

The Light company

Houston Lighting & Power

South Texas Project Electric Generating Station P. O. Box 289 Wadsworth, Texas 77483

December 19, 1994
ST-HL-AE-4954
File No.: G03.08
G02.05
10CFR50.54(f)

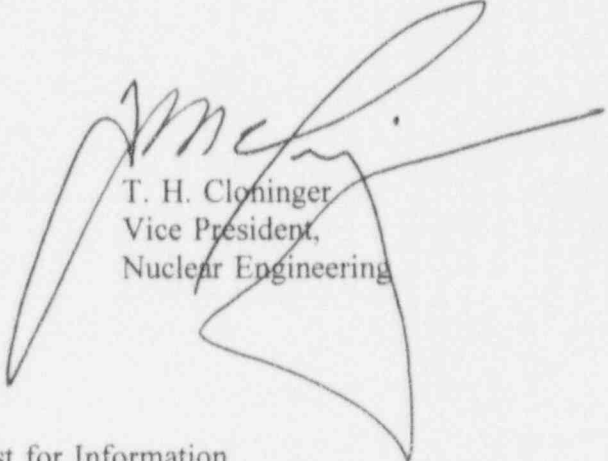
U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555-0001

South Texas Project
Units 1 and 2
Docket Nos. STN 50-498, STN 50-499
Follow-up to the Request for Additional Information
Regarding Generic Letter 92-08, "Thermo-Lag 330-1 Fire Barriers"

Reference: NRC Correspondence from R. P. Zimmerman to W. T. Cottle, dated
Septemeber 19, 1994 (ST-AE-HL-93938)

Pursuant to 10CFR50.54(f), Houston Lighting & Power submits the attached supplemental response as requested by the referenced letter. It should be noted that at the South Texas Project, reliance on Thermo-Lag has been significantly reduced by requiring only one of three trains of safe shutdown equipment to remain available in the event of a fire. The previous analysis maintained a primary and a redundant safe shutdown path (two out of three) which remained free from fire damage.

If there are any questions regarding the additional information, please contact Mr. Steve Thomas at (512) 972-7162 or myself at (512) 972-8787.



T. H. Cloninger
Vice President,
Nuclear Engineering

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Attachment: Follow-up to the 10CFR50.54(f) Request for Information

MISC-94/94-350.003

Project Manager on Behalf of the Participants in the South Texas Project

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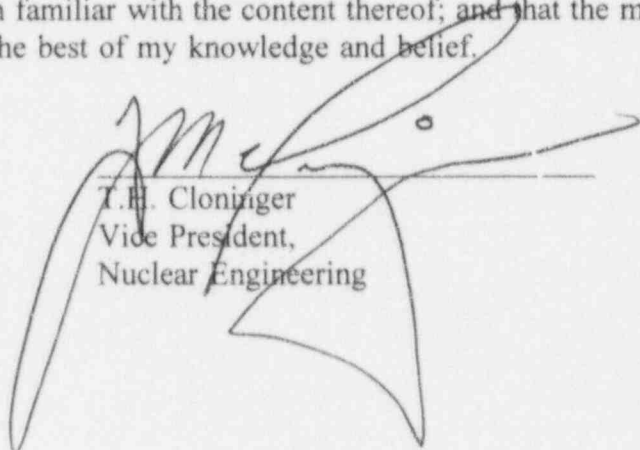
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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of)	
)	
Houston Lighting & Power)	Docket Nos. 50-498
Company, et al.,)	50-499
)	
South Texas Project)	
Units 1 and 2)	

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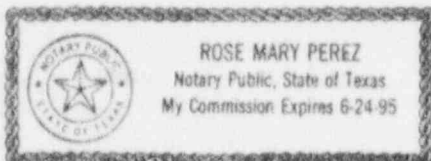
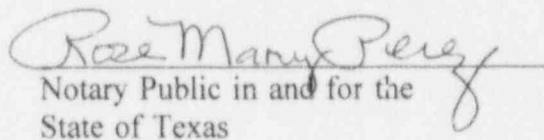
I, T. H. Cloninger, being duly sworn, hereby depose and say that I am Vice President, Nuclear Engineering, of Houston Lighting & Power Company; that I am duly authorized to sign and file with the Nuclear Regulatory Commission the attached supplemental information regarding Generic Letter 92-08; that I am familiar with the content thereof; and that the matters set forth therein are true and correct to the best of my knowledge and belief.



T.H. Cloninger
Vice President,
Nuclear Engineering

STATE OF TEXAS)
)
COUNTY OF MATAGORDA)

Subscribed and sworn to before me, a Notary Public in and for the State of Texas, this 19th day of December, 1994.

Notary Public in and for the
State of Texas

c:

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**FOLLOW-UP TO THE 10CFR50.54(f) REQUEST FOR INFORMATION
REGARDING GENERIC LETTER 92-08, "THERMO-LAG 330-1 FIRE BARRIERS"**

I. Thermo-Lag Fire Barrier Configurations and Amounts

B. Required Information

1. Describe the Thermo-Lag 330-1 barriers installed in the plant to:
 - a. meet 10CFR50.48 or Appendix R to 10CFR50,
 - 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 (for example, 3-hour fire barrier, 1-hour fire barrier, radiant energy heat shield), and the type and dimension of the barrier (for example, 8-ft by 10-ft wall, 4-ft by 3-ft by 2-ft equipment enclosure, 36-inch-wide cable tray, or 3-inch-diameter conduit).

2. 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 feet 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.

STP Response

- I.B.1. Thermo-Lag 330-1 fire barrier systems are used at the South Texas Project to provide 3-hour fire barrier separation of safe shutdown equipment in Fire Area 7 outside containment. This reduced reliance on Thermo-Lag is a result of the reevaluation of the safe shutdown pathways identified as a planned action in our February 10, 1994 response. This substantial reduction was achieved primarily by requiring only one out of three trains to remain available to support safe shutdown in the event of a fire. The previous analysis maintained a protected primary and redundant safe shutdown path (two out of three) that remained free of fire damage.

Thermo-Lag 330-1 is utilized inside containment to provide separation as a radiant energy heat shield.

Thermo-Lag 330-1 is used to achieve physical independence of electrical systems per NRC guidance provided in Regulatory Guide 1.75.

All three applications provide protection for 12-inch-wide and 24-inch-wide steel cable trays (solid- and ladder-back) and conduit from 1-inch-diameter up to and including 6-inch-diameter. Also protected are junction boxes and pull boxes that are a part of the protected raceways.

The Appendix R Thermo-Lag that was required to protect the redundant safe shutdown paths will be evaluated for Regulatory Guide 1.75 requirements.

- I.B.2 The following is an estimation of the total quantity of Thermo-Lag 330-1 installed in both Units 1 and 2 to meet 10CFR50 Appendix R requirements:

Cable trays: 37 linear feet (197 square feet) (3-hour)

Conduits: 47 linear feet (3-hour)

All other fire barriers: 128 square feet (3-hour)

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.
2. For any parameter that is not known or has not been verified, describe how you will evaluate the in-plant barrier for acceptability.
3. 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.

STP Response

II.B. We are currently evaluating the Thermo-Lag required to meet the requirements of 10CFR50 Appendix R (refer to the response to section I.B.) utilizing the Nuclear Energy Institute Industry Application Guide. This process involves walkdown of the remaining conduit and cable tray configurations, a review of the installation documentation including the in process QA inspection records, and an interview with an individual involved with the original installation on these configurations. This process, coupled with the relatively straightforward nature in which the commodities were covered (conduit protected with preshaped half rounds and cable tray protected with panels installed tight to the tray), results in a high level of confidence that these Thermo-Lag configurations can be effectively evaluated. Preliminary indications are that, utilizing conservative approaches, both the conduit and the cable tray coverages can obtain at least a 1-hour fire barrier rating with some minor upgrade of the existing installation. Based on the very low in-situ combustibles and the results of the fire modeling in this area, we are planning to request a deviation from the requirements of 10CFR50 Appendix R, Section III.G.2.c. due to the lack of area-wide suppression. Detailed documentation of these evaluations will be available on site for NRC inspection.

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

B. Required Information

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

STP Response

- III.B.1 As discussed in section II.B, the remaining Thermo-Lag configurations required to protect safe shutdown paths can be bounded by the testing documented in the Nuclear Energy Institute Industry Application Guide with some minor upgrade of the installed configurations.
- III.B.2. The remaining configurations are only expected to obtain a 1-hour rating and are located in an area currently requiring a 3-hour rated barrier. Based on the very low in-situ combustibles and the results of the fire modeling in this area, we are planning to request a deviation from the requirements of 10CFR50 Appendix R, Section III.G.2.c. due to the lack of area-wide suppression.
- III.B.3. Due to the expected qualification of the Thermo-Lag configurations for a rating of at least 1 hour and the small quantities of remaining Thermo-Lag required to protect safe shutdown paths, we do not expect to undertake any plant specific fire endurance testing. However, we intend to keep this option open should the opportunity present itself to team with other utilities or support further Nuclear Energy Institute testing that would be beneficial to the South Texas Project.

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 NUMARC program for ampacity derating, those that will not be bounded by the NUMARC program, and those for which ampacity derating does not apply.
2. 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.
3. For the barrier configurations that you have determined will not be bounded by the NUMARC test program, describe your test plan for evaluating whether or not the ampacity derating tests relied upon for the ampacity derating factors used 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.
4. 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.

STP Response

IV.B. Site-specific ampacity derating tests were conducted by Underwriters' Laboratories. Prior to the testing, Houston Lighting & Power prepared an ampacity derating test specification which specified test assemblies to be built using cables, cable fill, and cable tray and conduit types consistent with those installed in the plant. With minor exceptions, which were pre-approved by Houston Lighting & Power engineering staff and which did not impact test results, the Underwriters' Laboratories tests were conducted in accordance with the test specification. Thermo-Lag barriers for the tests were selected and assembled in a manner consistent with configurations installed in the plant. All test enclosures were constructed by personnel employed to construct fire barriers at the South Texas Project.

Because we conducted ampacity derating tests specifically for the South Texas Project, we consider the test results to be applicable to the plant design. The derating factors resulting from these tests were used directly in the analyses which verify the acceptability of all Thermo-Lag wrapped power cable sizing in accordance with industry standards.

Houston Lighting & Power will respond to this section of the information request in further detail when the technical issues with respect to ampacity derating factors have been resolved.

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.

STP Response

V.B. As discussed in section II.B, the remaining Thermo-Lag configurations required to protect safe shutdown paths can be bounded by the testing documented in the Nuclear Energy Institute Industry Application Guide with some minor upgrade of the installed configurations.

The remaining configurations are only expected to obtain a 1-hour rating and are located in an area currently requiring a 3-hour rated barrier. Based on the very low in-situ combustibles and the results of the fire modeling in this area, we are planning to request a deviation from the requirements of 10CFR50 Appendix R, Section III.G.2.c. due to the lack of area-wide suppression.

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

STP Response

VI.B. The actions described in the responses to sections II through IV above will be completed by February 15, 1995.