

Abstract Submitted  
for the DPP09 Meeting of  
The American Physical Society

**Overview of the TCS-Upgrade device** J.A. GROSSNICKLE, R.D. BROOKS, C.L. DEARDS, A.L. HOFFMAN, P.A. MELNIK, K.E. MILLER, R.D. MILROY, A. TANKUT, K.M. VELAS, G.C. VLASES, University of Washington, Redmond Plasma Physics Laboratory — The Translation, Confinement, and Sustainment Upgrade (TCSU) device is a facility to form and sustain field-reversed configurations (FRC) in steady-state using rotating magnetic fields (RMF). Recent campaigns include Ti gettering as well as the installation of a set of internal flux rings. The Ti gettering campaign was carried out to reduce impurities and to reduce deuterium recycling from the walls. This was successful, and for the first time FRCs were sustained using external gas puffs instead of wall recycling for fuelling. These plasmas had very little impurity radiation, and it was possible, with better inventory control, to form hotter FRCs by operating at lower densities. Internal flux rings have been installed to provide a uniform flux surface and minimize plasma-wall contact. Experiments will be performed with the external magnetic field tailored to direct the plasma exhaust to ‘divertor’ sections where Ta bands have been placed as divertor targets. Results from the Ti gettering and internal flux ring campaigns will be reported.

James Grossnickle  
University of Washington

Date submitted: 17 Jul 2009

Electronic form version 1.4