Abstract Submitted for the Forty-Ninth Annual Meeting
Division of Plasma Physics
November 12–16, 2007, Orlando, Florida

Category Number and Subject: 5.6.2. DIII-D Tokamak

[ ] Theory [ ] Experiment

Transport, MHD, and Stability Investigations of a Proposed Fusion Development Facility (FDF),* H.E. St John, L.L. Lao, C.M. Greenfield, R. Prater, P.B. Snyder, G.M. Staebler, V.S. Chan, R.D. Stambaugh, *General Atomics* – Recent simulations of a compact next generation testing facility tokamak, FDF, indicates that favorable H-mode, AT-type operation with high boostrap current fractions, is possible. Our simulations assumed an *apriori* fixed, stable edge pressure stable and peeling-ballooning modes and favorably shaped but fixed density profiles. Heating and current drive was supplied by on and off axis ECH and low energy, 120 keV, beams directed near the plasma edge. The resulting rotation speed profile is highly sheared at the plasma edge. Under these conditions we were able to simulate a suite of internal transport barrier confined discharges using the GLF23 transport model with the ONETWO transport code. Ongoing work includes extending these simulations to include fixed boundary MHD calculations, density evolution and dynamic ELM control using the ELITE edge stability code. We present the results and methodology required to perform these simulations.

[1] R.E. Waltz, *et al.,* Phys. Plasma **4**, 2482 (1997).

*Supported by GA IR&D funding.