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Neutron Measurements in Small MagLIF Experiments on OMEGA V.YU. GLEBOV, D.H. BARNAK, J.R. DAVIES, J.P. KNAUER, R. BETTI, S.P. REGAN, T.C. SANGSTER, E.M. CAMPBELL, Laboratory for Laser Energetics, U. of Rochester — The Laboratory for Laser Energetics (LLE) is participating in laser-driven magnetized linear inertial fusion (MagLIF) research on the OMEGA Laser System in partnership with Sandia as part of ARPA-E's ALPHA Program. In the current OMEGA setup, a CH cylindrical tube filled with D_2 gas is compressed by 40 laser beams, preheated by one of the beams, and an axial magnetic field is applied to limit electron heat loss. Two copper coils provide 10-T magnetic fields. A neutron time-of-flight (nTOF) detector has been designed, fabricated, and calibrated to diagnose primary D–D fusion neutron yield in the range of 1 10^7 to 5 10^9 and ion temperature from 2 to 8 keV. The design details and calibration results of these nTOF detectors will be presented together with neutron measurement results from recent laser-driven MagLIF experiments on OMEGA. The information, data, or work presented herein was funded in part by the Advanced Research Projects Agency-Energy (ARPA-E), U.S. Department of Energy, under Award Number DE-AR0000568, and the Department of Energy National Nuclear Security Administration under Award Number DE-NA0001944.

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