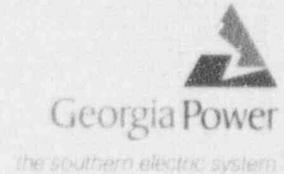


Georgia Power Company  
40 Inverness Center Parkway  
Post Office Box 1295  
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J. T. Beckham, Jr.  
Vice President - Nuclear  
Hatch Project



July 12, 1993

Docket Nos. 50-321  
50-366

HL-3397  
005805

TAC Nos. M86696  
M86697

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

Edwin I. Hatch Nuclear Plant  
Response to a Request for Additional Information  
Thermal Ceramics FP-60 Fire Barrier

Gentlemen:

By letter dated June 16, 1993, Georgia Power Company (GPC) was requested to provide additional information related to the Thermal Ceramics FP-60 fire barrier material installed in the Edwin I. Hatch Nuclear Plant. The request for additional information was developed as part of the NRC staff's preliminary review of the FP-60 fire barriers. The additional information concerns the technical basis for accepting the FP-60 material, test reports, barrier installations within the plant, and the quantity installed.

Subsequent to receipt of the subject letter, GPC contacted Mr. K. Jabbour, NRR Project Manager, to obtain clarification relative to the scope of the information requested. Mr. Jabbour informed GPC that the request mainly pertained to FP-60 fire barriers used in 10 CFR Part 50, Appendix R applications; however, GPC should discuss other applications as necessary.

The enclosure provides GPC's response to the questions provided in the subject letter. GPC has concluded that the FP-60 material, as used in the specific applications at Plant Hatch, is acceptable for meeting the applicable technical and licensing bases.

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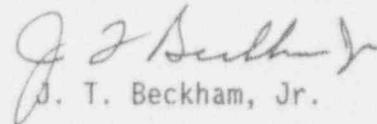
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U.S. Nuclear Regulatory Commission  
July 12, 1993

Page Two

Mr. J. T. Beckham, Jr. states he is Vice President of Georgia Power Company and is 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.

Sincerely,

  
J. T. Beckham, Jr.

Sworn to and subscribed before me  
this 12<sup>th</sup> day of July 1993

  
Notary Public

My Commission Expires: 6/30/96

JKB/cr

Enclosure

cc: Georgia Power Company  
Mr. H. L. Sumner, General Manager - Nuclear Plant  
NORMS

U.S. Nuclear Regulatory Commission, Washington, D.C.  
Mr. K. Jabbour, Licensing Project Manager - Hatch

U.S. Nuclear Regulatory Commission, Region II  
Mr. S. D. Ebnetter, Regional Administrator  
Mr. L. D. Wert, Senior Resident Inspector - Hatch

## Enclosure

### Edwin I. Hatch Nuclear Plant Response to a Request for Additional Information Thermal Ceramics FP-60 Fire Barrier

#### NRC Question 1:

If you are currently using the FP-60 fire barriers, manufactured by Thermal Ceramics, Inc., to meet your current licensing basis, provide the technical basis which demonstrates its acceptability for your facility.

#### GPC Response:

GPC evaluated the FP-60 firemaster blanket and concluded that it is an equivalent substitute for the Kaowool firemaster blanket based on the following discussion.

Kaowool is a noncombustible ceramic fiber material that was tested under Underwriters Laboratory (UL) 723/ASTM E-84 and listed by UL test report no. R8418. The UL-listed Kaowool is designated by the manufacturer as firemaster with a density of 8 lb/ft<sup>3</sup>. The FP-60 blanket is the same as a Kaowool blanket with a protective skin consisting of a 2-mil aluminum foil skin cemented to the Kaowool blanket. The aluminum skin is intended to provide protection against mechanical damage. A summary of the test reports documenting the performance characteristics of the FP-60 firemaster blanket is provided in GPC's response to NRC Question 2. Based on the information and test data supplied by the manufacturer, the Kaowool firemaster material and the FP-60 firemaster material are comprised of the same ceramic fiber product and provide equivalent performance characteristics. Consequently, either material, when installed with equal material thickness, provides equivalent protection of electrical cables.

GPC's licensing basis related to 10 CFR 50.48 and Appendix R to Part 50 provided for a limited application of the Kaowool material. For Appendix R, the Kaowool material was installed only on u. cable trays in the river intake structure. The Kaowool was installed in 15' on all cable trays to reduce the combustible loading in this area. Installation of Kaowool allowed an exemption from the requirements of Paragraph III.G.2 of Appendix R to be taken to the extent that an area-wide automatic fire suppression system was not required for the entire river intake structure. The exemption was reviewed and granted by the NRC staff in a safety evaluation dated April 18, 1984. GPC subsequently requested an exemption from the requirements of Paragraph III.G.2.b to the extent that a 20-foot separation was not required for cable in conduit and cable in trays wrapped with Kaowool blankets. This exemption was reviewed and granted by the NRC staff in a safety evaluation dated January 2, 1987.

Enclosure  
Response to a Request for Additional Information  
Thermal Ceramics FP-60 Fire Barrier

Recently, GPC replaced the Kaowool firemaster material in this area with FP-60 firemaster material primarily because of physical wear and degradation of the Kaowool material. The FP-60 material's 2-mil aluminum skin provides protection to the Kaowool ceramic material.

The technical basis for the acceptability of the Kaowool barriers is predicated on the low nontransient fire loading in the river intake structure, the available fire detection and suppression systems, and administrative controls for significant quantities of transient combustibles. The river intake structure contains eight plant service water (PSW) pump motors, eight residual heat removal service water (RHRSW) pump motors, the standby PSW pump motor, and the associated circuitry, piping, valves, and supports for the above components. The fire loading in the river intake structure is not significant, and the design basis fire duration is less than 15 minutes. Essentially, the nontransient fire load in this area is associated with the lubricating oil in the PSW and RHRSW pump motors. Active protection for this area is provided by a thermal detection system, and each of the PSW and RHRSW pump motors is provided with a fixed wet pipe automatic water spray system. All cable trays were wrapped with Kaowool to reduce the combustible loading such that an area wide fire suppression system was not required. The wrapped configuration provides a nominal 1-hour fire rating.

In considering the permanent combustible materials, a fire, if one should occur, would most likely be associated with a PSW or RHRSW pump motor. While ignition of the lubricating oil in the closed sumps is extremely unlikely, the automatic water spray system is designed to quickly extinguish such a fire. The most likely occurrence of a fire in this area is associated with transient combustibles, e.g., those involved in changing the lubricating oil in the pump motors. However, current administrative controls require a continuous fire watch to be established when transient combustibles are in the area. Portable carbon dioxide and dry chemical fire extinguishers, along with hose stations, are provided for manual fire fighting. Consequently, if a fire involving transient combustibles should occur, it would be immediately detected and promptly extinguished.

With regard to ampacity derating of the wrapped cable trays in the river intake structure, calculations were performed to consider the insulating effect of a cable tray completely wrapped with a 2-inch layer of Kaowool firemaster material. The methodology employed by these calculations was to ensure the sum of the heat losses of all of the continuously energized power circuits in the raceway would not exceed the maximum allowable heat for

Enclosure  
Response to a Request for Additional Information  
Thermal Ceramics FP-60 Fire Barrier

the raceway in watts per foot. These calculations concluded that the application of the barrier did not reduce the ampacity of the cables in the raceway to a value less than that required. Additional calculations have recently been performed using an ampacity derating of 61.4 percent based on independent test results and have shown that the existing cables are acceptable, thus confirming the validity of the original calculations.

Based on the above information and the testing data documenting the fire endurance and ampacity derating, GPC considers the FP-60 firemaster material to be acceptable and in compliance with the current licensing basis for the configuration and application in the river intake structure for Appendix R requirements.

GPC also installed Kaowool firemaster blankets for two additional purposes:

1. To provide a barrier for the separation of redundant divisions of electrical circuits.

For the divisional separation applications, the technical requirement was to provide protection of both divisions of cables in cases where the required physical separation was not met. The principal method of protection for exposed cable trays in such cases is to provide solid metal covers on the top and bottom of the cable tray. An approved alternative method includes the use of a 1-inch-thick blanket of Kaowool ceramic fiber material instead of a metal tray cover. Although this type of barrier is not required to be fire rated, an acceptable barrier is considered to be a material having a fire rating of at least 30 minutes.

2. To reduce the combustible loading in a given fire area for compliance with Appendix A to Branch Technical Position APCSB 9.5-1.

For applications involving the reduction of combustible loading, the technical requirement was to provide additional fire protection measures in areas of high cable concentrations. This requirement was typically achieved by installing solid metal tray covers or by wrapping the cable tray with a 1-inch or 2-inch protective covering using Kaowool firemaster blanket. Customarily, a material is classified as qualified for the purpose of reducing combustible loadings if the material has a fire rating of 30 minutes.

Enclosure  
Response to a Request for Additional Information  
Thermal Ceramics FP-60 Fire Barrier

GPC has reviewed the applicable test reports for the FP-60 firemaster material and has concluded that the tests support a fire rating of the required duration for divisional separation applications and applications for the purpose of reducing combustible loadings. Additionally, generic, representative calculations have been recently performed to address cable derating due to the insulating effect of the barrier material. As previously stated, GPC has determined that the FP-60 firemaster material is equivalent to the Kaowool firemaster material. Consequently, the FP-60 material is an approved substitute for Kaowool, provided equal thickness is applied, and has been installed in the plant for these two applications. Therefore, GPC considers the FP-60 firemaster blanket to be acceptable for the above applications.

NRC Question 2:

Provide any test reports that document the fire endurance or ampacity derating characteristics of the FP-60 fire barriers.

GPC Response:

GPC has received and reviewed Underwriters Laboratory test no. R11044, dated May 1984 and Southwest Research Institute test report no. 01-8305-053, dated February 1986 which document the barrier characteristics of the FP-60 material. Southwest Research Institute test report no. 01-8818-210, dated July 1986 was also reviewed. These test reports were provided to the NRC by Thermal Ceramics, Inc., as discussed in NRC Information Notice 93-40.

NRC Question 3:

Identify the areas of the plant in which the FP-60 fire barriers are installed, and the timeframe in which they were installed.

GPC Response:

For the 10 CFR 50, Appendix R application, FP-60 fire barriers are installed in the river intake structure. The Kaowool barriers were installed in 1984 and subsequently replaced with the FP-60 barriers from 1992 to 1993. The FP-60 material has also been installed in various areas of the Control Building and Reactor Building on both units. These barriers were installed from 1992 to 1993.

NRC Question 4:

Provide an approximation of the quantity of FP-60 fire barriers that is installed in your facility to meet your current licensing basis. The estimate may be in linear feet of conduit or square feet of cable raceway.

Enclosure  
Response to a Request for Additional Information  
Thermal Ceramics FP-60 Fire Barrier

GPC Response:

The river intake structure contains approximately 1,250 linear feet of installed FP-60 fire barriers. For the various locations in the Control Building and Reactor Building on both units, procurement records show that GPC has purchased approximately 4000 linear feet of the FP-60 blanket. This value provides a very conservative estimate of the quantity installed for these areas.

NRC Question 5:

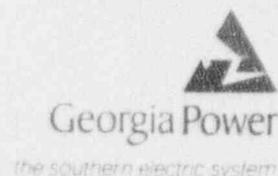
Perform an operability analysis of the FP-60 fire barrier as it is installed in your facility and provide the results of your analysis.

GPC Response:

As provided in the response to NRC Question 1, GPC has concluded that the FP-60 firemaster barrier meets the current licensing basis for the Appendix R application, divisional separation applications, and applications for the reduction of combustible loadings. Consequently, an operability analysis of the FP-60 fire barrier is not necessary.

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J. T. Beckham, Jr.  
Vice President - Nuclear  
Hatch Project



July 12, 1993

Docket Nos. 50-321  
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HL-3397  
005805

TAC Nos. M86696  
M86697

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

Edwin I. Hatch Nuclear Plant  
Response to a Request for Additional Information  
Thermal Ceramics FP-60 Fire Barrier

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Subsequent to receipt of the subject letter, GPC contacted Mr. K. Jabbour, NRR Project Manager, to obtain clarification relative to the scope of the information requested. Mr. Jabbour informed GPC that the request mainly pertained to FP-60 fire barriers used in 10 CFR Part 50, Appendix R applications; however, GPC should discuss other applications as necessary.

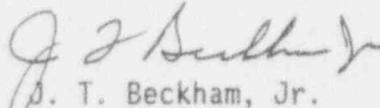
The enclosure provides GPC's response to the questions provided in the subject letter. GPC has concluded that the FP-60 material, as used in the specific applications at Plant Hatch, is acceptable for meeting the applicable technical and licensing bases.

U.S. Nuclear Regulatory Commission  
July 12, 1993

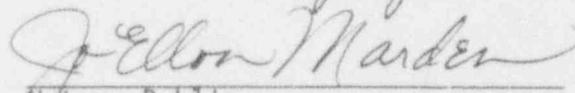
Page Two

Mr. J. T. Beckham, Jr. states he is Vice President of Georgia Power Company and is 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.

Sincerely,

  
J. T. Beckham, Jr.

Sworn to and subscribed before me  
this 12<sup>th</sup> day of July 1993

  
Notary Public

My Commission Expires: 6/30/96

JKB/cr

Enclosure

cc: Georgia Power Company  
Mr. H. L. Sumner, General Manager - Nuclear Plant  
NORMS

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Mr. S. D. Ebnetter, Regional Administrator  
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Enclosure

Edwin I. Hatch Nuclear Plant  
Response to a Request for Additional Information  
Thermal Ceramics FP-60 Fire Barrier

NRC Question 1:

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GPC Response:

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GPC's licensing basis related to 10 CFR 50.48 and Appendix R to Part 50 provided for a limited application of the Kaowool material. For Appendix R, the Kaowool material was installed only on the cable trays in the river intake structure. The Kaowool was installed in 1984 on all cable trays to reduce the combustible loading in this area. Installation of Kaowool allowed an exemption from the requirements of Paragraph III.G.2 of Appendix R to be taken to the extent that an area-wide automatic fire suppression system was not required for the entire river intake structure. The exemption was reviewed and granted by the NRC staff in a safety evaluation dated April 18, 1984. GPC subsequently requested an exemption from the requirements of Paragraph III.G.2.b to the extent that a 20-foot separation was not required for cable in conduit and cable in trays wrapped with Kaowool blankets. This exemption was reviewed and granted by the NRC staff in a safety evaluation dated January 2, 1987.

Enclosure

Response to a Request for Additional Information  
Thermal Ceramics FP-60 Fire Barrier

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Enclosure  
Response to a Request for Additional Information  
Thermal Ceramics FP-60 Fire Barrier

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Response to a Request for Additional Information  
Thermal Ceramics FP-60 Fire Barrier

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NRC Question 2:

Provide any test reports that document the fire endurance or ampacity derating characteristics of the FP-60 fire barriers.

GPC Response:

GPC has received and reviewed Underwriters Laboratory test no. R11044, dated May 1984 and Southwest Research Institute test report no. 01-8305-053, dated February 1986 which document the barrier characteristics of the FP-60 material. Southwest Research Institute test report no. 01-8818-210, dated July 1986 was also reviewed. These test reports were provided to the NRC by Thermal Ceramics, Inc., as discussed in NRC Information Notice 93-40.

NRC Question 3:

Identify the areas of the plant in which the FP-60 fire barriers are installed, and the timeframe in which they were installed.

GPC Response:

For the 10 CFR 50, Appendix R application, FP-60 fire barriers are installed in the river intake structure. The Kaowool barriers were installed in 1984 and subsequently replaced with the FP-60 barriers from 1992 to 1993. The FP-60 material has also been installed in various areas of the Control Building and Reactor Building on both units. These barriers were installed from 1992 to 1993.

NRC Question 4:

Provide an approximation of the quantity of FP-60 fire barriers that is installed in your facility to meet your current licensing basis. The estimate may be in linear feet of conduit or square feet of cable raceway.

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Response to a Request for Additional Information  
Thermal Ceramics FP-60 Fire Barrier

GPC Response:

The river intake structure contains approximately 1,250 linear feet of installed FP-60 fire barriers. For the various locations in the Control Building and Reactor Building on both units, procurement records show that GPC has purchased approximately 4000 linear feet of the FP-60 blanket. This value provides a very conservative estimate of the quantity installed for these areas.

NRC Question 5:

Perform an operability analysis of the FP-60 fire barrier as it is installed in your facility and provide the results of your analysis.

GPC Response:

As provided in the response to NRC Question 1, GPC has concluded that the FP-60 firemaster barrier meets the current licensing basis for the Appendix R application, divisional separation applications, and applications for the reduction of combustible loadings. Consequently, an operability analysis of the FP-60 fire barrier is not necessary.