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Changes in Edge and Scrape-off Layer Plasma Behavior Due to Variation in Magnetic Balance¹ T.W. PETRIE, A.W. HYATT, R.J. LA HAYE, A.W. LEONARD, M.A. MAHDAVI, T.H. OSBORNE, W.P. WEST, General Atomics, M.E. FENSTERMACHER, C.J. LASNIER, G.D. PORTER, M.E. RENSINK, N.S. WOLF, LLNL, J.G. WATKINS, SNL — We report on recent experiments in which the magnetic balance of highly-triangular H-mode plasmas was systematically varied. “Magnetic balance” is quantified in terms of dR_{sep} , which is the radial distance between the upper divertor separatrix and the lower divertor separatrix, as determined at the outboard midplane. The ∇B drift was toward the X-point for which dR_{sep} was negative. Sizable changes in edge and core plasma properties, e.g., pedestal density ($n_{e,ped}$) and energy confinement (τ_E), were observed when dR_{sep} was varied between 0 and +2 cm. However, τ_E and $n_{e,ped}$ were insensitive to changes in magnetic balance for $dR_{sep} < 0$. ELMing was absent on the high field side of the core and scrape-off layer plasmas for double-null divertors (DND), even as ELMing was clearly present on the low field side. Thus, DND operation may largely relax the requirement for “ELM protection” on the inboard divertors and centerpost in future tokamaks.

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- Prefer Oral Session
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