

Abstract Submitted
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Impact of the Digital Coil Protection System and Plasma Shutdown Handler on NSTX-U Operations STEFAN GERHARDT, D. BATTAGLIA, M. BOYER, K. ERICKSON, D. MUELLER, C MYERS, D. MUELLER, PPPL, S.A. SABBAGH, Columbia University — In order to prevent excessive forces on the NSTX-U vessel and coils, a digital coil protection system (DCPS) has been implemented. This system computes approximately 400 different forces/torques/stresses, and terminates the discharge if limits on those quantities are exceeded. It is desirable, however, to prevent these coil system trips from ever happening. Given that many of these limits would be reached during transients associated with disruptions, a “discharge shutdown handler” was coded in the plasma control system to automatically control the plasma shutdown. This is a state machine with five states, and a set of rules for transitioning between states. The first use of these systems during plasma operations on NSTX-U will be described, with a focus on operational experiences and directions for future improvements. Work Supported by U.S.D.O.E. Contract No. DE-AC02-09CH11466.

Stefan Gerhardt
PPPL

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