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**DUKE POWER**

February 11, 1994

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

Subject: McGuire Nuclear Station, Units 1 and 2  
Docket Nos. 50-369 and 50-370  
NRC Generic Letter 92-08  
Thermo-Lag 330-1 Fire Barriers  
Response to NRC Request For Additional Information

Dear Sir:

By letter dated December 21, 1993, additional information regarding our plans and schedules for resolving the technical issues identified by Generic Letter 92-08 was requested. The December 21, 1993 letter requested, pursuant to 10 CFR 50.54(f), a written report containing the information that was specified in the enclosure be submitted within 45 days from receipt of the letter. Accordingly, please find attached our response to your request for additional information regarding our plans to resolve the technical issues concerning the Thermo-Lag fire barriers installed at McGuire.

Please contact Paul Guill at (704) 875-4002 if there are any questions regarding this response.

I declare under penalties of perjury that the statements set forth herein are true and correct to the best of my knowledge.

Very truly yours,

A handwritten signature in cursive script, appearing to read 'T. C. McMeekin'.

T. C. McMeekin

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xc: Mr. S. D. Ebnetter  
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ATTACHMENT

DUKE POWER COMPANY

MCGUIRE NUCLEAR STATION

RESPONSE TO NRC REQUEST FOR  
ADDITIONAL INFORMATION  
REGARDING GENERIC LETTER 92-08  
"THERMO-LAG 330-1 FIRE BARRIERS"  
PURSUANT TO 10 CFR 50.54(f)  
DECEMBER 21, 1993

## I. THERMO-LAG FIRE BARRIER CONFIGURATIONS AND AMOUNTS

### RESPONSE TO NRC ITEM I.B.1:

At McGuire Nuclear Station, Thermo-Lag is utilized as a fire barrier material in three areas of the plant. They are as follows:

- 1) Unit 1 Auxiliary Building pipe chase (elevation 716+0);
- 2) Unit 2 Motor Driven Auxiliary Feedwater (MDAFW) pump room (elevation 716+0); and
- 3) Unit 1 train "B" switchgear room (elevation 733+0).

The response provided for NRC Bulletin 92-01, Supplement 1 provides a brief discussion of the equipment that is being protected within each of the above identified areas. The response to NRC bulletin 92-01, supplement 1 was provided by letters dated September 30, 1992 and June 17, 1993.

The following is a description of the Thermo-Lag fire barriers installed in each of the above areas. The description for each area where Thermo-Lag fire barriers are utilized includes information on the intended purpose of the barrier, the fire rating of the barrier, and the dimensions of the barrier.

### Unit 1 Auxiliary Building pipe chase:

The intended purpose of the 3-hour rated fire barrier is to meet 10 CFR Part 50, Appendix R regulatory requirements. The types of equipment being protected are, a 6 inch wide cable tray, a 3 inch cable bundle, a terminal box, and two valve motor operators. The approximate dimensions of the fire barriers within this area are:

- a) 18 inches x 12 inches x 24 inches  
(terminal box enclosure)
- b) 13 inches x 22 inches x 23 inches  
(valve motor operator enclosures)

### Unit 2 MDAFW pump room:

The intended purpose of the 3-hour rated fire barrier is to meet 10 CFR Part 50, Appendix R regulatory requirements. The actual regulatory required fire rating for the Thermo-Lag barrier installed in this area is 1-hour. The types of equipment being protected are two valve motor operators. The approximate dimension of the fire barrier installed within this area is:

- a) 13 inches x 22 inches x 23 inches  
(valve motor operator enclosures)

Unit 1 train "B" switchgear room:

The intended purpose of the 3-hour rated fire barrier is to meet 10 CFR Part 50, Appendix R regulatory requirements. The types of equipment being protected are two separate 4 inch wide cable trays. The cable trays are secured to a 3-hour fire rated reinforced concrete wall. Thermo-Lag fire barrier material is used to enclose the other three sides of the cable trays.

RESPONSE TO NRC ITEM I.B.2:

- a. For Thermo-Lag fire barriers protecting cable trays, there is approximately 53 linear feet of 3-hour rated barriers at McGuire. This equates to approximately 115 square feet of Thermo-Lag material protecting cable trays at McGuire.
- b. Not applicable for McGuire.
- c. For all other fire barriers installed at McGuire, the total square feet of 3-hour barriers is approximately 160 square feet.
- d. Not applicable for McGuire.

## II. IMPORTANT BARRIER PARAMETERS

### RESPONSE TO NRC ITEM II.B.1 AND II.B.2:

The NRC requests that the licensee state whether or not the listed important performance parameters, including those parameters pertaining to cables, have been obtained and verified for each Thermo-Lag fire barrier installed at McGuire. Further this NRC Item requests that the licensee discuss the parameters that have not been obtained or verified. In addition, the NRC Item requests that for any identified important performance parameter that is not known or has not been verified, describe how the barrier will be evaluated for acceptability. Finally, the NRC Item requests that the type and the extent of unknown parameters be described.

Within the discussion section for this item, the NRC identified 24 parameters that were considered important by NUMARC. In addition, the NRC also identified 8 important parameters relative to cables. As stated within the discussion section, the parameters listed were obtained from a July 29, 1993 NUMARC letter that was sent to Mr C. McCracken of the NRC.

In a January 14, 1994 NUMARC letter that was sent to Utilities, a clarified list of parameters that are considered to be important was provided. This clarified list identifies a set of important performance parameters which includes the 24 important parameters identified within the discussion section for this NRC Item.

At this time, any list that identifies important performance parameters, should be considered preliminary. Extreme caution should be exercised when proceeding with any major parameter identification effort. Any verification effort of any preliminary list of important performance parameters may prove to be unnecessary or premature. For instance, the list itself may prove to be incomplete or may identify performance parameters or boundary conditions that may prove to be unimportant. To take on such an effort at this time would not be a prudent use of resources, particularly since a final list will be provided in a short period of time. The NUMARC Application Guideline will provide the final positions with respect to important performance parameters and bounding conditions. Following NRC review, the NUMARC Application Guideline will be issued. The anticipated issuance of the NUMARC Application Guidelines is April, 1994.

Based on the above, a major effort to verify important performance parameters, including unknown parameters, and bounding conditions in regard to fire barriers installed at McGuire would not be prudent at this time. Accordingly, a schedule for submitting this information will be provided 30 days after receipt of the NUMARC Application Guideline.

### III. THERMO-LAG FIRE BARRIERS OUTSIDE THE SCOPE OF THE NUMARC PROGRAM

#### RESPONSE TO NRC ITEM III.B.1:

The Thermo-Lag fire barriers discussed under NRC Item I.B.1, do not appear to be completely bounded by the NUMARC test program at this time. This preliminary determination is based on the latest information that is available regarding the NUMARC testing program. The final determination will be based on the final reports from the NUMARC testing program, and the final content of the Application Guide. In the event that the above determination is revised, a supplemental response will be provided 30 days after receipt of the final test reports and the NUMARC Application Guideline.

#### RESPONSE TO NRC ITEMS III.B.2 AND III.B.3:

For the fire barrier configurations that are currently installed in the Unit 1 Auxiliary Building pipe chase and the Unit 2 MDAFW pump room, an effort has been initiated to re-evaluate the engineering analyses used to determine the Appendix R safe shutdown pathways, equipment and actions. Following completion of this effort, the anticipated result is that fire barriers may no longer be required for these areas. A supplemental response will be provided following the completion of the re-evaluation effort. Currently, the results of this re-evaluation effort will be submitted by April 15, 1994.

For the final area where Thermo-Lag is installed (Unit 1 Train "B" Switchgear room), an engineering evaluation is planned. Although the plant configuration is not exactly like the configuration being tested by NUMARC, it is very similar in many respects. The engineering evaluation will assess the differences between the plant configuration and the tested configuration to determine their impact, if any. Although the scope of the test program is known, what will ultimately be bounded will be a function of the outcome of the tests and the final content of the Application Guide. The current engineering judgement is that the barrier configuration will be shown to be within the scope of the Application Guide. The engineering evaluation will be completed and the results of this effort will be submitted to the NRC within 90 days of receipt of the final test reports and the Application Guide.

As a final note, the compensatory measures that were implemented, as discussed in the responses to NRC Bulletin 92-01 including its supplement and to Generic Letter 92-08, will continue until all corrective actions for resolving this issue have been implemented.

#### IV. AMPACITY DERATING

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##### RESPONSE TO NRC ITEM IV.B.1:

The NRC requests that for barriers identified and described under NRC Item I.B.1, determine which ones 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. As discussed in the response to NRC Item I.B.1, Thermo-Lag is utilized in three locations. In each application in which Thermo-Lag is utilized as a fire barrier material, ampacity derating does not apply.

Briefly, ampacity derating is an issue that applies only to cable raceways containing power cables that are continuously energized. The Thermo-Lag fire barriers at McGuire protect control cables only and do not contain any power cables that are continuously energized. The maximum loading of these control cables are 0.4 amp continuous, with an intermitted loading of 8.34 amps. This duty cycle in conjunction with the maximum loading will not result in a significant temperature rise in the cables. Therefore, for the fire barriers which use Thermo-Lag fire material, ampacity derating does not apply.

##### RESPONSE TO NRC ITEMS IV.B.2, IV.B.3, AND IV.B.4:

A response to the information requested by these NRC Items is not required since ampacity derating is not applicable to the current Thermo-Lag fire barriers at McGuire.



## V. ALTERNATIVES

### RESPONSE TO NRC ITEM V.B:

As discussed in the response to NRC Item III.B., a re-evaluation effort is underway with the anticipated result of being able to eliminate the fire barrier requirements for two of the three plant areas that contain Thermo-Lag material as a fire barrier (Unit 1 Auxiliary Building Pipe Chase and the Unit 2 MDAFW pump room).

In the event the re-evaluation effort does not result in being able to eliminate fire barrier requirements, other alternatives will be considered for these two areas. A supplemental response on the results of this effort will be provided April 15, 1994. At that time other alternatives will be discussed if the results of the re-evaluation effort does not eliminate the fire barrier requirements for these two areas.

An engineering evaluation will be performed for the Thermo-Lag fire barriers in the Unit 1 train "B" switchgear room. Based on the preliminary information and results from the NUMARC testing program, the fire barrier should be able to be upgraded to comply with NRC fire protection regulatory requirements. Although the barrier configuration does not appear to be bounded by the NUMARC test program, additional plant-specific testing should not be necessary.

In the event that this fire barrier can not be upgraded to comply with NRC fire protection regulatory requirements, other alternatives will be considered. In the event that this fire barrier can not be upgraded, a supplemental response, discussing the other alternatives, will be provided 90 days from receipt of the final test reports and the NUMARC Application Guide.

In the development of any final resolution plan or alternative, uncertainties must be considered. Specifically, three undefined factors must be considered in case currently identified plans and alternatives are not practical:

1. Test and acceptance criteria have not been finalized and issued by the NRC. Proposed draft criteria contain new conservatism in fire test methods and acceptance criteria that could affect the scope and complexity of upgrades to installed barriers. The content of the final criteria, and the resulting impact on specific action plans, is uncertain.

2. Complete Phase 2 test results will not be known until mid-March time frame. Results of baseline (as installed) and upgraded test configurations from Phase 2 must be considered to determine appropriate action plans to address specific configurations. Moreover, further generic testing may be undertaken following Phase 2.
3. The NUMARC Application Guideline, to be final by mid-April, will include a matrix of important performance parameters and bounding conditions. Discussions with the NRC will be necessary to reach agreement on the selection of comparison parameters and bounding conditions. The results of these NRC interactions will define the final content and would directly impact the generic applicability of a given test to an installed configuration.

In sum, the currently identified final resolution and alternatives being considered are:

- 1) Rely on the NUMARC test program to demonstrate that the final configuration of the Thermo-Lag fire barrier located within the Unit 1 train "B" switchgear room will comply with NRC fire protection regulatory requirements.
- 2) Re-evaluation of the engineering analyses used for determining the Appendix R safe shutdown pathways, equipment and actions for the Thermo-Lag fire barriers located within the Unit 1 Auxiliary Building pipe chase, and within the Unit 2 MDAFW pump room.

Other alternatives will be considered based on the outcome of the NUMARC test program and the re-evaluation effort. A discussion of the other alternatives being considered will be provided in a supplemental response if warranted.

## VI. SCHEDULES

### RESPONSE:

As discussed in the response to NRC Item V.B., the uncertainties, as well as the complexity associated with this issue will impact any schedule that is developed. Further, the outcome of the NUMARC test program and the re-evaluation effort, could also impact the proposed schedule. As such, the proposed schedule provided within this response may need to be revised. When revisions are known, a supplemental response will be submitted providing an updated schedule. The following is the current general schedule for bringing all Thermo-Lag fire barriers into compliance with NRC fire protection regulatory requirements.

### ACTIVITY

### SCHEDULE

submit results of re-evaluation  
of Appendix R safe shutdown  
effort

April 15, 1994

submit schedule for important  
performance parameter  
information

30 days after receipt of NUMARC  
Application Guide

submit results of engineering  
evaluation to determine if  
barrier in switchgear room is  
within scope of NUMARC program  
and can be upgraded

90 days after receipt of NUMARC  
final test reports and  
Application Guide

## VII. SOURCES AND CORRECTNESS OF INFORMATION

### RESPONSE:

The information provided by this response is based on field observations that were made of the Thermo-Lag fire barriers and design related documents.