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First Tests of a Bubble Chamber for Neutron Detection on OMEGA M.C. GHILEA, D.D. MEYERHOFER, T.C. SANGSTER, D.J. LONOBILE, Laboratory for Laser Energetics, U. of Rochester, R.A. LERCHE, LLNL, L. DISDIER, CEA — A high-spatial detector was developed and tested at LLE to provide additional line-of-sight options for neutron imaging at ICF facilities. The detector is based on a high-pressure, freon-115 bubble chamber with an expansion mechanism controlled by a linear motor. A CCD camera is used to photograph the neutron-induced bubbles in parallel, monochromatic light, while a Schlieren disk is used to enhance the contrast of the image. Imaging when bubble diameters are about 100 μm in diameter potentially offers a several-fold increase in spatial resolution relative to the conventional pixilated scintillator arrays. Test neutron images have been acquired on OMEGA. Flat-field and edge images have been obtained to estimate the resolution of the instrument. This work was supported by the U.S. Department of Energy Office of Inertial Confinement Fusion under Cooperative Agreement DE-FC52-08NA28302.

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