Two-point Analysis of SOLPS Modeling for a Slot Divertor[1] P.C.
STANGEBY, U. Toronto, J.M. CANIK, ORNL — Two-Point Modeling, 2PM, is
used to verify and quantify SOLPS code analysis of a narrow slot divertor configu-
ration for a Fusion Nuclear Test Facility based on the Advanced Divertor concept,
FNSF-AT [1]. The conventional 2PM includes free parameters, the power and mo-
mentum loss factors, $f_{pwr-loss}$, $f_{mom-loss}$. Kotov and Reiter showed that the 2PM
is exact in the framework of the equations solved by the B2 code when $f_{pwr-loss}$
and $f_{mom-loss}$ are computed from the B2 code output [2]. An approximation of this
procedure is applied here to the SOLPS analysis for FNSF-AT. As the "upstream"
density at the outside midplane separatrix, n_u, is increased from 4.8e19 to 8.4e19
m^{-3}, the value of T_{e-OSP} at the outer strike point drops from 70 to 2 eV while
n_{e_OSP} increases from 2E20 to 2E21 m^{-3}. Over this range of conditions the 2PM
values of T_{e-OSP} were found to be within a factor of 2 of the SOLPS values. The
relative roles of power and momentum loss are discussed.

[1] Garofalo et al, Nucl. Fusion 54 (2014) 073015.
[2] Plasma Phys. Control. Fusion 51 (2009) 115002.

P.C. Stangeby
U. Toronto