Abstract Submitted
for the DPP05 Meeting of
The American Physical Society

Experimental observations of the effect of Ar seeding in JET H-Mode discharges JEF ONGENA, ERM-KMS, Brussels, Belgium, IRINA VOITSEKHOVITCH, UKAEA Fusion, Culham, UK, PIERRE DUMORTIER, ANDRE MESSIAEN, ERM-KMS, Brussels, Belgium, EFDA-JET COLLABORATORS TEAM — Ar seeding in H-Mode discharges in JET has resulted in simultaneous high radiation γ=$P_{rad}/P_{tot} \sim 0.6$, high density $n/n_{GW} \sim 1$, beta $\beta_N \sim 1.9$ and confinement $H_{98(y,2)} \sim 1$, stationary neutron yield and low $Z_{eff} \sim 2.2$ for up to 5s. A quantitative comparison of the effect of Ar is shown by comparing (1) with discharges with same initial conditions and (2) with discharges with matched density during the Ar seeding. The main results are: (i) a decrease in the temperature of the divertor targets, observed by IR thermography and thermocouple measurements; (ii) at same density, an increase in the central ion temperature (from 2.5 to 3keV, with a reduction in χ_i by a factor 2) (iii) a change in the nature of the ELMs (mixed Type I/III); (iii) in plasmas with same initial conditions, a density increase is seen (by about 20%) with Ar seeding, with only a small reduction (by about 5%) in confinement enhancement $H_{98(y,2)}$, remaining close to 1. The tritium diffusion coefficient is reduced (by a factor of 2) with Ar, partly explained by the higher density reached. A comparison of the experimental results with modelling codes (TRANSP, UTC) will be included.

Jef ONGENA
ERM-KMS, Brussels, Belgium

Date submitted: 27 Jul 2005 Electronic form version 1.4