Abstract Submitted
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NSTX Progress and Plan of Interest to Component Test Facility (CTF)[1] YUENG KAY MARTIN PENG, ORNL, UT-Battelle, NSTX TEAM — Continued rapid progress on NSTX and more broadly in Tokamak and ST plasma science has indicated relatively robust physics conditions in a broad number of topical areas for a compact CTF [1], which is included in the DOE Office of Science Strategic Plan [2]. This progress has enabled an updated projection of the practical CTF plasma conditions. The results indicate appropriate designs with R_0 = 1.1-1.2 m, A = 1.5, elongation $\sim$ 3, B_T $\sim$ 1.5-2.5 T, and a range of I_p = 6-12 MA to deliver a fusion neutron flux of 0.5-4.0 MW/m^2, requiring a range of 30-70 MW of combined neutral beam and RF heating and current drive power. Database is evaluated to be adequate in Macroscopic Plasma Physics; Multi-scale Plasma Physics; Waves and Energetic Particles; and Physics Integration; but not yet adequate in Plasma Boundary Interface (high divertor heat flux) and Solenoid-Free Operations (current initiation and ramp-up). Near-term ST research to strengthen and fill in the needed database will be described, including a discussion on how the CTF testing program could begin with plasma facing component testing in D-D at low currents followed by fusion component testing in D-T at higher currents. [1] Plasma Phys. Contol. Fusion **47** (2005) B263. [2] http://www.sc.doe.gov/bes/archives/plans/SCSP_12FEB04.pdf.

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