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U. S. Nuclear Regulatory Commission
Att: Document Control Desk
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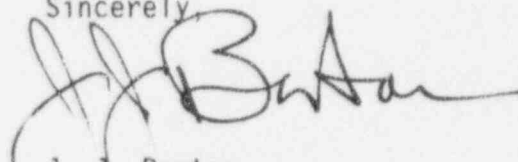
Dear Sir:

Subject: Oyster Creek Nuclear Generating Station (OCNGS)
Docket No. 50-219
Response to the Follow-up to the Request for Additional
Information Regarding Generic Letter 92-08 Issued Pursuant
to 10 CFR 50.54(f)

The purpose of this letter is to provide an up-dated response to those questions for which the answers provided in the Response to Request for Additional Information Regarding Generic Letter 92-08 "Thermo-Lag 330-1 Fire Barriers," Pursuant to 10 CFR 50.54(f), dated February 10, 1994 (C321-94-2012) were incomplete based on the reference to further NEI activity. At the time of the response, the NEI Phase I testing of up-graded Thermo-Lag configurations was complete; however, Phase II testing had not been completed and the NEI Application Guide was not finalized.

The attachment to this letter contains the OCNGS response to the NRC follow-up request for additional information itemized by section, based on the completed NEI Phase I and II test program results and issuance of the Application Guide.

Sincerely,



J. J. Barton
Vice President and Director
Oyster Creek

DJD/plp
Attachment

cc: Administrator, Region I
Senior Resident Inspector, OC
Oyster Creek Senior NRC Project Manager
NEI - Alex Marion

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Notarized by:

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My Commission Expires 6/5/96

AD29

II. Important Barrier Parameters

B. Required Information

1. State whether or not you have obtained and verified each of the aforementioned parameters for each Thermo-Lag barrier installed in the plant. If not, discuss the parameters you have not obtained or verified. Retain detailed information on site for NRC audit where the aforementioned parameters are known.

Response

In the previous response, C321-94-2012 dated February 10, 1994, GPUN provided the results of a documentation review which identified the generic Thermo-Lag barrier configurations and material amounts installed at OCNGS. Since that time, a walkdown of fire area/zones was initiated to document the installed barrier configurations with digitized computer images.

At this point in the evaluation process, the parameters identified during the test programs and the determination of the relevant Application Guide sections have been confirmed. The TSI configurations and performance parameter descriptions identified in the Application Guide were adapted by GPUN in a database matrix. Data was collected during the walkdown and entered into the database to permit detailed comparisons with NEI data and fire endurance test results from the TU and TVA programs. As a result of the comparison, fire ratings are being established on a component by component basis.

The walkdown is complete for all seven (7) of the affected OCNGS fire area/zones. The comparison activity and barrier acceptability determinations are in progress. The detailed information is being retained and will be available for NRC audit.

2. For any parameter that is not known or has not been verified, describe how you will evaluate the in-plant barrier for acceptability.

Response

As stated above, comparisons of the barrier data collected from the completed walkdowns with NEI data and fire endurance test results from TU and TVA programs is currently in progress. At this time, OCNGS has not identified any barrier parameter that cannot be verified. It is expected that

unverified parameters, if any, can be identified or enveloped by review of the original fire barrier installation documentation or by in-situ inspection/destructive testing.

3. To evaluate NEI's application guidance, an understanding of the types and extent of the unknown parameters is needed. Describe the type and extent of the unknown parameters at your plant in this context.

Response

GPUN Fire Protection Engineers have been using the Application Guide to compare OCNGS plant-specific data with the test program results. With the exception of plant-specific configurations which are currently unbounded by testing as identified in the response to question III.B.1 below, the plant walkdown/documentation review results have resulted in the identification of no relevant unknown parameters which were not verifiable by the walkdown activity or by review of the original fire barrier installation documentation.

III. Thermo-Lag Fire Barriers Outside the Scope of the NEI Program

B. Required Information

1. Describe the barriers discussed under Item I.B.1 that you have determined will not be bounded by the NEI test program.

Response

While it could not be determined which of the OCNGS electrical raceway fire barriers would not be bounded by NEI's test program at the time of the response to the initial request for additional information, completion of both Phase I and II testing and the Application Guide by NEI have made a nearly complete comparison with installed plant configurations possible. To date, the following specific plant installation configurations are not considered bounded by the NEI test programs:

- a. A pre-form conduit section is butted hard up to a concrete wall. The protected conduit passing through the wall/conduit is embedded. The barrier is pre-buttered and placed against the wall.
- b. HVAC ductwork enveloped with TSI barrier in the 480V Switchgear Rooms.
- c. Wall-mounted electrical penetration boxes on outside of drywell. The boxes have flexible blanket protection penetrating the TSI barrier box.

- d. Flexible TSI blanket cable protection (i.e., cable air drops).
 - e. Box configuration installed in 480V Switchgear Room.
2. Describe the plant-specific corrective action program or plan you expect to use to evaluate the fire barrier configurations particular to the plant. This description should include a discussion of the evaluations and tests being considered to resolve the fire barrier issues identified in GL 92-08 and to demonstrate the adequacy of existing in-plant barriers.

Response

Where the acceptability of a fire barrier system cannot be established based on comparison with test results, use of the NEI Application Guide, or adequately justified so as to support a request for an exemption, the noncompliance will be eliminated through one or more of the following options: modification or upgrade of the barrier, rerouting circuits, complete replacement of the barrier or by additional testing.

3. If a plant-specific fire endurance test program is anticipated, describe the following:
- a. Anticipated test specimens.
 - b. Test methodology and acceptance criteria including cable functionality.

Response

No plant-specific fire endurance test program is anticipated for the unbounded GPUN configurations. NEI has requested that plants identify those configurations that cannot be evaluated against configurations tested to date. NEI is proposing to complete tests remaining from Phase II and possibly include additional testing to address those currently unbounded installation configurations common to the greatest number of utilities. GPUN identified the configurations listed in response to Item No. 1 above in its answer to NEI and is also considering participation in a test effort with other utilities having equivalent unbounded configurations should the NEI tests not be performed or not include configurations specific to OCNCS.

IV. Ampacity Derating

B. Required Information

1. For the barriers described under Item I.B.1, describe those that you have determined will fall within the scope of the NEI program for ampacity derating, those that will not be bounded by the NEI program, and those for which ampacity derating does not apply.

Response

The scope of the NEI ampacity derating test program has not been finalized, therefore, we cannot identify the extent of those barriers which are to be bounded or not bounded by the NEI program. OCNGS has completed calculations for TSI protected circuits which indicate that the maximum allowable derating factors for these circuits currently exceed the 8% for 1-hour fire rated barriers and 11% for 3-hour fire rated barriers specified by TSI. Any new ampacity derating values resulting from NEI testing will be compared to the OCNGS calculated maximum allowable factors.

2. For the barriers you have determined fall within the scope of the NEI program, describe what additional testing or evaluation you will need to perform to derive valid ampacity derating factors.

Response

Additional evaluation of the effect of upgrades to existing thermal barriers containing power cables would be performed to verify that there were no significant changes in the temperature conditions within the barriers resulting from the upgrade. If significant changes are noted, further evaluations will be performed.

3. For the barrier configurations that you have determined will not be bounded by the NEI test program, describe your plan for evaluating whether or not the ampacity derating tests relied upon for the ampacity derating factors used for those electrical components protected by Thermo-Lag 330-1 (for protecting the safe shutdown capability from fire or to achieve physical independence of electrical systems) are correct and applicable to the plant design. Describe all corrective actions needed and submit the schedule for completing such actions.

Response

Based on the response to IV.B.1, the ampacity concerns for existing configurations will be considered to be acceptable. No further action is necessary regarding non-upgraded Thermo-Lag barriers. The content of a corrective action plan for identified ampacity deficiencies will be dependent on identifying the need to upgrade a specific fire barrier and the identification of the ampacity derating factor deficiency resulting from the upgrade. Corrective actions and the scheduling thereof will be addressed by a future submittal once the need for upgrades is identified.

4. In the event that the NEI fire barrier tests indicate the need to upgrade existing in-plant barriers or to replace existing Thermo-Lag barriers with another fire barrier system, describe the alternative actions you will take (and the schedule for performing those actions) to confirm that the ampacity derating factors were derived by valid tests and are applicable to the modified plant design.

Response

GPUN has determined that ampacity derating factors for as-built configurations can be conservatively applied to configurations requiring upgrade. Such efforts would be limited to upgrades using TSI material since there has been no determination made on the adequacy of the fire endurance performance of other fire barrier manufacturers' products. OCNGS will also consider the results of the NEI ampacity derating test program for applicability to TSI barrier upgrades to determine new derating factors as well as to consider conservative heat transfer methodologies to determine new derating factors as part of the upgrade process. For the reasons expressed above, no attempt is being made to plan or schedule alternative actions at this time. The subject will be addressed by a future submittal if the need is identified.

V. Alternatives

B. Required Information:

Describe the specific alternatives available to you for achieving compliance with NRC fire protection requirements in plant areas that contain Thermo-Lag fire barriers. Examples of possible alternatives to Thermo-Lag based upgrades include the following:

1. Upgrade existing in-plant barriers using other materials.
2. Replace Thermo-Lag barriers with other fire barrier materials or systems.
3. Reroute cables or relocate other protected components.
4. Qualify 3-hour barriers as 1-hour barriers and install detection and suppression systems to satisfy NRC fire protection requirements.

Response

Since the previous response, the NRC has confirmed that the ASTM E-119 test would remain the source standard for fire barrier acceptance criteria. As such the alternatives available to achieve compliance with the fire protection requirements still include one or more of the alternatives described above and the possibility for inclusion of an additional alternative.

A reassessment of the Appendix R safe shutdown analysis has been conducted to determine the feasibility of revising the analysis to delete protected circuits from the safe shutdown path. This review concluded that no Thermo-Lag raceway can be eliminated. Other than the reevaluation of the fire barrier configuration for the Reactor Building stairwell enclosure, as submitted in GPUN letter to NRC dated September 16, 1994 (C321-94-2145), no other safe shutdown revisions have been identified.

Exemption requests using baseline (non-up-graded) test results which demonstrate adequate protection for the installed hazard will be pursued by GPUN. In conjunction, fire modeling or probabilistic safety analysis (PSA) will be used to support the justification for the exemption.

Fire endurance evaluations are in progress for fire areas with 1-hour barriers installed. In fire areas where an equivalent level of safety is justifiable based on the actual fire loading and fire modeling results; GPUN intends to submit an exemption from 1-hour fire barriers.

OCNGS currently has installed only one 3-hour fire barrier configuration. This 3-hour barrier is installed in Fire Zone TB-FZ-11C and protects approximately 20 lineal feet of 4 inch conduit. A rating for this 3-hour barrier will be re-established. GPUN will request exemption (with supporting justification) from the requirement for automatic suppression in this area. Originally, 3-hour barriers were installed in locations where automatic suppression is considered impractical or undesirable. Gaseous suppression systems are impractical due to the unavailability of Halon and the personnel safety hazards associated with Carbon Dioxide. Hence, the basis for our plans in the aforementioned location will consider appropriate levels of fixed fire protection features commensurate with the actual hazard.

VI. Schedules

B. Required Information:

Submit an integrated schedule that addresses the overall corrective action schedule for the plant. At a minimum, the schedule should address the following aspects for the plant:

1. implementation and completion of corrective actions and fire barrier upgrades for fire barrier configurations within the scope of the NEI program,
2. implementation and completion of plant-specific analyses, testing, or alternative actions for fire barriers outside the scope of the NEI program.

Response

GPUN has initiated additional activities to address the inability of Thermo-Lag to provide the required level of fire protection. Those activities include:

1. Completed walkdowns to identify the element details of the plant installed configurations and the circuit schedule review.

2. Complete plant specific database for use in evaluating and assigning ratings to bounding configurations.
3. Evaluate alternatives for unacceptable configurations: identify potential resolutions: activities involving plant modifications such as Thermo-Lag upgrades, replacement of Thermo-Lag with other materials, rerouting cables or relocating protective components, or installation of suppression and/or detection or a combination including a request for exemption.
4. Complete resolution of unacceptable configurations utilizing: fire modeling, and/or exemption requests where appropriate by the end of 1995, and schedule any upgrades (modifications) in accordance with the Long Range Planning Program Integrated Schedule pursuant to License DPR-16, Condition 2.c.(6).
5. Evaluate the effect of upgrades on the ampacity derating factor. Planning and scheduling corrective actions on the ampacity issue will be addressed by a future submittal once the need is identified and the scope of ampacity derating factor deficiencies is determined.