bisco

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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 +/-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,

James S. Anderson
President

JSA:lfh