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Neutron Diagnostic Development for the Z Accelerator[1] KELLY HAHN, G.A. CHANDLER, C.L. RUIZ, B. JONES, M.R. GOMEZ, P.F. KNAPP, A.B. SEFKOW, S.B. HANSEN, P.F. SCHMIT, E.C. HARDING, E. NORRIS, J.A. TORRES, Sandia National Laboratories, G.W. COOPER, J.D. STYRON, University of New Mexico, J. FRENJE, B. LAHMANN, M. GATU-JOHNSON, F. SEGUIN, R. PETRASSO, Massachusetts Institute of Technology, D. FITTINGHOFF, M. MAY, L. SNYDER, Lawrence Livermore National Laboratories, K. MOY, R. BUCKLES, National Security Technologies, V.YU. GLEBOV, University of Rochester — We are studying Magnetized Liner Inertial Fusion (MagLIF) and Gas Puff fusion neutron sources on the Z accelerator. MagLIF experiments have produced up to 3e12 primary DD neutrons with 2-3 keV ion temperatures and 1-2 ns burn widths. Gas puff experiments have produced up to 5e13 primary DD neutrons with higher ion temperatures, longer burn times, and evidence of non-thermonuclear production. For MagLIF, the yield is expected to increase rapidly with increased energy coupling, yet it remains unclear if Gas Puffs would scale as attractively. We review neutron measurements for these experiments and plans for developing neutron diagnostics for these two very different sources.

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