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Document Control Desk
U.S. NUCLEAR REGULATORY-COMMISSION
Washington, D.C. 20555

Attention: Mr. George Lear, Director
PWR Project Directorate No. 1

Gentlemen:

DOCKET NOS. 50-266 AND 50-301
RESULTS OF EXAMINATION OF POISON INSERT ASSEMBLIES
REMOVED FROM THE SPENT FUEL STORAGE RACKS
POINT BEACH NUCLEAR PLANT, UNITS 1 AND 2

Our July 23, 1986 letter advised you of our intent to remove two poison insert assemblies from the spent fuel storage racks and examine them. In that letter, we also committed to providing you the results of our examination. Our report, "Results of Boraflex Examination, Point Beach Nuclear Plant" is enclosed with this letter and provides the examination results and our conclusions.

In the enclosure, we note that the full-length inserts in the spent fuel racks are in excellent condition. The full-length Boraflex inserts have behaved largely as predicted for the gamma exposure received, experiencing embrittlement and some dimensional shrinkage. Overall, the Boraflex inserts were found suitable for performing their intended function.

On the other hand, the 2" x 2" samples in our surveillance program have reached a state where the Boraflex is friable and easily degraded. The neutron attenuation properties of the samples were confirmed by testing at the Georgia Institute of Technology. However, their physical integrity showed deterioration at doses of 1×10^{10} rads gamma and greater.

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Currently, the average spent fuel rack position has accumulated a gamma dose equivalent to six years exposure or 3×10^7 rads gamma. The samples have been irradiated to gamma exposures up to 1.6×10^{10} rads gamma. The full-length Boraflex insert which was examined received accelerated gamma exposures of 1×10^{10} rads, because it was adjacent to the sample location. This dose is equivalent to 20 years for the average spent fuel rack location.

We have concluded from the comparison of the two programs that the samples are not representative of the full-length Boraflex inserts. The differences observed between the physical conditions of the full-length sheets and smaller samples are possibly attributable to differences in methods of encapsulation, Boraflex geometry, and handling frequency. We do believe, however, that permeation of acidic spent fuel pool (SFP) water into Boraflex has a role in diminishing the integrity of the Boraflex material. It further appears that the extent of SFP water permeation into Boraflex is a function of gamma dose received. Our report provides additional information to support these conclusions.

To monitor the condition of boraflex in the Point Beach spent fuel racks, we intend to modify future surveillance as follows:

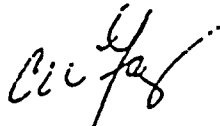
1. Since the samples do not appear representative of the full length Boraflex sheets and have limited value in predicting the onset of Boraflex degradation in the spent fuel racks, we will terminate the Point Beach surveillance program in REI-25, "Spent Fuel Rack Neutron Absorbing Material Surveillance Specimen Program." This includes eliminating the requirement to place freshly discharged spent fuel adjacent to the sample location every six months.
2. In the place of the current surveillance program, we will examine another full-length Boraflex sheet in approximately 5 years from the present. The recommended insert is at position SN-40/41, as it currently has exposures of 1.5×10^{10} rads gamma.
3. Subsequent examinations will be performed at locations and intervals to be determined after the next inspection.
4. We will continue to follow the industry's development of data regarding Boraflex.



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Overall, we believe our examination has confirmed the continued serviceability of the full-length Boraflex inserts in the Point Beach spent fuel racks. If you have questions concerning our report, please do not hesitate to contact us.

Very truly yours,



C. W. Fay
Vice President
Nuclear Power

Enclosure

Copy to NRC Resident Inspector
NRC Regional Administrator, Region III

