Abstract Submitted
for the DPP15 Meeting of
The American Physical Society

Protective Interlocks and Procedures on the DIII-D ECH System[1] J. LOHR, M. CENGHER, X. CHEN, Y. GORELOV, D. PONCE, R. PRATER, A. TORREZAN, GA — Several new protective interlocks are being installed on the DIII-D ECH system to increase the safety margins for plasma operations at densities approaching cutoff. Inadvertent overdense operation has resulted in reflection of an rf beam back into one of the launchers causing extensive arcing and melt damage on one waveguide line. Therefore, protective steps have been taken to reduce the risk of such damage in the future. These include a density interlock generated by the plasma control system, enhanced video monitoring of the launchers, an ambient light monitor on each of the waveguide systems and versatile rf monitors, measuring forward and reflected power in addition to the mode content of the rf beams, which are installed as the last miter bends in each waveguide line. Calculations of the rf beam trajectories in the plasmas are being performed using the TORAY ray tracing code with input from kinetic profile diagnostics, and strike points for refracted beams on the vacuum vessel are being calculated, which allows evaluating the risk of damage to sensitive diagnostics and hardware.

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

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Date submitted: 19 Jul 2015 Electronic form version 1.4