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Development

☐ Theory      ☐ Experiment

**Fusion Development Facility – Mission and Overview,\*** R.D. Stambaugh, V.S. Chan, and C.P.C. Wong, *GA* – A Fusion Development Facility (FDF) is proposed to make possible a fusion demonstration power plant (DEMO) as the next step after ITER. To make possible a DEMO of the ARIES-AT type, the mission of the FDF should be to carry forward Advanced Tokamak physics and enable development of fusion energy applications. FDF should demonstrate advanced physics operation of a tokamak in steady-state with burn, producing 100-250 MW fusion power with modest energy gain ( $Q < 5$ ) in a modest sized device. Full noninductive, high bootstrap operation will enable continuous operation for periods up to two weeks. FDF must further develop all elements of AT physics for an advanced performance DEMO. With neutron flux at the outboard midplane of  $1\text{--}2\text{ MW/m}^2$  and a goal of a duty factor of 0.3, FDF can produce fluences of  $3\text{--}6\text{ MW-yr/m}^2$  in ten years of operation. FDF will have a goal of producing its own tritium and building a supply to start up DEMO. The development of blankets suitable for tritium, electricity, and hydrogen production will be done in port modules. FDF, ITER, IFMIF, and other AT devices will provide the basis for a fusion DEMO power plant of the ARIES-AT type.

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