

DISCUSSION

*J. J. Holmes*¹—Have you done any additional testing?

K. R. Garr (authors' closure)—Yes, we have done tests at 400, 600, and 700 C (752, 1112, and 1292 F) on Type 316 stainless steel. Figures 6 and 7 show the average yield strength and total elongation as a function of test temperature. In the annealed condition, irradiated samples have higher yield strengths and smaller total elongations than the control samples at all temperatures except 700 C. At 700 C the yield strengths are essentially the same, indicating that most of the irradiation-produced defects have annealed out during the 1 h hold at temperature prior to testing. The total elongation of the irradiated samples remains considerably below the control samples due to helium embrittlement.

In the case of the cold-worked samples, Treatment D, the reverse is observed; the irradiated samples have a lower yield strength and slightly higher total elongation, indicating an irradiation softening, which is due in part to the reversion of martensite to austenite, as noted earlier. At 700 C the irradiated sample has a yield strength that is higher than the control.

¹ Section manager, WADCO, Richland, Wash. 99352.

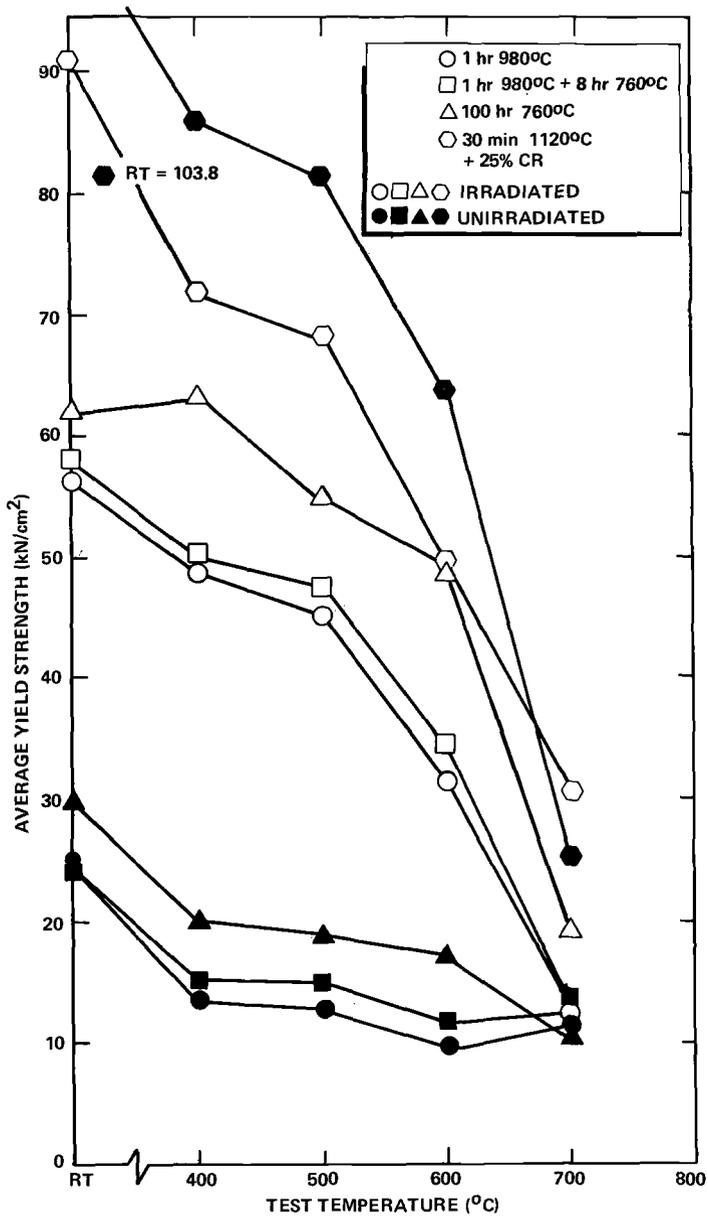


FIG. 6—Average yield strength versus test temperature for Type 316 stainless steel.

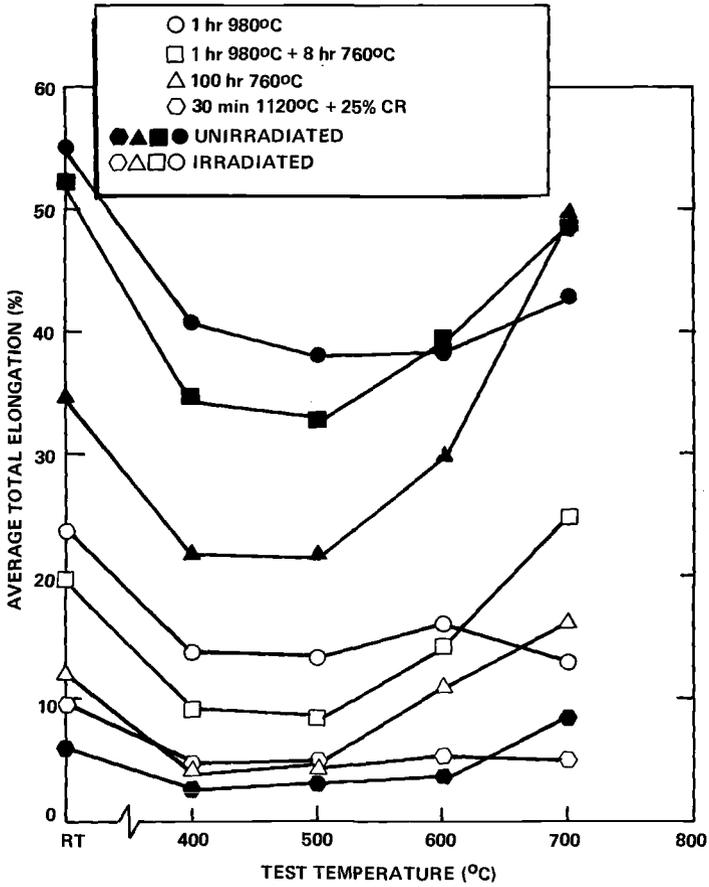


FIG. 7—Average total elongation versus test temperature for Type 316 stainless steel.