Abstract Submitted
for the DPP06 Meeting of
The American Physical Society

Validity of the Objectives and Solutions of the Ignitor Program*

A. AIROLDI, CNR, Italy, B. COPPI, MIT, F. BOMBARDA, ENEA, Italy, G. CENACCHI, P. DETRAGIACHE — The validity of the objectives of the Ignitor Program[1] and its design solutions have been reaffirmed recently[2]: i) in order to prove the scientific feasibility of relevant fusion reactors, burning plasmas with $Q \geq 50$ should be produced and studied, ii) copper magnets are the most convenient solution for machines capable of reaching this objective, iii) experiments that do not include a divertor are the most efficient, at producing the highest plasma currents with the best confinement parameters. Ignitor is in fact designed to operate with either an "extended-limiter" configuration or with a double X-point configuration (X-points on the first wall). The experiment can reach the conditions where the thermonuclear instability is excited ($Q \to \infty$) or where the plasma can be kept under quasi-stationary conditions with large values of Q and the input of modest amounts of ICRH power. The maximum plasma currents with reasonable safety factors are up to 11 MA, corresponding to average poloidal fields $B_p \approx 3.4$ T. The latest physics and technology developments are presented.

*Sponsored in part by ENEA of Italy and by the U.S. DOE.

[1]B. Coppi, A. Airoldi, et al. *Nucl. Fusion* **41** (9), 1253 (2001)
[2]P.H. Rebut, *EPS Conference on Plasma Physics, Rome, 19 June 2006*

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Date submitted: 21 Jul 2006 Electronic form version 1.4