

**Abstract Submitted for the 52nd Annual Meeting
Division of Plasma Physics
November 8–12, 2010, Chicago, Illinois**

Category Number and Subject: *5.3.0 Heating and current drive*

Theory Experiment

Effect of Test Blanket Module on Triton Burn-up in DIII-D

Tokamak,* Y.B. Zhu, W.W. Heidbrink, *University of California, Irvine*; M.J. Schaffer, *General Atomics* — Time resolved measurements of triton burnup on DIII-D tokamak have been performed using a newly restored and upgraded 14 MeV neutron emission monitor based on silicon surface barrier diode. Neutron and energetic ion relevant data have been analyzed for the dedicated ITER Test Blanket Module (TBM) mockup plasma experiments. During the TBM on period, no observable change was recorded by a Faraday type fast ion loss collector, but a decrease in D-D neutron yield was usually encountered with a drop in plasma density. With full current applied on TBM coils, coincident reduction in 14 MeV neutron counts was prominent, as well as the ratio of 14 MeV D-T neutrons to 2.45 MeV D-D neutrons. In some cases, these behaviors were accompanied by a slight increase in signal of ion cyclotron emission loops attached behind the plasma-facing graphite protection module. Deterioration in triton confinement was observed to be weaker with partial current applied to the TBM and did not occur at all for no TBM current.

*Work supported by the US Department of Energy under SC-G903402 and DE-FC02-04ER54698.