

Abstract Submitted
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The Development of LITER - a Lithium Evaporator for Use in Fusion Devices¹ D.K. MANSFIELD, H.W. KUGEL, R. KAITA, R.P. MAJESKI, L. ZAKHAROV, M. BELL, T. BENNET, L. GUTTADORA, S. JURCYZNSKI, T. PROVOST, J. TAYLOR, J. TIMBERLAKE, PPPL — An evaporator to be used for the deposition of elemental lithium onto the plasma facing components of fusion devices has undergone several stages of design, evaluation and development. A 150 Watt prototype evaporator with a modest 10 gram reservoir was first tested in the laboratory before it was successfully employed on the CDX-U device in a horizontally-pointing geometry. Drawing on that experience, the prototype evaporator design then evolved through several stages as its reservoir capacity was increased to 50 to 100 grams, its power consumption increased to about 300 Watts and its pointing-orientation changed from horizontal to vertically-downward so that it could be used to coat the lower divertor in the NSTX device. These design changes were dictated from both laboratory experience and from practical experience on NSTX. The most challenging problems associated with the evaporator have been the need to achieve reasonable rates of evaporation (1 to 100 mg/ min) at operating temperatures in the range of 500 C to 700 C while avoiding the uncontrolled wetting of the lithium onto external regions of the evaporator. The design and performance of the evaporator at each stage of its development will be summarized and discussed in detail.

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