility safety requirements require adequate containment for operation in the variety of environments available. In this talk, we will present a containment setup developed to enable studies of such materials. In particular, studies of the phase diagram of uranium using ultrasonic interferometry to determine the elasticity, mechanical, and thermal properties will be discussed. These results present the first high pressure studies of combined elasticity and thermal properties of depleted uranium metal as well as demonstration of a containment system for making such measurements.

Matthew Jacobsen
Los Alamos National Laboratory

Date submitted: 04 Nov 2015 Electronic form version 1.4