Abstract Submitted for the DPP12 Meeting of The American Physical Society

Effect of Divertor Shaping on Divertor Plasma Behavior on DIII-D<sup>1</sup> T.W. PETRIE, A.W. LEONARD, T.C. LUCE, M.A. MAHDAVI, General Atomics, C.T. HOLCOMB, M.E. FENSTERMACHER, D.N. HILL, C.J. LASNIER, Lawrence Livermore National Laboratory, J.G. WATKINS, Sandia National Laboratories, R.A. MOYER, University of California San Diego, P.C. STANGEBY, University of Toronto — Recent experiments examined the dependence of divertor density  $(n_{TAR})$ , temperature  $(T_{TAR})$ , and heat flux at the outer divertor separatrix target on changes in the divertor separatrix geometry. The responses of  $n_{TAR}$ and  $T_{TAR}$  to changes in the parallel connection length in the scrape-off layer (SOL)  $(L_{\parallel})$  are consistent with the predictions of the Two Point Model (TPM). However,  $n_{TAR}$  and  $T_{TAR}$  display a more complex response to changes in the radial location of the outer divertor strike point  $(R_{TAR})$  than expected based on the TPM. SOLPS transport analysis indicates that small differences in divertor geometry can change neutral trapping sufficient to explain differences between experiment and TPM predictions. The response of the core and divertor plasmas to changes in  $L_{\parallel}$  and  $R_{TAR}$ , under both radiating and non-radiating divertor conditions, will be shown.

<sup>1</sup>Work supported by the US Department of Energy under DE-FC02-04ER54698, DE-AC52-07NA27344, DE-AC05-00OR22725, and DE-AC04-94AL85000.

Tom Petrie General Atomics

Date submitted: 24 Jul 2012

Electronic form version 1.4