THE DEPENDENCE OF IRRADIATION CREEP IN AUSTENITIC ALLOYS ON DISPLACEMENT RATE AND HELIUM TO DPA RATIO - F. A. Garner (Pacific Northwest National Laboratory)*, M. B. Toloczko (Washington State University) and M. L. Grossbeck (Oak Ridge National Laboratory)

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EXTENDED ABSTRACT

Before the parametric dependencies of irradiation creep can be confidently determined, analysis of creep data requires that the various creep and non-creep strains be separated, as well as separating the transient, steady-state, and swelling-driven components of creep. When such separation is attained, it appears that the steady-state creep compliance, B_o, is not a function of displacement rate, as has been previously assumed. It also appears that the formation and growth of helium bubbles under high helium generation conditions can lead to a significant enhancement of the irradiation creep coefficient. This is a transient influence that disappears as void swelling begins to dominate the total strain, but this transient can increase the apparent creep compliance by 100-200% at relatively low ($\leq$20) dpa levels.

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