

Abstract Submitted  
for the DPP09 Meeting of  
The American Physical Society

**Fusion Nuclear Science Facility Design Points**<sup>1</sup> R.D. STAMBAUGH, V.S. CHAN, A.M. GAROFALO, J.P. SMITH, C.P.C. WONG, General Atomics — A Fusion Nuclear Science Facility (FNSF) is needed to fill the gaps between ITER and current experiments and a fusion demonstration power plant (DEMO). Characteristics should be neutron flux at the outboard midplane of 1-2 MW/m<sup>2</sup>, continuous operation for periods up to two weeks, a goal of a duty factor of 0.3 on a year and fluences of 3-6 MW-yr/m<sup>2</sup> in ten years of operation to enable development of blankets suitable for tritium, electricity, and hydrogen production. Systems code analysis that implements constant physics and technology assumptions over a wide range of aspect ratio has been updated for more detailed design considerations and neutronics calculations. Conventional copper-coil tokamaks with inboard breeding/shielding and an OH solenoid optimize at high aspect ratio with devices between DIII-D and JET in size. Removal of the inboard breeding/shielding and OH coil results in the distinct ST branch with devices about half the size and  $A < 1.8$ . All these devices are generally  $Q < 5$  but possible avenues to higher  $Q$  will be discussed.

<sup>1</sup>Supported by GA IR&D funding.

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Date submitted: 19 Jul 2009

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