Abstract Submitted
for the DPP11 Meeting of
The American Physical Society

Overview of Recent DIII-D Experimental Results[1] P. GOHIL, General Atomics, AND THE DIII-D TEAM — Recent DIII-D experiments have addressed critical ITER issues and improved the physics basis for steady state operation, making use of new diagnostic and hardware capabilities. The support mechanism of one beamline has been modified to allow off axis neutral beam injection (NBI) up to 16.5 deg from the horizontal. Off-axis NBI shows clear off-axis deposition and current drive at $\rho \sim 0.5$, consistent with calculations, and experiments to optimize the q-profile for steady-state operation, will be discussed. Progress in other major areas of research will be presented: understanding transport induced by 3-D field perturbations; determining reliable alternative techniques for ELM control that do not require internal coils; systematic tests of existing models of pedestal structure through comparisons with experimental results; evaluation of profile stiffness and critical gradients in the electron transport; improved control and dissipation of runaway electrons; development of plasma scenarios with low torque or rotation; improved characterization and control of sawteeth and neoclassical tearing modes.

[1]Work supported by US DOE under DE-FC02-04ER54698.

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Date submitted: 19 Jul 2011 Electronic form version 1.4