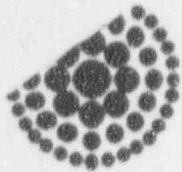


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Florida Power

CORPORATION

Crystal River Unit 3
Docket No. 90-302

March 3, 1994
3F0394-01

Mr. James M. Taylor
Executive Director of Operations
U. S. Nuclear Regulatory Commission
Washington, DC 20555

Subject: Thermo-Lag Fire Barriers

Dear Mr. Taylor:

As a follow-up to our recent meeting, I would like to take this opportunity to outline for you Florida Power Corporation's (FPC) approach to the resolution of the Thermo-Lag fire barrier issue. We have an ongoing program to address the qualification of Thermo-Lag fire barriers. It is FPC's intention to adhere to sound technical bases in resolving this issue. The output of our program will ensure that one train of plant systems necessary to achieve and maintain safe shutdown will remain free of fire damage. In this regard, our program is consistent with the 10 CFR 50, Appendix R objective. However, we intend to use an alternate, performance based approach in meeting adequate separation requirements. This program relies on NUMARC's activities in this area as well as our own actions associated with the final resolution of barrier functionality. FPC is monitoring and providing input as necessary to the NUMARC Thermo-Lag program via membership on the Fire Protection Working Group, and participating in an EPRI Fire Probabilistic Safety Assessment program. These activities will culminate in the application of a performance based approach to resolution of the Thermo-Lag fire barrier issue. This was reflected in our response to the Generic Letter 92-08 information request on February 9, 1994. In our response, we provided as much and as accurate information as we had available.

Section III.G of Appendix R which requires the separation of redundant cable trains needed for safe shutdown. Alternatives for meeting the separation criteria included (a) adequate separation distance with no intervening combustibles, (b) protection by detection/suppression along with wrapping the circuits in one hour fire barrier material, or (c) protection of the circuit with three hour fire barrier material. Evaluations of the alternatives concluded that the one hour and three hour barrier alternatives were the most viable for our Crystal River Unit 3 plant. Each area was

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analyzed for the required protection and the fire barrier material selection made. Thermo-Lag material was selected primarily because of the material weight, the ampacity derating factors and its field workability. Thermo-Lag material was used to provide raceways with one and three hour protection, as radiant energy heat shields and as component fire barriers.

FPC installed Thermo-Lag from February, 1985 through March, 1986. The installation of the raceway fire barriers and the radiant energy heat shields exceeded the manufacturer's instructions and typical industry practice. Each installer was given specific training, a rigorous quality control program was used, and a manufacturer's representative was retained on site for the duration of the activity. Further, the Crystal River Unit 3 raceway installation practices exceeded the manufacturer's requirements in at least two specific regards. For the applications in the Control Complex (~30% of installations), the applied cover thickness of the trowel grade Thermo-Lag was greater than specified by the manufacturer. In all raceway applications, tie wire and steel banding was done at closer intervals than required by the Thermo-Lag installation manual.

The final cost was in excess of fourteen million dollars. The conduit and cable tray supports were upgraded to account for the weight of the Thermo-Lag material. The final installation of Thermo-Lag material totaled in excess of 7700 linear feet of Thermo-Lag wrapped cable trays and conduits, and over 15,600 linear feet of Thermo-Lag wrapped raceway supports. Estimating a cost for the resolution of the current Thermo-Lag concerns is difficult at this time, since the information on potential fixes is incomplete. Options include: exemptions from the regulations; relatively minor barrier add-ons; or, complete removal and reinstallation of all of the Thermo-Lag fire barrier material. The use of performance based fire barriers which match fire endurance rating to the fire hazard present, and exemptions to the regulations are estimated to cost between one half and two million dollars. Minor upgrades would cost between five and twenty million dollars to implement. The worst case option would involve removal of all the Thermo-Lag fire barrier material, replacing it with approved material to maintain the one or three hour rating (including the removal and disposal of contaminated material and upgrading of supports), or rerouting safe shutdown circuits. The cost of either of these options is between twenty and forty million dollars. It is, therefore, imperative for us to obtain all of the test data and consider all alternatives prior to initiating modifications to the fire barriers in the plant.

Because of the scope of this issue, numerous activities must be completed and brought together to fully address the problem, including fire barrier testing, fire modeling, probabilistic safety assessments and evaluations of plant modifications. Not all of these activities have been completed which prevents the development of an all encompassing program and schedule at this time. The magnitude of this project requires an engineering evaluation be performed to assure the proposed fixes meet the safe shutdown needs in the most cost effective manner.

The need to evaluate changes to the regulations in lieu of physical modifications to the plant becomes evident when the resources necessary to modify the plant are outlined as demonstrated above. The regulatory requirement for one and three hour barriers is arbitrary and does not account for actual plant conditions or response

of the on-site fire brigade which significantly reduces the reliance on fire barrier performance times. It is FPC's belief that revising the Appendix R regulations to address the performance based aspects of fire barriers is a more appropriate solution to this concern than plant modifications, particularly considering the safety significance of the issue. In the Final Report of the Special Review Team for the Review of Thermo-Lag Fire Barrier Performance (Attachment 1 to IN 92-46), the team stated the following.

"Although the special review team considers the fire resistance ratings of the Thermo-Lag fire barriers indeterminate, there is evidence that the barriers will provide some level of fire protection. In addition, most fire areas have low fuel loads, controlled ignition sources, and are equipped with other passive and active fire protection features to alert and assist plant operators in the event of a fire. Therefore, the review team considers the relative safety significance of the fire barrier concerns to be low." (emphasis added)

Providing physical upgrades to fire barriers is not an effective or efficient use of monetary and human resources when changes to the regulations in support of a performance based system is more appropriate. In addition, since this issue is being actively addressed by the industry through an organized approach with NUMARC, and adequate compensatory measures have and continue to be in place to accommodate for any degradation in barrier performance, we believe it is premature to require detailed actions and schedules to be developed before information is available to assess the most appropriate actions.

Sincerely,



P. M. Beard, Jr.
Senior Vice President
Nuclear Operations

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xc: Regional Administrator RII, Stewart D. Ebnetter
Director NRR, William T. Russell