



Georgia Power

the southern electric system

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February 11, 1994

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50-425

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M85620

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

Gentlemen:

**VOGTLE ELECTRIC GENERATING PLANT  
RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION  
THERMO-LAG FIRE BARRIERS**

On June 24, 1992, the NRC issued NRC Bulletin (NRCB) No. 92-01, "Failure of Thermo-Lag 330 Fire Barrier System to Maintain Cabling in Wide Cable Trays and Small Conduits Free from Fire Damage." This bulletin notified licensees of failures in fire endurance testing of the Thermo-Lag 330 fire barrier system and requested licensees to take specific actions. By letter dated July 23, 1992, Georgia Power Company (GPC) responded to NRCB 92-01 describing actions taken in response to the bulletin. These actions included establishment of fire patrols in the affected areas as required by the VEGP Fire Hazards Analysis for inoperable fire barriers. Adequate interim assurance of safe shutdown capability is provided until the Thermo-Lag issue can be resolved.

On August 28, 1992, the NRC issued NRCB 92-01, Supplement 1, "Failure of Thermo-Lag 330 Fire Barrier System to Perform its Specified Fire Endurance Function." This supplement notified licensees of additional Thermo-Lag fire endurance test failures and expanded the scope of the original bulletin. By letter dated September 25, 1992, GPC responded to NRCB 92-01, Supplement 1 describing the additional actions taken in response to the expanded scope of the bulletin.

On December 17, 1992, the NRC issued Generic Letter (GL) 92-08, "Thermo-Lag 330-1 Fire Barriers" to obtain additional information from licensees concerning the Thermo-Lag fire barriers installed at their plants and to obtain a schedule for completion of any necessary corrective actions. By letter dated April 16, 1993, GPC responded to GL 92-08 providing the requested information and discussing the request for a schedule for completion of corrective actions. GPC indicated that actions necessary to resolve the Thermo-Lag issue at VEGP would be based on the results of the industry test program being coordinated by the Nuclear Management and Resources Council (NUMARC), and that the compensatory actions mentioned above would remain in place to assure protection of safe shutdown equipment until all actions necessary to resolve the Thermo-Lag issue have been completed.

In a letter dated June 16, 1993, the NRC discussed the GPC response to GL 92-08. The letter stated that the NRC staff expected GPC to review the results of the NUMARC test

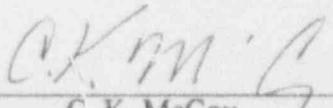
program, and within 30 days after completion of the program, to inform the NRC of actions necessary and the schedule for restoring operability of the Thermo-Lag fire barriers. The letter also requested that, for configurations not bounded by the NUMARC program, GPC provide within 30 days from the receipt of that letter, the schedules for site specific fire endurance testing of these unique configurations and implementation of any potential barrier upgrades resulting from this testing.

By letter dated December 21, 1993, the NRC requested additional information regarding GL 92-08 pursuant to 10 CFR 50.54(f) within 45 days of this request. The enclosure to this letter provides information requested to the extent possible at this time.

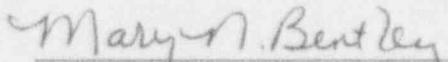
As a result of additional reviews, Item I.B.1.e., HVAC Duct, identified a new area requiring the establishment of a hourly fire patrol.

Mr. C. K. McCoy states he is duly authorized to execute this oath on behalf of Georgia Power Company, and to the best of his knowledge and belief, the facts set forth in this letter are true and correct.

GEORGIA POWER COMPANY

By:   
C. K. McCoy

Sworn to and subscribed before me this 11<sup>th</sup> day of February 1994.

  
Notary Public

MY COMMISSION EXPIRES MAY 6, 1995

CKM/PAH/gmb

cc: Georgia Power Company  
Mr. J. B. Beasley, Jr.  
Mr. M. Sheibani  
NORMS

U. S. Nuclear Regulatory Commission  
Mr. S. D. Ebnetter, Regional Administrator  
Mr. D. S. Hood, Licensing Project Manager, NRR  
Mr. B. R. Bonser, Senior Resident Inspector, Vogtle

## ENCLOSURE

### VOGTLE ELECTRIC GENERATING PLANT RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION THERMO-LAG FIRE BARRIERS

The NRC request for additional information (RFAI) is divided into several sections pertaining to different subjects. Within each of these sections, the NRC's request first discusses the subject and then the required information concerning that subject is described. The Georgia Power Company's (GPC's) response as it applies to the Vogtle Electric Generating Plant (VEGP) follows the NRC's format by reproducing the specific information requested in each section followed by GPC's response.

#### I. Thermo-Lag Fire Barrier Configurations and Amounts

##### Item I.B.1: Required Information

Describe the Thermo-Lag 330-1 barriers installed in the plant to

- a. meet 10 CFR 50.48 or Appendix R to 10 CFR Part 50,
- b. support an exemption from Appendix R,
- c. achieve physical independence of electrical systems,
- d. meet a condition of the plant operating license,
- e. satisfy licensing commitments.

The descriptions should include the following information: the intended purpose and fire rating of the barrier, and the type and dimension of the barrier.

##### Item I.B.1: GPC Response

- a. The following table lists the applications of Thermo-Lag 330-1 installed at VEGP to meet 10 CFR 50.48 or Appendix R to 10 CFR Part 50.

APPLICATION	SIZE	QUANTITY	INSTALLED BARRIER RATING	REQUIRED BARRIER RATING
CABLE TRAY	24" WIDE	4	3 HR	3 HR
CONDUIT	0.75" DIA	2	3 HR	3 HR
CONDUIT	1.0" DIA	1	3 HR	1 HR
CONDUIT	1.0" DIA	1	3 HR	3 HR
CONDUIT	1.50" DIA	1	3 HR	3 HR
CONDUIT	2.0" DIA	1	3 HR	1 HR
CONDUIT	2.0" DIA	10	3 HR	3 HR
CONDUIT	3.0" DIA	3	3 HR	1 HR
CONDUIT	3.0" DIA	6	3 HR	3 HR
CONDUIT	4.0" DIA	7	3 HR	3 HR
JUNCTION BOXES	VARIOUS	9	3 HR	1 HR
	VARIOUS	5	3 HR	3 HR

ENCLOSURE (CONTINUED)

VOGTLE ELECTRIC GENERATING PLANT  
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THERMO-LAG FIRE BARRIERS

- b. Thermo-Lag was not installed to support an exemption from Appendix R.
- c. Thermo-Lag 330-1 is installed at VEGP to meet requirements for physical independence of electrical systems. The following table lists these applications:

APPLICATION	SIZE	QUANTITY	INSTALLED BARRIER RATING*
CABLE TRAY	24" WIDE	2	3 HR
CONDUIT	1.0" DIA	1	3 HR
CONDUIT	1.50" DIA	1	3 HR
CONDUIT	2.0" DIA	5	3 HR
CONDUIT	3.0" DIA	2	3 HR
CONDUIT	4.0" DIA	6	3 HR
JUNCTION BOXES	VARIOUS	6	3 HR

\*No specific time requirement exists for Regulatory Guide 1.75 barriers

- d. Thermo-Lag 330-1 is not installed at VEGP to meet a condition of the plant operating license.
- e. The following table lists the applications of Thermo-Lag 330-1 installed to satisfy licensing commitments.

APPLICATION	SIZE	QUANTITY	INSTALLED BARRIER RATING	REQUIRED BARRIER RATING
RADIANT ENERGY SHIELDS				
CONDUIT	0.75" DIA	2	3 HR	30 MINUTES
CONDUIT	1.0" DIA	11	3 HR	30 MINUTES
JUNCTION BOXES	VARIOUS	12	3 HR	30 MINUTES
INSTRUMENTS	VARIOUS	4	3 HR	30 MINUTES
OTHER				
HVAC DUCT	VARIOUS	1	3 HR	3 HR

All Thermo-Lag applications at VEGP used the 3 hour panel board or the 3 hour half moon conduit sections. All applications were originally rated as 3 hour barriers, even though some applications were only required to remain functional for 30 minutes.

ENCLOSURE (CONTINUED)

VOGTLE ELECTRIC GENERATING PLANT  
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Item I.B.2: Required Information

For the total population of Thermo-Lag fire barriers described under Item I.B.1, submit an approximation of:

- a. For cable tray barriers: the total linear feet and square feet of 1-hour barriers and the total linear feet and square feet of 3-hour barriers.
- b. For conduit barriers: the total linear feet of 1-hour barriers and the, total linear feet of 3-hour barriers.
- c. For all other fire barriers: the total square feet of 1-hour barriers and the total square feet of 3-hour barriers.
- d. For all other barriers and radiant energy heat shields: the total linear or square feet of 1-hour barriers and the total linear or square feet of 3-hour barriers, as appropriate for the barrier configuration or type.

Item I.B.2: GPC Response

The following table provides an approximation of Thermo-Lag installed for each application:

- |  |   |                           |
|--|---|---------------------------|
| a. For cable tray barriers: - 3 hour (for I.B.1.a) | - | 124 sq. ft, 18 Linear ft. |
| For cable tray barriers: - 3 hour (for I.B.1.c)    | - | 68 sq. ft, 6 Linear ft.   |
| b. For conduit barriers: - 3 hour (for I.B.1.a)    | - | 725 Linear ft.            |
| For conduit barriers: - 3 hour (for I.B.1.c)       | - | 60 Linear ft.             |
| c. For HVAC Duct: - 3 hour                         | - | 27 sq. ft.                |
| d. For radiant energy shield conduits: 3 hour      | - | 111 sq. ft.               |
| For radiant energy shield junction boxes: 3 hour   | - | 186 sq. ft.               |
| For radiant energy shield instruments: 3 hour      | - | 94 sq. ft.                |
| For junction boxes: 3 hour (for I.B.1.a)           | - | 252 sq. ft.               |
| For junction boxes: 3 hour (for I.B.1.c)           | - | 312 sq. ft.               |
| For boxed in conduits: 3 hour (for I.B.1.a)        | - | 124 sq. ft.               |

## ENCLOSURE (CONTINUED)

### VOGTLE ELECTRIC GENERATING PLANT RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION THERMO-LAG FIRE BARRIERS

#### II. Important Barrier Parameters

##### Item II.B.1: Required Information

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.

##### Item II.B.1: GPC Response

Many of the raceway and cable parameters identified in the RFAI are readily available from existing plant records such as Plant Data Management System, (which is used by engineering to design cable routes), equipment location drawings, and the as-built sketches for Thermo-Lag installations at VEGP. Georgia Power Company has not obtained and verified each of the parameters referenced in the RFAI since the fire barrier testing currently being performed will identify essential parameters needed for effective Thermo-Lag barrier installation and application and may include parameters not currently identified. The testing may also prove that many of the listed parameters are not essential for proper installation and application. Historically, installation of the Thermo-Lag fire barriers was in accordance with work instructions supplied by the vendor (TSI Inc.). Installations were reviewed on site in accordance with the quality control and quality assurance programs for acceptability. Specific parameters for barrier installations were not documented at the time of installation. Many of the identified parameters are located in existing plant and engineering records and can be retrieved; however, some of the identified parameters can not be determined without destructive testing. If destructive testing must be used to gather information on barrier parameters, all of the important parameters needed for the evaluation process should be known before initiating the destructive testing program.

NUMARC has indicated that, following completion of the Thermo-Lag testing program, they will prepare and issue an Application Guideline. This guideline will provide bounding raceway and fire barrier parameters that are determined to be important. NUMARC has already provided GPC with the current listing of these parameters, which includes all of the raceway and barrier parameters listed in the NRC RFAI. However, other parameters not included in either the NRC list or the NUMARC list may be identified as potentially important. In addition, fire barrier testing planned as part of Phase 2 of the NUMARC program could identify further parameters of importance. A supplementary response will be submitted within 120 days of receipt of the Application Guideline. The supplementary response will describe parameters for which information is readily available and will also provide a schedule for obtaining information on those parameters for which destructive testing is necessary.

## ENCLOSURE (CONTINUED)

### VOGTLE ELECTRIC GENERATING PLANT RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION THERMO-LAG FIRE BARRIERS

#### Item II.B.2: Required Information

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

#### Item II.B.2: GPC Response

Certain raceway and barrier parameters listed under Item II.B.1 are not readily available because they are internal to the barrier system and were not documented during installation. For those parameters determined to be important but not verifiable from existing records, the in-plant barrier can be evaluated for acceptability by one or more of the following methods:

1. Assume limiting or worst case conditions for the unknown parameters. The benefit of reducing evaluation efforts will be compared on a case by case basis with the potential increase in required barrier upgrades.
2. Review Thermo-Lag installation work practices and procedures.
3. Conduct destructive examinations of barriers on a sample basis to obtain information on construction techniques.

In addition to raceway and barrier parameters, the NRC RFAI (on page 3 of 7) includes a list of important cable parameters. At this time, it is uncertain whether consideration of all of these parameters will be necessary for most barriers. For example, if fire test results are satisfactory on the basis of temperature, the only cable parameter which would need to be evaluated is the percentage of cable fill (subset of item 4 of the RFAI list). If fire test results exceed the temperature criteria, one optional approach to resolution would be evaluation of cable functionality at the elevated temperatures. In this case, determination of cable performance at elevated temperature (item 8) would be indicated, using cable performance test data or information for specific installed cable types (items 1, 2, 3, and 7). However, requirements for cable functionality evaluation have not yet been finalized, nor are test results yet available which would clearly indicate the scope of such evaluations.

Items 4, 5, and 6 of the RFAI cable parameter listing address issues relative to potential cable/barrier contact for cable trays. NUMARC has agreed to provide additional thermocouples below the cable tray rungs in the Phase 2 cable tray tests to provide information to address NRC concerns relative to potential contact of cables with the cold side of the fire barriers. Further, NUMARC has indicated that a small piece of Sealtemp cloth (item 6) was used only in NUMARC test number 1-4 (24" steel cable tray with air drop, three hour test) and did not impact performance or capability of using the test results.

ENCLOSURE (CONTINUED)

VOGTLE ELECTRIC GENERATING PLANT  
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Item II.B.3: Required Information

To evaluate NUMARC'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.

Item II.B.3: GPC Response

NUMARC'S application guidance has not been issued. The issuance of this guidance will provide a definitive listing of important parameters. When this guidance is issued, as discussed earlier, GPC will provide a schedule within 120 days for obtaining information for additional identified parameters.

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

Item III.B.1: Required Information

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

Item III.B.1: GPC Response

All raceway barriers are expected to be bounded by the NUMARC test program.

NUMARC has indicated that the current generic test program may be expanded based on information from utilities concerning installed configurations which are not included in the current scope of the NUMARC test program. If this expanded scope affects any of the above information, a supplemental response will be provided in a timely manner.

Item III.B.2: Required Information

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.

## ENCLOSURE (CONTINUED)

### VOGTLE ELECTRIC GENERATING PLANT RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION THERMO-LAG FIRE BARRIERS

#### Item III.B.2: GPC Response

As explained in Item III.B.1 above, GPC expects all raceway barriers to be bounded by the NUMARC test program. NUMARC will initiate actions to facilitate shared testing of installations which cannot be practically included in the generic test program. Georgia Power Company anticipates NUMARC will develop a matrix of shared tests and provide this to utilities. Georgia Power Company may choose to address certain barriers by participating in shared testing with other utilities or, if necessary, perform plant specific testing. Whether or not a particular barrier is bounded by the NUMARC program, the same evaluation process will be employed to determine the resolution of the concerns identified in GL 92-08. This process is described in detail in the GPC response to RFAI Item V.

#### Item III.B.3: Required Information

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.

#### Item III.B.3: GPC Response

At this time, Georgia Power Company does not expect any plant-specific tests to be required.

If plant-specific fire endurance tests become necessary, GPC plans to use the generic test and acceptance criteria which is currently under development by NUMARC. Georgia Power Company does not expect that any plant-specific tests will have to be performed for which the generic criteria cannot be applied. VEGP has installed very few non-raceway barriers. It is expected that alternate solutions will be utilized to resolve concerns with these barriers.

## IV. Ampacity Derating

#### Item IV.B.1: Required Information

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

## ENCLOSURE (CONTINUED)

### VOGTLE ELECTRIC GENERATING PLANT RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION THERMO-LAG FIRE BARRIERS

#### Item IV.B.1: GPC Response

Ampacity derating is an issue that applies to cable raceways containing power cables. Ampacity derating factors determined for upgraded configurations can be conservatively applied to baseline configurations. For upgraded one hour cable tray and conduit barriers, the NUMARC program for ampacity derating evaluation is expected to generically apply derating factors derived by Texas Utilities Electric Company (TUEC) using the methodology of IEEE P848 Draft 11, with some modifications. This approach is currently under review by the NRC. The TUEC testing provided preliminary ampacity derating factors of 32 percent for cable trays and 11 percent for conduits, which are within the range of previously reported values. It should be noted that ampacity derating factors used at VEGP are similar to those reported by TUEC.

NUMARC will conduct ampacity testing of upgraded three hour barriers to the requirements of IEEE P848, following determination of appropriate barrier upgrades for three hour installations and finalization of ampacity test methodology. It is expected that this testing would be conducted in the second quarter of 1994. To the extent that successful upgrades using alternative materials are identified, ampacity testing of these upgrades would be considered as well.

The IEEE P848 approach provides for testing of a single cable tray, and small and large conduits. The limiting conduit derating factor (of the two sizes tested) is applied to the range of conduit sizes, cable fills, etc. For cable trays, the single cable tray derating factor is applied to all sizes of cable trays, cable fills, etc. Thus ampacity testing can be performed generically with broad applicability, unlike fire testing where many performance parameters must be considered. The NUMARC program is expected to provide ampacity derating factors for one and three hour barriers for both cable trays and conduits. It is expected that all applicable barriers at VEGP will fall within the scope of the NUMARC program for ampacity derating. GPC will begin review of the results of the NUMARC program upon receipt. If any of the above information is affected, an updated response will be provided in a timely manner.

#### Item IV.B.2: Required Information

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

#### Item IV.B.2: GPC Response

It is anticipated that the NUMARC program will provide valid ampacity derating factors for all applicable raceway barriers. Therefore, no additional testing or evaluation should be necessary. If the results of the NUMARC program do not provide adequate ampacity derating information, an updated response will be provided within 120 days of the receipt of the NUMARC ampacity information.

ENCLOSURE (CONTINUED)

VOGTLE ELECTRIC GENERATING PLANT  
RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION  
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Item IV.B.3: Required Information

For the barrier configurations that you have determined will not be bounded by the NUMARC 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.

Item IV.B.3: GPC Response

As explained above in the response to Item IV.B.1, it is expected that all applicable barriers at VEGP will fall within the scope of the NUMARC program for ampacity derating. Therefore, no special action plan should be necessary. If review of the results of the NUMARC program indicate that any of the applicable barriers are not bounded by the program, an updated response will be provided in a timely manner.

Item IV.B.4: Required Information

In the event that the NUMARC 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.

Item IV.B.4: GPC Response

As stated above in the response to Item IV.B.1, the NUMARC test program is expected to provide ampacity derating factors for upgraded one and three hour barriers, for cable trays and conduits. Ampacity derating factors determined for upgraded configurations can be conservatively applied to baseline configurations. Therefore, the NUMARC test program is expected to provide valid derating factors for both baseline and upgraded barrier configurations.

Currently, no fire barrier system is known which can be used as a suitable replacement for Thermo-Lag. There are products on the market; however, questions still exist as to their fire endurance capabilities and ampacity derating characteristics. Because of these uncertainties, GPC does not currently plan to replace existing Thermo-Lag barriers with any other product. If in the future GPC decides to install another type fire barrier in place of Thermo-Lag, an updated response will be provided in a timely manner.

## ENCLOSURE (CONTINUED)

### VOGTLE ELECTRIC GENERATING PLANT RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION THERMO-LAG FIRE BARRIERS

#### V. Alternatives

##### Item V.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.

##### Item V.B: GPC Response

In addition to the possible alternatives listed in the RFAI, GPC plans to implement a systematic evaluation and resolution process that may employ several additional options in determining a resolution to the concerns for a given fire barrier.

In summary, current Thermo-Lag fire barriers issues relate to: configuration (or fire endurance), combustibility, and ampacity derating. Therefore, the evaluation process must first address each of these issues separately, and then determine a solution which resolves all areas of collectively for each issue. In each case, NUMARC is coordinating industry efforts in order to provide a consistent approach and to allow utilities to share the costs associated with the required testing, analysis, and information dissemination. For each of the issues, following generic testing and analysis, NUMARC will issue a guidance document which will aid utilities in evaluating the status of their installed Thermo-Lag barriers. Currently, the guidance document for combustibility has been issued, and issuance of the configuration and ampacity guidance documents is pending. Prior to completion of the configuration guidance document, Phase 2 of the fire endurance testing program must be completed.

Following receipt and review of these documents, GPC will evaluate the Thermo-Lag fire barriers installed at VEGP for acceptability regarding each issue. This process may require destructive examinations of some installations in order to verify as-built conditions. If a given barrier is determined to be acceptable with regard to all three issues, the evaluation of that barrier will be complete and the process will be documented. However, if a barrier is determined to be unacceptable, possible options for resolution will be considered.

## ENCLOSURE (CONTINUED)

### VOGTLE ELECTRIC GENERATING PLANT RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION THERMO-LAG FIRE BARRIERS

In many cases, an option to be considered will be the possibility of requesting an exemption from the requirements of 10 CFR 50 Appendix R. Based on the results of NUMARC fire testing performed to date, it is anticipated that some barrier designs which were originally installed as one hour barriers may only be able to provide circuit protection for a shorter period of time. However, evaluation of the combustible loading for the subject area may indicate that a fire would last for an even shorter period of time. In this situation the existing barrier may be determined to provide acceptable performance as is. Exemptions could also be based on the determination that barrier inoperability results in an insignificant impact on core damage frequency. Probabilistic safety analysis performed as part of the Individual Plant Examination of External Events program could provide such determinations.

In situations where a given barrier protects very few safe shutdown circuits, modification of the affected circuits may be a cost effective solution. The protected circuit could be made unnecessary by either substituting the function of the circuit with a manual action, modifying the system logic or re-analyzing the system. Another option would be to reroute the affected circuit such that a fire barrier is not necessary.

As also suggested in the NRC RFAI, the existing Thermo-Lag barrier could be upgraded to a configuration proven by testing to be acceptable for the associated fire rating. Although no other fire barrier system is currently known which could be used as a suitable replacement for Thermo-Lag, such a system could be developed or qualified in the future. Therefore, replacing the Thermo-Lag barrier with a barrier of another type is an option which is left open for consideration.

As suggested in the NRC RFAI, if an installed three hour fire barrier configuration cannot be qualified to last for three hours, it may be able to be qualified as a one-hour barrier. The addition of detection and suppression systems would allow fire protection criteria to be met.

As discussed above in the response to Item III.B.2, installed fire barrier configurations which are not bounded by the NUMARC test program may require shared or plant specific testing prior to being evaluated for resolution. The alternatives discussed above will probably be considered for non-bounded configurations prior to performance of plant-specific testing. If additional testing is performed, the above options will be considered again following completion of the testing.

Once the evaluation process is completed for the affected fire barriers, an overall implementation schedule will be developed. This schedule will be dependent on the time necessary to develop modification packages, procure needed parts and materials, and to install the modifications. Implementation will be concurrent with scheduled refueling outages as necessary.

ENCLOSURE (CONTINUED)

VOGTLE ELECTRIC GENERATING PLANT  
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VI. Schedules

Item VI.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 NUMARC program,
2. Implementation and completion of plant-specific analyses, testing, or alternative actions for fire barriers outside the scope of the NUMARC program.

Item VI.B: GPC Response

As stated above in the response to Item V.B, GPC will follow the systematic evaluation and resolution process in evaluating Thermo-Lag fire barriers with respect to all three areas of concern (configuration, combustibility, and ampacity derating) prior to determining a solution which resolves all of these issues. Currently, issuance of the NUMARC guidance documents for configuration and ampacity derating are pending. Prior to completion of the configuration guidance document, Phase 2 of the fire endurance testing program must be completed. Following receipt and review of these documents, GPC will evaluate the Thermo-Lag fire barriers installed at VEGP for acceptability regarding each issue. Once this review is complete, an action plan can be developed for resolution of the entire Thermo-Lag issue. Within 120 days after issuance of the necessary NUMARC documents, GPC will provide an updated response which includes a schedule for implementation and completion of all necessary corrective actions and fire barrier upgrades for VEGP fire barrier configurations both within and outside the scope of the NUMARC program.

Item VII: Required Information

Describe the sources of the information provided in response to this request for information (for example, from plant drawings, quality assurance documents, walk downs or inspections) and how the accuracy and validity of the information was verified.

Item VII: GPC Response

All of the information contained in this response was obtained from plant and engineering records. The validity and accuracy of these drawings is ensured by the VEGP configuration control program. If other methods, such as walkdowns or inspections, are required to gather more information in the future, a description of these methods will be included in the submittal containing the subject information. Documentation of any such activities will be retained for NRC review.