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Development

Theory Experiment

Fusion Blanket Development in FDF, C.P.C. Wong, J.P. Smith, R.D. Stambaugh, *General Atomics* — To satisfy the electricity and tritium self-sufficiency missions of a Fusion Development Facility (FDF), suitable blanket designs will need to be evaluated, selected and developed. To demonstrate closure of the fusion fuel cycle, 2-3 main tritium breeding blankets will be used to cover most of the available chamber surface area in order to reach the project goal of achieving a tritium breeding ratio, $TBR > 1$. To demonstrate the feasibility of electricity and tritium production for subsequent devices such as the fusion demonstration power reactor (DEMO), several advanced test blankets will need to be selected and tested on the FDF to demonstrate high coolant outlet temperature necessary for efficient electricity production. Since the design goals for the main and test blankets are different, the design criteria of these blankets will also be different. The considerations in performing the evaluation of blanket and structural material options in concert with the maintenance approach for the FDF will be reported in this paper.

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