THE EFFECTS OF IRRADIATION, ANNEALING AND REIRRADIATION ON AN A533B RPV STEEL

M. K. Miller, R.K. Nanstad, M.A. Sokolov and K. F. Russell
Metals and Ceramics Division, Oak Ridge National Laboratory,
Oak Ridge, TN 37831-6136, USA

The mechanical properties, number density, size, and composition of precipitates in an A533B RPV steel have been characterized through two irradiation and annealing cycles. Atom probe tomography revealed that irradiation (fluence = $5x10^{23}$ m^{-2}) (E>1MeV) produced a high number density of copper-, manganese-, nickel- and silicon-enriched precipitates. After annealing (168 h at 460°C), their number density significantly decreased. After irradiation (fluence = $0.85x10^{23}$ m^{-2}), annealing and re-irradiation (fluence = $0.85x10^{23}$ m^{-2}), a high number of copper-enriched precipitates was observed. A low number density of some large copper-rich precipitates was observed after the second annealing treatment.

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