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Elephant in the room: overlooked plasma-destroying reaction with cross section10^{12} times that for fusion necessitates redesign of ITER* BOGDAN MAGLICH, DAN SCOTT, TIM HESTER, California Science & Engineering Corporation (CASLEC), CALSEC TEAM — Existence of *charge transfer* collisions (CT) was overlooked in ITER design [1,2] although CT cross section [3], $\sigma_{CT} \sim 10^9$ b, is $\sim 10^{12}$ times that for fusion, $\sigma_{DT} \sim$ mb, at T = 10 KeV. CT deconfines plasma by neutralizing ions. Since $\sigma_{CT} = 100\ \sigma_{IO}$, ion $\tau_{CT} \sim \tau_E = 3x10^{-7}$ s <<thermalization time ~ 0.1 s; plasma cannot form. $\tau_E \sim 1$ s requires operating vacuum p $\sim 10^{-9}$ torr, base 10^{-11} torr. CT oversight brings 4 serious but corrigible errors: –Operating at T = 10-30 KeV below Critical ion energy [4,5] $E_c \sim 200$ KeV, CT prevents plasma formation [6]. Above E_c, ion dominates $\tau_E = 24$ s achieved [8] with 700 KeV D^+.–No UHV system; base 10^{-7} torr[2]. Based on tenet that $\sigma_{CT}/\sigma_{io} \sim 10^2$, opposite to measured [3] $\sigma_{CT}/\ \sigma_{io} \sim 10^2$, ionization *by itself*, acts as UHV ion pump; data show it is compressor.–Neutral injection of 10^{22} D/T s^{-1} will result in pressure ~ 1 torr, a "poison."–ITER goal $n\tau \sim 10^{20}$ m^{-3} s^{-1} presented as Lawson [9] is "1% burn-up" criterion; real $n\tau \sim 10^{22}$ $m^3 s^{-1}$. *Preprint presented to Fusion Energy Sci. Committee, USDOE 11/11/14. †Deceased [1] Nucl. Fusion 49 065012 (2009). [2] *Pumping Systems for ITER*, 3/01 (2001). [3] Physics Scripta, 23, 143 (81). [4] Evid. Crit. Energy, www.world-scientific-education.net [5] Ibid Am. Phys. Soc. March Meeting 2015, Abstract T34.00004. [6] Exp. Evidence Absence Thermonuc. Fus. Power prod. In TFTR, www.world-scientific-education.net. [7] *Phys. Rev. Lett.* 54, 769 (85). [8] NIM A 271 1-288 (88). [9] Proc. Phys. Soc. B70, 6, (57).

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