SWELLING OF F82H IRRADIATED AT 673 K UP TO 51 DPA IN HFIR – Y. Miwa, E. Wakai, K. Shiba (Japan Atomic Energy Research Institute), J. P. Robertson, A. F. Rowcliffe (Oak Ridge National Laboratory), and A. Hishinuma (JAERI)

Extended Abstract (the full paper will be published in the Journal of Nuclear Materials as Proceedings of the Ninth International Conference on Fusion Reactor Materials, October 10-15, 1999, Colorado Springs, Colorado).

Reduced-activation ferritic/martensitic steel, F82H (8Cr-2W-0.2V-0.04Ta-0.1C), and the same alloy doped with isotopically tailored boron were irradiated at 673 K up to 51 dpa in the High Flux Isotope Reactor (HFIR). The concentrations of ^{10}B in these alloys were 4, 62, and 325 appm, during HFIR irradiation, which resulted in the production of 4, 62, and 325 appm He, respectively. After irradiation, transmission electron microscopy was carried out, and the following conclusions were made.

(1) Swelling of F82H-std and the two alloys doped with ^{10}B increased linearly with increasing displacement damage. The root mean cube of voids increased and the number density of voids decreased with increasing displacement damage.

(2) With the addition of ^{10}B, number density of cavities increased. Larger swelling was observed in alloys that contained higher concentrations of ^{10}B.

(3) Voids were observed in the matrices, but rarely on the lath boundaries or the precipitate/matrix interfaces.