Abstract Submitted for the 50th Annual Meeting
Division of Plasma Physics
November 17–21, 2008, Dallas, Texas

Category Number and Subject: 5.5.0 ITER and Magnetic Fusion Development

[ ] Theory [ ] Experiment

Fusion Development Facility Divertor Design, A.M. Garofalo, T.W. Petrie, J.P. Smith, M.R. Wade, V.S. Chan, R.D. Stambaugh, *General Atomics*, R. Bulmer, D.N. Hill, C.J. Lasnier, T.D. Rognlien, D. Ryutov, M. Umansky, *LLNL*, J. Canik, R. Maingi, *ORNL*, M. Kotschenreuther, S.M. Mahajan, P. Valanju, *U. Texas*—
The Fusion Development Facility (FDF) is proposed as an aspect ratio 3.5 tokamak with major radius of 2.5 m and total heating power of ~100 MW, that would make possible a fusion demonstration power plant (DEMO) of the ARIES-AT type as the next step after ITER. One of the main issues that needs to be resolved on the path from ITER to DEMO is that of power exhaust. Requirements for the FDF divertor include: heat flux reduction to levels manageable in steady-state; adequate fuel exhaust for density control; adequate helium exhaust to maintain $f_{He} < 10\%$; compatibility with good confinement and stability in order to achieve high level mission goals. FDF will have to show integrated physics/technical solutions compatible with a 14 MeV neutron environment. A compact, symmetric double null divertor addressing these requirements is being designed. UEDGE and SOLPS modeling of divertor performance will be presented. Other divertor concepts, including Snowflake and SX divertors, are being considered for FDF.

*Supported by GA IR&D funding.