Abstract Submitted for the 54th Annual Meeting Division of Plasma Physics October 29 through November 2, 2012 Providence, Rhode Island

Category Number and Subject: 5.5.0 ITER and Magnetic Confinement Development

[] Theory [X] Experiment

Test Blanket Module Mockup Experiments in DIII-D* E.J. Strait, N.H. Brooks, R.J. Buttery, R.J. La Haye, M.J. Schaffer, General Atomics; H. Reimerdes, CRPP-EPFL; J.A. Snipes, ITER Organization; J.M. Hanson, Columbia University; W.W. Heidbrink, Y. Zhu, UC-Irvine; Y. In, FAR-Tech; G.J. Kramer, M. Okabayashi, J.-K. Park, W.M. Solomon, PPPL; A.G. McLean, LLNL; N. Oyama, JAEA, T. Tala, EURATOM-Tekes - Recent DIII-D experiments have investigated the effects of localized magnetic field perturbations. using coils that approximate the magnetization of the test blanket modules (TBMs) in one ITER port. In H-mode discharges, compensation of the TBM field using an applied n = 1 field yielded only partial recovery of the plasma rotation, and the compensation field that maximized plasma rotation differed significantly from the field that reduced the resonant magnetic response to a very low value. These results provide insight into the effects of error fields, and suggest an important role for non-resonant magnetic braking. In addition, measurements of localized heat deposition with the TBM field are being compared to orbit following calculations of fast ion loss, and a new fast ion detector has confirmed earlier observations of reduced 1 MeV triton confinement.

*Work supported by US DOE under DE-FC02-04ER54698, DE-FG02-04ER54761, SC-G903402, DE-FG02-06ER84442, DE-AC02-09CH11466, and DE-AC52-07NA27344.