



August 26, 1987

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Dr. C. Vernon Hodge
Generic Communications Branch
Division of Operational Events Assessment
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, DC 20555

Dear Dr. Hodge:

This letter will serve to confirm several of the points covered in our recent conversation.

A study was initiated some time ago at the University of Michigan to characterize the effects of radiation on shrinkage in Boraflex. A preliminary report was issued which presented data through a cumulative dose of $1E10$ rads gamma and greater than $3E18$ neutrons/cm². The Boraflex used in the test was produced under the same production procedures and raw material specifications which apply to that material used in Turkey Point and other spent fuel storage racks.

The data collected indicates the shrinkage at both the $5E9$ and $1E10$ levels of irradiation was essentially the same, averaging in all dimensions 2.1% with a length to width swing of about $\pm 0.2\%$. Preliminary evaluation of the $2.5E10$ data shows an average of about 2.4% with a length to width swing of about 0.4%. The cause of the swing is being evaluated, but could be caused by some anisotropy or by increasing measurement error coincident with a small observed loss of sharpness of the edge. The relatively small sample size causes a measurement of only 0.01 inches to represent about 0.6% size change, therefore, it would be expected that the measured shrinkage would err on the high side as the sharpness of the sample edge declines.

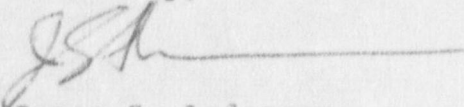
Since the accuracy factor is a significant limitation of small size samples, we recommend that test coupons be as large as possible. Bisco has entered into a new agreement with the University of Missouri in which samples measuring about 5" x 12" will be irradiated in order to minimize the measurement accuracy factor. In addition, since the reduction of edge sharpness in the high dose samples range from less than .01 inches to about .04 inches, the larger sample will essentially eliminate this affect from the determination of shrinkage.

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As usual, we will keep you informed of future data as it is generated.

Sincerely,

A handwritten signature in dark ink, appearing to be 'JSA', followed by a horizontal line extending to the right.

James S. Anderson
President

JSA:lfh

USNRC-ES

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