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**Boundary and PMI Diagnostics for the DIII-D National Fusion Facility,\*** D.M. Thomas, B.D. Bray, C. Chrobak, A.W. Leonard, *GA*; S.L. Allen, C.J. Lasnier, A.G. McLean, *LLNL*; A.R. Briesemeister, *ORNL*; J.A. Boedo, *UCSD*; D. Elder, J.G. Watkins, *SNL* – The Boundary and Plasma Materials Interaction Center is planning an improved set of boundary and divertor diagnostics for DIII-D in order to develop and validate robust heat flux solutions for future fusion devices on a timescale relevant to the design of FNSF. We intend to develop and test advanced divertor configurations on DIII-D using high performance plasma scenarios that are compatible with advanced tokamak operations in FNSF as well as providing a comprehensive testbed for modeling. Simultaneously, candidate PFC material solutions can be easily tested in these scenarios. Additional diagnostic capability is vital to help understand and validate these solutions. We will describe a number of desired measurements and our plans for deployment. These include better accounting of divertor radiation, including species identification and spatial distribution, divertor/SOL main ion temperature and neutral pressure, fuller 2D  $T_e/n_e$  imaging, and toroidally separated 3D heat flux measurements.

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