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SUBJECT: Forwards to follow-up 941229 ltr request for addl info re
GL 92-08, "Thermo-Lag 330-1 Fire Barriers."

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March 29, 1995

AEP:NRG:0692DD

Docket Nos.: 50-315
50-316

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

Gentlemen:

Donald C. Cook Nuclear Plant Units 1 and 2
RESPONSE TO FOLLOW-UP TO THE REQUEST FOR
ADDITIONAL INFORMATION REGARDING
GENERIC LETTER (GL) 92-08,
"THERMO-LAG 330-1 FIRE BARRIERS"

The purpose of this letter is to respond to a December 29, 1994, NRC letter that requested supplemental information associated with tests, analyses, and inspections required to determine the material properties and attributes of Thermo-Lag installed at Donald C. Cook Nuclear Plant. Our response is provided in the attachment to this letter.

The December 29, 1994, NRC letter requested that our response be made under oath or affirmation according to the provisions of Section 182a of the Atomic Energy Act of 1954, as amended, and 10 CFR 50.54(f).

Sincerely,

E. E. Fitzpatrick
Vice President

SWORN TO AND SUBSCRIBED BEFORE ME

THIS 29th DAY OF March 1995

Notary Public MICHELOT BENJAMIN

My Commission Expires: 3-9-98

cad

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AD29



U. S. Nuclear Regulatory Commission
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AEP:NRC:0692DD

Attachment

cc: A. A. Blind
G. Charnoff
J. B. Martin
NFEM Section Chief
NRC Resident Inspector - Bridgman
J. R. Padgett

ATTACHMENT TO AEP:0692DD

Response to NRC Follow-up Letter dated December 29, 1994,
Request for Additional Information Regarding Generic Letter
(GL) 92-08, "Thermo-Lag 330-1 Fire Barriers"

1. Thermo-Lag Materials

- a. Describe the specific tests and analyses that will be performed to verify that the Thermo-Lag fire barrier materials that are currently installed at Cook Nuclear Plant, or that will be installed in the future, are representative of the materials that were used to address the technical issues associated with Thermo-Lag barriers and to construct the fire endurance and ampacity derating test specimens. The tests and analyses shall address the material properties and attributes that were determined or controlled by TSI during the manufacturing process and the quality assurance program. The tests and analyses shall also address the material properties and attributes that contribute to conclusions that the Thermo-Lag materials and barriers conform to NRC regulations. These include:
1. chemical composition;
 2. material thickness;
 3. material weight and density;
 4. the presence of voids, cracks, and delaminations;
 5. fire endurance capabilities;
 6. combustibility;
 7. flame spread rating;
 8. ampacity derating, and
 9. mechanical properties such as tensile strength, compressive strength, shear strength, and flexural strength.
- b. Describe the methodology that will be used to determine the sample size, and demonstrate that the sample size will be large enough to ensure that the information and data obtained will be sufficient to assess the total population of in-plant Thermo-Lag barriers, and the materials that will be installed in the future. In determining the sample size, consider the time of installation and manufacture of the various in-plant materials and barrier installations. Give the number and types (e.g., panels, conduit preshapes, trowel-grade materials, stress skin) of samples that will be tested or analyzed.

- c. Submit the schedule for verifying the Thermo-Lag materials.

RESPONSE

- a. The extent of additional Thermo-Lag tests and analyses performed for Cook Nuclear Plant will be influenced by the outcome of our effort to reduce the need for Thermo-Lag fire barriers. Through revalidation of our Appendix R safe shutdown analysis, we believe we can reduce the number of 10 CFR 50 Appendix R fire barriers by approximately seventy percent. We are also evaluating the use of alternate fire barrier materials for replacement of the remaining Thermo-Lag fire barriers. If an alternate material is used for replacement, only a few Thermo-Lag fire barriers would remain. Because of these factors, additional Thermo-Lag testing and analysis, including sample size, will be tailored to these specific remaining Thermo-Lag fire barriers.

AEP is participating in the NEI-sponsored industry effort to evaluate chemical composition of Thermo-Lag samples as a means of addressing product consistency and thereby meeting the intent of the request for additional information (RAI). NEI will provide information on product consistency, based on the chemical composition testing, to NRC and licensees as described in NEI's February 21, 1995, letter to NRC. By using the chemical composition test data, AEP will have a basis to independently confirm applicability of generic industry test data to Cook Nuclear Plant installations with respect to chemical composition, fire endurance capability, combustibility, flame spread, and ampacity.

For each Thermo-Lag barrier for which credit is taken to satisfy fire protection requirements, at least one destructive examination will be performed to determine material thickness and to check for the presence of voids, cracks, and delaminations.

AEP does not believe ampacity is an issue of concern for Cook Nuclear Plant. AEP's position on ampacity was explained in our two previous responses to NRC RAIs, AEP:NRC:0692CV and AEP:NRC:0692DA.

Mechanical properties such as tensile strength, compressive strength, shear strength, and flexural strength relate to the ability of a fire barrier to maintain its structural integrity. Surveillances conducted at least every eighteen months in accordance with plant Technical Specifications indicate that the Thermo-Lag fire barriers at Cook Nuclear Plant have remained structurally intact. While it is unlikely that any slight variation in expected material properties would cause gross failure of the barriers during a seismic event, each installed Thermo-Lag barrier will be evaluated to determine if degradation of the barrier during a seismic event could reasonably endanger seismic category 1 equipment installed underneath the barrier. Upon completion of the evaluations, for any Thermo-Lag barriers which pose a seismic concern, actions will be taken as necessary to address the concern. These actions include but are not limited to removal or modification of the barriers.

- b. AEP will provide NEI with a total of seven Thermo-Lag samples for chemical testing. Five of these samples will be taken from installed barriers and will represent each of the Thermo-Lag product forms installed in each unit with the exception of preformed one-hour conduit sections. Two samples of preformed one-hour conduit sections were previously taken from stock material and chemically tested using the same test methodology and laboratory that NEI is using. The one-hour conduit sections were tested as a part of the fire endurance testing performed at Omega Point Laboratories for the Hot Shutdown Panel enclosures. The results of these tests will also be forwarded to NEI for inclusion in the NEI chemical test program.

It is anticipated that any future installation of Thermo-Lag materials would only be associated with the upgrading or repair of existing Thermo-Lag fire barriers. Thermo-Lag materials installed in the future will be analyzed for chemical composition. Prefabricated conduit sections and panels will be inspected for proper thickness prior to installation. Prefabricated conduit sections and panels will also be inspected for the presence of voids, cracks, and delaminations when such pieces are required to be cut during the installation process.

- c. An integrated schedule of activities necessary for the resolution of the Thermo-Lag issue for Cook Nuclear Plant was provided in our December 21, 1994, letter to NRC (AEP:NRC:0692DA). This schedule showed a final resolution date of December 30, 1996, and includes the above tests and analyses.

2. Important Barrier Parameters

- a. Describe the examinations and inspections that will be performed to obtain the important barrier parameters given in Section II of the RAI of December 1993, for the Thermo-Lag fire barrier configurations installed at Cook Nuclear Plant.
- b. Describe the methodology that will be applied to determine the number and type of representative in-plant fire barrier configurations that will be examined in detail and demonstrate that the sample size is adequate to ensure that the information and data that will be obtained are adequate to assess the total population of in-plant Thermo-Lag barriers. A large enough sample of the total population of configurations should be examined to provide reasonable assurance that the materials and important barrier parameters used to construct the in-plant barriers and any future barrier installations or modifications, are representative of the parameters used to construct the fire endurance test specimens.
- c. Submit the schedule for obtaining and verifying all of the important barrier parameters.

RESPONSE

- a,b. Examinations and inspections that have been performed to obtain the important barrier parameters given in Section II of the RAI of December 1993, for the Thermo-Lag fire barrier configurations installed at Cook Nuclear Plant were previously described in our letter to NRC dated December 21, 1994. That letter stated that the majority of the Thermo-Lag barrier parameters were known based upon visual inspections. Parameters such as panel rib orientation, which may not be verifiable by visual examination, would be assumed to be in the worst case orientation when using the NEI Application guide to evaluate the barrier.

Material thickness was previously identified as a parameter which was not verified through physical examination. Therefore, additional destructive examinations of each required Thermo-Lag barrier will be conducted to determine material thickness as described in our response to item 1.a above.

For the relatively small number of Thermo-Lag barriers that will still be required for the protection of raceways following our Appendix R revalidation effort, the majority of the eight important cable parameters identified in Section II of the RAI of December 1993, have been obtained. Identification of cable operating temperatures and temperatures at which the cables can no longer perform their intended function when energized at rated voltage and current are not considered necessary at this time. Per the acceptance criteria stated in GL 86-10, Supplement 1, these two parameters are not of importance if the fire endurance test results are satisfactory on the basis of internal temperature of the fire barrier system, visual inspection of the protected cables, and hose stream tests.

- c. An integrated schedule of activities necessary for the resolution of the Thermo-Lag issue for Cook Nuclear Plant was provided in our December 21, 1994, letter to NRC. This schedule showed a final resolution date of December 30, 1996, and includes the above examinations and inspections.