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SUBJECT: Informs NRC that util intends to terminate Boraflex Coupon  
Surveillance testing program while continuing Blackness  
Testing of plant spent fuel pool Boraflex panels.      O

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U. S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
Washington, D. C. 20555

Gentlemen:

Re: Turkey Point Units 3 and 4  
Docket Nos. 50-250 and 50-251  
Spent Fuel Pool Boraflex Surveillance Program

The purpose of this letter is to inform the NRC that Florida Power & Light Company (FPL) intends to terminate the Boraflex Coupon Surveillance (BCS) testing program while continuing Blackness Testing of the Turkey Point Units 3 and 4 spent fuel pools' Boraflex panels. The BCS testing program will be terminated effective October 10, 1995.

Background

By letter dated November 21, 1984, the NRC issued Amendments 111 and 105 to Facility Operating Licenses DPR-31 and DPR-41 for Turkey Point Units 3 and 4, respectively. The amendments authorized an increase in the capacity of each unit's spent fuel pool (SFP) from 621 to 1404 spaces. The expansion of the SFPs was accomplished by reracking each SFP into two discrete regions. The NRC's Safety Evaluation (SE) related to these amendments stated:

To provide added assurance that no unexpected corrosion or degradation of materials will compromise the integrity of the racks, the licensee has committed to conduct a long term poison coupon surveillance program, which will be representative of the material used in both the Region I and Region II locations. .... The initial surveillance of the specimens will be performed after approximately five years of exposure to the pool environments. Subsequent surveillances will be based on the initial results to assure acceptable material performance throughout the life of the plant.

By letter L-87-279, dated July 10, 1987, FPL responded to an NRC Request for Additional Information concerning the Boraflex in use at Turkey Point. Concerning the in-service surveillance program for Boraflex neutron absorbing material, FPL stated:

To confirm that the Boraflex at Turkey Point is acceptable for continued use, FPL will conduct two types of examinations of the Boraflex. First, as described in the Turkey Point Units 3 and 4 Spent Fuel Storage Facility Modification,

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Safety Analysis Report, dated March 14, 1984. Section 4.8, Testing and In-service Surveillance, FPL will conduct an in-service surveillance program. This program will evaluate both Region I and Region II Boraflex samples .....

Second, FPL will conduct a surveillance program to detect any spatial distribution anomalies in the Boraflex panels. This program, called "Blackness Testing", will involve the use of a fast neutron source and thermal neutron detectors.

The expansion in storage capacity of the Turkey Point Units 3 and 4 SFPs was completed in 1985 and 1989, respectively. Boraflex coupon surveillance tests were performed in 1989, 1992 and 1993; Blackness Testing was performed in 1987, 1989 and 1993.

### Discussion

The Boraflex Surveillance program has two goals:

1. To provide Boraflex coupon test data that can be readily used for monitoring the performance of Boraflex panels installed in SFP Regions I and II; and,
2. As discussed in the NRC's SE, to reveal deterioration of the Boraflex that might lead to the loss of neutron absorbing power well before significant deterioration occurs.

These goals have been addressed by Boraflex Coupon Surveillance and Blackness Testing, as discussed below.

### Boraflex Coupon Surveillance

As discussed in letter L-87-279, the BCS testing program met the first goal above by providing the following data on the physical and nuclear characteristics of the Boraflex coupons:

1. Examination of the stainless steel jacket material for smoothness or presence of visible damage.
2. Examination of the coupon for smoothness or presence of visible damage.
3. Measurement of coupon's weight, volume and density.
4. Neutron radiography of the coupon to determine uniformity of boron distribution.
5. Attenuation measurements and determination of  $B^{10}$  loading.

FPL has collected a large amount of physics data discussed above on Boraflex coupons, not only from Turkey Point's own surveillance program, but also from St. Lucie Unit 1 and the



Electric Power Research Institute data bank. Data such as the above are widely available because they are reported industry-wide in Boraflex coupon test reports. This type of data is important in understanding degradation mechanisms, but it is not useful in practical applications of Boraflex panels in SFP racks. As described above, Boraflex coupon data are characterized by five types of data. In contrast, Boraflex panel data are physically characterized by the existence of panel gaps, panel shrinkage, and changes in the size and axial distribution of gaps. Based on FPL's experience, the coupon data indicate that the physical characteristics of Boraflex change with time. The application of the BCS data to monitor in-service Boraflex panel performance is of limited use since none of the test data can be correlated with the presence and/or distribution of gaps in the Boraflex panels. Even the neutron performance of the coupons is applicable only to the coupons themselves and not directly to the Boraflex panels in the SFP.

Although the BCS testing program has successfully met the first goal of the program, the information the program supplies is not plant specific, is available from the industry, and does not permit correlation of BCS data with in-service Boraflex panel performance.

#### Blackness Testing

To enable verification of Boraflex panel performance, in letter L-87-279, FPL committed to perform "Blackness Testing." Blackness Testing is a procedure which employs neutron logging. This technique uses a sealed neutron source and thermal neutron detectors to verify the continued presence and integrity of the Boraflex neutron absorbing material in the storage racks.

During the neutron logging, the testing tool (containing a source and four thermal neutron detectors) is lowered into individual spent fuel pool storage cells and vertically traverses the selected cells. As the tool traverses the cell, fast neutrons from the source pass through the cell walls and are thermalized in the water adjacent to the cell. Back-scattered thermal neutrons are absorbed in areas of the rack where the absorber material is present and intact. In areas where the absorber material is missing or significantly degraded, the thermal neutrons pass through the cell wall and are registered as counts by the test tool detectors. Increases in count rate, as compared to the reference standard, indicate missing or degraded absorber material. Blackness Testing provides a direct measurement of the position of the Boraflex absorbers, including shrinkage, gap formation, size, and distribution as they change with time and exposure.

In contrast to the BCS data, Blackness Testing data is directly applicable to Turkey Point since it measures the performance of the Boraflex panels which are in place in the SFPs. The Blackness Testing data provides for direct measurement of the position of the Boraflex absorber, including shrinkage, gap formation, size, distribution, and permits determination of changes over time. As the test measures neutron performance of the panels directly, it is of much greater use than the data from the BCS testing program. Consequently, the



Blackness Testing program enables Turkey Point to meet the second objective of the Boraflex Surveillance program, which is detection of Boraflex deterioration before it becomes significant.

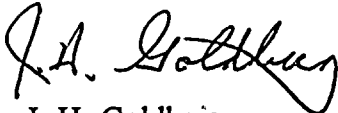
Conclusion

FPL has determined that continued surveillance of Boraflex coupons in the Turkey Point Units 3 and 4 SFPs does not provide additional information necessary to evaluate the in-service performance of Boraflex. FPL has evaluated this commitment change pursuant to 10 CFR 50.59 and determined that an unreviewed safety question does not exist. Based on the above, FPL will discontinue the BCS testing program effective October 10, 1995. The Turkey Point Boraflex Surveillance program will consist of Blackness Testing of the SFP racks on a frequency of one test every five years performed on specific Boraflex panels in either SFP.

FPL has determined that this proposed change is consistent with the Executive Order to reduce regulatory burden and, as such, is a Cost Beneficial Licensing Action with estimated savings over the remaining licensed operating terms of both units in excess of one hundred thousand dollars.

Should there be any questions on this topic, please contact us.

Very truly yours,



J. H. Goldberg  
President  
Nuclear Division

JHG/RJT/rt

cc: S. D. Ebnetter, Regional Administrator, Region II, USNRC  
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