Station Support Department

10 CFR 50.54(f)

PECO ENERGY

PECO Energy Company
Nuclear Group Headquarters
965 Chesterbrook Boulevard
Wayne, PA 19087-5691

August 2, 1995

Docket Nos. 50-277
50-278
50-352
50-353

License Nos. DPR-44
DPR-56
NPF-39
NPF-85

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

Subject: Peach Bottom Atomic Power Station, Units 2 and 3,
Limerick Generating Station, Units 1 and 2,
Request for Additional Information Regarding
Generic Letter 92-08, "Thermo-Lag 330-1 Fire Barriers"

References:

1) Letter from G. A. Hunger, Jr. to USNRC Document Control Desk dated April 16, 1993

2) Letter from G. A. Hunger, Jr. to USNRC Document Control Desk dated December 29, 1993

3) Letter from G. A. Hunger, Jr. to USNRC Document Control Desk dated February 4, 1994

4) Letter from G. A. Hunger, Jr. to USNRC Document Control Desk dated December 19, 1994

5) Letter from G. A. Hunger, Jr. to USNRC Document Control Desk dated March 29, 1995

6) Letter from G. A. Hunger, Jr. to USNRC Document Control Desk dated June 26, 1995

Dear Sirs:

The subject request for additional information (RAI) regarding Generic Letter (GL) 92-08, "Thermo-Lag 330-1 Fire Barriers," dated May 30, 1995, requested that PECO Energy Company, (PECO Energy), respond in a timely manner with additional information regarding Thermo-Lag 330-1 fire barrier systems. PECO Energy had previously responded on April 16, 1993 (reference letter 1), December 29, 1993 (reference letter 2), February 4, 1994 (reference letter 3), December 19, 1994 (reference letter 4), and March 29, 1995 (reference letter 5) to this GL. In addition, the Individual Plant Examination of External Events (IPEEE) was submitted by Reference 6.

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Attachment I to this letter includes our response to the latest RAI. This response is being submitted under oath or affirmation as requested in the RAI.

If you have any questions please feel free to contact us.

Very truly yours,

G. A. Hunger, Jr.

G. A. Hunger, Jr.,
Director - Licensing

cc: T. T. Martin, Administrator, Region I, USNRC
W. L. Schmidt, USNRC Senior Resident Inspector, PBAPS
N. S. Perry, USNRC Senior Resident Inspector, LGS

COMMONWEALTH OF PENNSYLVANIA :

: ss.

COUNTY OF CHESTER :

W. H. Smith, III, being first duly sworn, deposes and says:

That he is Vice President of PECO Energy Company; that he has read the attached response to the Request for Additional Information regarding Generic Letter 92-08 for Peach Bottom Facility Operating Licenses DPR-44 and DPR-56, and Limerick Facility Operating Licenses NPF-39 and NPF-85, and knows the contents thereof; and that the statements and matters set forth therein are true and correct to the best of his knowledge, information and belief.

W. H. Smith, III
Vice President

Subscribed and sworn to
before me this 2nd day
of August 1995.

Mary Lou Skrocki
Notary Public

Notarial Seal
Mary Lou Skrocki, Notary Public
Tredyffrin Twp., Chester County
My Commission Expires May 17, 1999
Member, Pennsylvania Association of Notaries

Introduction

The request for additional information (RAI) regarding Generic Letter (GL) 92-08, "Thermo-Lag 330-1 Fire Barriers," dated May 30, 1995, requested that PECO Energy respond in a timely manner with additional information regarding Thermo-Lag 330-1 fire barrier systems. PECO Energy has reviewed the subject RAI, and each of the requested items is restated below along with our response.

1. A schedule for completion of all corrective actions is requested. Any changes to the schedule deemed necessary should be submitted to the staff for information only.

   Response

   PECO Energy has developed a comprehensive program to address the concerns with Thermo-Lag 330-1, and we have presented details of this program to the NRC in the previous responses to RAIs. In summary, the program will minimize our reliance on the use of Thermo-Lag 330-1, through a detailed safe shutdown re-analysis, which relies on operator actions, and economically justified plant modifications. This re-analysis will identify the population of cables that require some form of protection (i.e., encapsulation). The safe shutdown re-analysis, including identifying operator actions and the preliminary design of modifications, is complete for LGS, and scheduled to be completed for PBAPS by November 1995. To perform these activities, and the Thermo-Lag 330-1 construction parameter identification and analysis provided in the previous RAIs, PECO Energy has spent approximately 1.5 million dollars.

   The implementation of the re-analyzed safe shutdown analyses, and the analysis to qualify the required fire barrier configurations will be completed by December 1997 at an estimated cost of 1.6 millon dollars.

   The cost of final design and installation of the modifications and required fire barriers associated with the safe shutdown re-analysis has not been developed. The modification work and installation of fire barriers is contingent on unit outage schedules, and is currently scheduled to be completed by April of 1999 for LGS, and October of 1999 for PBAPS.

2. Additional information regarding the validation, verification, and application of the enhanced FIVE methodology for resolution of the Thermo-Lag 330-1 issue at Peach Bottom and Limerick should be submitted for staff review.

   Response

   The Fire Induced Vulnerability Evaluation (FIVE) methodology was used to develop the fire risk portion of the Individual Plant Examination of External Events (IPEEE). The IPEEE for LGS was submitted on June 26, 1995 (Reference 6) and is scheduled to be submitted in November 1995 for PBAPS. The FIVE methodology was described in the June 26, 1995 submittal. The insights regarding the fire risks for plant areas will be used to prioritize the development of encapsulations for cables identified as being required to support the re-analyzed safe shutdown. The FIVE methodology will also be used to ensure that any exemption requests that PECO Energy submits in the future will not create an unanticipated risk. PECO Energy recognizes that probabilistic safety analyses and fire modeling techniques cannot be used as the sole justification for deviations or exemption requests.

3. PECO Energy is requested to submit their ampacity derating evaluations, including any applicable test reports in order to provide an adequate response to the GL 92-08 reporting requirement 2.(c).

Response

Our previous responses to GL 92-08 acknowledged that ampacity concerns could be resolved independently of the fire endurance concerns. However, until the recent publication of the Safety Evaluation (SE) by the office of Nuclear Reactor Regulation ("Ampacity Issues Related to Thermo-Lag Fire Barriers, Texas Utilities Electric Company [TUEC], Comanche Peak Steam Electric Station, Unit 2" dated June 14, 1995) there was no agreement on an appropriate testing protocol. The TUEC ampacity testing was performed using the Institute of Electrical and Electronics Engineers (IEEE) Standard P848, "Procedure for the Determination of the Ampacity Derating of Fire Protected Cables," Revision 11, dated April 6, 1992 as a basis for their own test methodology. This revision of IEEE Standard P848 was not endorsed by the NRC. The TUEC SE, along with subsequent revisions of IEEE P848, are being reviewed for generic industry applicability to identify an appropriate test protocol for ampacity derating testing. PECO Energy will use an appropriate test protocol to develop a derating factor when designing the required encapsulation assemblies. As discussed in Response 1, the design of the required encapsulation assemblies is scheduled to be completed by December 1997.

4. In the December 29, 1994 RAI PECO Energy was directed to submit a schedule for completion of the chemical verification effort for Thermo-Lag 330-1 materials. A schedule was not provided in your March 29, 1995 response. Please provide a schedule.

Response

PECO Energy is participating in the industry testing program conducted by Nuclear Energy Institute (NEI). The chemical testing program, including performance of testing for organic and inorganic material, issuance of utility specific test reports, and completion of a summary assessment, will be completed by September 15, 1995. NEI will forward the assessment to utilities, and the NRC.

5. The NRC staff requested information on the material weight and density of Thermo-Lag 330-1 installed at PBAPS and LGS. PECO Energy responded that Thermo-Lag 330-1 material from both plants will be tested for density and that an appropriate test and sampling methodology will be developed. Please provide the methodology and schedule for completion.

Response

PECO Energy provided samples to NUCON Labs as part of the chemical verification effort. In addition to the chemical verification effort, PECO Energy requested density testing be performed; however, we did not attempt to control the moisture content in the samples. The samples selected for chemical and density verification were representative of the spectrum of sizes, applications and vintages of Thermo-Lag 330-1 material installed at PBAPS and LGS. The laboratory performed density testing through the use of standard laboratory techniques (i.e., volume and mass) and did not standardize the moisture content of the samples prior to determining the density. The samples ranged in density from a low of 67.4 lbs/ft^3 to a high of 86.8 lbs/ft^3, with an average density of 77.2 lbs/ft^3. The average density of 77.2 lbs/ft^3 for the manufactured forms (i.e., panels and pre-shapes) of Thermo-Lag material was consistent with the weight values documented in the acceptance criteria of the receipt inspections. The acceptance criteria for weight was calculated from the TSI supplied density value of "circa 78 lbs/ft^3." Trowel grade material is primarily used as a binding agent, and installation techniques may effect the density of the sample; therefore, it was not considered in determining the average density. The shipping documentation, acceptance criteria for weight and thickness, and the average density are intended to provide a reasonable assurance that the Thermo-Lag material installed at LGS and PBAPS has a consistent density; however, it is not intended to provide a statistically justified confidence in the density of the material.

6. PECO Energy responded that at PBAPS, installation records showed that the prefabrication inspections included a requirement for inspecting the assembly for voids. PECO Energy did not address the presence of cracks and delaminations for PBAPS. At LGS, PECO Energy is developing a destructive examination effort program that will include a visual inspection for voids, cracks, and delaminations. Please submit the requested information regarding the presence of cracks and delaminations in Thermo-Lag 330-1 barriers installed at PBAPS and the details of the destructive examinations program for LGS.

Response

For PBAPS, the prefabrication inspections were adequate to detect the presence of voids, cracks, and delaminations prior to the installation of Thermo-Lag 330-1. The inspection was performed to determine if the Thermo-Lag 330-1 was suitable for installation, and specifically addressed voids; however, the presence of cracks and delaminations would have rendered the material unsuitable for installation. According to PECO Energy documentation, unsuitable Thermo-Lag 330-1 was rejected. PECO Energy has reviewed the documentation and interviewed people who performed the inspections and installation. These efforts confirm that the prefabrication inspection would have resulted in voids, cracks, or delaminations being identified, and the Thermo-Lag 330-1 being rejected.

At LGS a similar prefabrication inspection was preformed. PECO Energy has determined as a result of interviews with people involved in the installation of Thermo-Lag 330-1 that the prefabrication inspection would have identified and rejected the material not suitable for construction. The documentation for the results of these inspections is no longer available; therefore, to confirm that Thermo-Lag 330-1 with cracks, voids and delaminations was not installed at LGS, samples of installed Thermo-Lag will be removed and inspected. The samples will be obtained from the destructive examination program being developed. The results of the inspection will be used to provide reasonable assurance that unsuitable Thermo-Lag 330-1 was not installed at LGS, and is not intended to provide a statistically justified confidence in the absence of voids, cracks and delaminations.

7. PECO Energy responded that the critical parameters that cannot be identified by walkdown will be determined through destructive examination of a sample of barriers. Please describe the methodology for the destructive examinations and a schedule for completion.

Response

At LGS, the destructive examination program will be used to determine critical construction parameters that cannot be identified or conservatively assumed. The destructive examination program includes the partial or complete disassembly of an existing Thermo-Lag 330-1 assembly such that the construction techniques used to build the assembly can be reasonably concluded.

At PBAPS, extensive Thermo-lag 330-1 design documentation exists, and the installation was performed in accordance with the PECO Energy Quality Assurance program; therefore, the vast majority of critical parameters are known. A destructive examination program will only be implemented if a critical construction parameter cannot be identified.

The destructive examination program, at LGS and if necessary at PBAPS, will examine those assemblies that, because of the safe shutdown re-analysis, are not required, and which share common construction techniques to required assemblies. Through this examination, a reasonable assumption about the unidentifiable parameters can be developed; however, it is not intended to provide a statistically justified confidence in these assumptions.

The destructive examination program will not be completed until Thermo-Lag 330-1 fire barriers required by the current safe shutdown analysis are no longer required. Our current licensing basis assumes that these assemblies are unanalyzed; however, even in their unanalyzed

condition the assemblies provide a degree of protection. To avoid the costs associated with reconstructing the barriers to maintain our current licensing basis, the destructive examination program will not begin until the Thermo-Lag assemblies are determined to no longer be required.

The destructive examination program is scheduled to be completed by January 1997 at LGS, and, if necessary by September 1997 at PBAPS.