DISCUSSION

A. G. Nicol[1] *(written discussion)*—What type of load frame(s) did you use for your tensile tests? Is the work performed in your hot cell?

R. B. Adamson et al (authors' closure)—All tests were performed using a screw-driven Instron testing machine having a maximum capacity of 9072 kg (20 000 lb). The expanding mandrel tests were conducted remotely in a hot cell; the other tests were conducted in a controlled laboratory using portable radiation shielding.

G. E. Lucas[2] *(written discussion)*—Assuming typical product form textures for your test specimens, it is conceivable that stress states could be obtained in your specimens which would disallow prism slip. Were the deformation systems operating in the different tests analyzed and, if so, did you see c+a or basal slip?

R. B. Adamson et al (authors' closure)—In most practical cases, the texture of Zircaloy components is such that prism slip would be allowed for the expected in-service stress condition. Even for highly textured Zircaloy, however, there will be some grains not properly oriented for prism slip. Also most reactor components are textured such that through-wall deformation by prism slip is not favored. We have done TEM analysis of dislocation channels in many specimens and usually observe channels of the $\{10\bar{1}0\}$ type. We do, however, observe channels of the $\{0001\}$ type occasionally. The frequency of basal plane channeling appears to increase as the oxygen content of the Zircaloy is decreased, especially below about 500 ppm.

N. F. Panayotou[3] *(written discussion)*—How did you define failure in your expanding mandrel tests?

R. B. Adamson et al (authors' closure)—Failure is defined as formation of a through-wall crack. This is usually accompanied by a significant drop in load during the test.

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