Abstract Submitted
for the DPP17 Meeting of
The American Physical Society

Disruption avoidance and fast ramp-down techniques for the DIII-D experimental scenarios[1] JAYSON BARR, General Atomics, Oak Ridge Assoc Univ, N.W. EIDIETIS, D.A. HUMPHREYS, B. SAMMULI, T. LUCE, General Atomics — Plasma current ramp-down in ITER will continue in H-mode from 15 MA to 10 MA, and will keep a diverted shape until termination. This is in contrast to the limited ramp-down scenarios typically used in DIII-D operations. Additionally, fast emergency ramp-down scenarios for ITER and future reactors are a priority for disruption avoidance. New experiments in DIII-D use the ramp-down phase of a variety of experiments including in the ITER baseline scenario to survey and identify optimized ramp-down scenarios for both scheduled terminations and terminations triggered by off-normal event detection. Systematic scans in current ramp-rate (1-5 MA/s), neutral beam power (including β_N feedback) and ramp-down shaping (limited versus continued diverted) have identified fast ramp-down scenarios for Lower Single Null (LSN) and Double Null (DN) plasmas. Scenario-specific methods and their rates of successful termination will be presented and compared relative to a historical data-set of ramp-down programming in the limiter configuration. Locked modes are found to be the most significant challenge to disruption avoidance in diverted ramp-downs. Results for LSN diverted discharges that begin the rampdown with large locked-modes will also be presented. If available, results of similar experiments on EAST will be presented.

[1]Work supported by US DOE under DE-FC02-04ER54698 and DE-SC0010685.

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Date submitted: 13 Jul 2017 Electronic form version 1.4