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Plasma Regimes for the Ignitor Experiment* A. AIROLDI, G. CENACCHI, CREATE, Italy, B. COPPI, MIT, G. CLAI, ENEA, Bologna, Italy — The Poloidal Field System in Ignitor is capable of producing a variety of equilibrium configurations (i.e., "extended limiter" or Double X-point) over a wide range of magnetic fields and plasma currents. The most relevant operational conditions have been extensively analyzed, starting from the reference ignition scenario at 13 T and 11 MA. The scenarios with 6MA/9T, 7MA/9T and 10MA/13T had been analyzed earlier[1] without considering the access to an enhanced confinement regime. The simulation for the 6MA/9T in the H regime have $\langle n_e \rangle = 1.8 \times 10^{20}$ m^{-3}; with 5 MW of ICRF power the peak electron temperatures range from 6.5 to 8.5 keV for Deuterium plasmas, and from 7 to 9.5 in D-T plasmas, where the α-power is around 2 MW. For the 7MA/9T scenario, by considering $\langle n_e \rangle = 1.9 \times 10^{20}$ m^{-3} and 5 MW of additional heating, the central electron temperatures are in the ranges 7.5 to 10 keV and 8.5 to 11 keV for D-D and D-T plasmas respectively. The third scenario (10 MA/13 T, DN configuration) is analyzed for $\langle n_e \rangle = 3.1 \times 10^{20}$ m^{-3}, with the same ICRF heating pulse. The peak temperature reaches 7.5 keV in D plasmas , and it oscillates around 15 keV in D-T . The α-power exceeds 25 MW and then decreases to 20 MW at the end of current flattop. *Sponsored in part by ENEA of Italy and by the U.S. D.O.E.

[1]F. Bombarda, A. Airoldi, G. Cenacchi, B. Coppi and D. Farina, *Proceed. EPS Conf.,* paper PI-196, 2006.

B. Coppi
MIT

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