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POLICY ISSUE

(Information)

November 30, 1992

SECY-92-397

For: The Commissioners

From: James M. Taylor
Executive Director for Operations

Subject: RESOLUTION OF ISSUES WITH THERMO-LAG 330-1 BARRIERS

Purpose: To inform the Commission that the staff plans to issue Generic Letter (GL) 92-XX, "Thermo-Lag 330-1 Fire Barriers," to all holders of operating licenses or construction permits for nuclear power reactors to obtain additional information needed to verify that Thermo-Lag 330-1 barriers comply with Section 50.48, "Fire protection," and General Design Criteria (GDC) 3, "Fire protection," and 17, "Electric power systems," of Appendix A to 10 CFR Part 50. The staff is also requesting information about any actions required to correct problems with Thermo-Lag 330-1 barriers.

Discussion: In June 1991, the staff began a review of Thermo-Lag 330-1 barriers after receiving reports about installation problems and Thermo-Lag barriers that had failed qualification fire tests. On February 12, 1992, the NRC staff held a public meeting with the Nuclear Management and Resources Council (NUMARC) to discuss its concerns about Thermo-Lag barriers. During the meeting, the staff distributed copies of the proposed generic letter. After the meeting, the staff placed a copy of the proposed generic letter in the NRC public document room.

The staff found that Thermo-Lag 330-1 fire barriers may not provide the level of fire endurance intended by the licensees, that some ampacity derating test results are questionable and inconsistent, and that

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some licensees did not adequately evaluate the fire endurance and ampacity derating test results for correctness and applicability to their plant designs.

Section 50.48 of 10 CFR requires that each operating reactor have a fire protection plan that satisfies GDC 3. Fire protection features required to satisfy GDC 3 include features to ensure that one train of systems necessary to achieve and maintain shutdown conditions be maintained free of fire damage. This requirement can be satisfied by separating one safe shutdown train from its redundant train with fire-rated barriers. Many licensees use Thermo-Lag 330-1 fire barriers to satisfy this requirement. The staff is concerned that Thermo-Lag 330-1 fire barriers may not provide the level of fire resistance intended by the licensees and, therefore, that licensees that use Thermo-Lag 330-1 barriers may not be complying with Section 50.48 or GDC 3.

Some licensees also use Thermo-Lag barriers to create physical independence between the circuits and electric equipment in and associated with the Class 1E power system and the protection system. Regulatory Guide 1.75, "Physical Independence of Electric Systems," includes the staff's guidance for achieving physical independence.

GDC 17 requires that onsite electric power systems be provided to permit the functioning of structures, systems, and components important to safety. The onsite electrical power system is required to have sufficient capacity and capability to ensure that vital functions are maintained. Cables associated with these systems that are routed in electrical raceways are derated to ensure that systems have sufficient capacity and capability to perform their intended safety functions. Cables routed in raceways enclosed in barriers require additional derating because of the insulating effect of the barrier materials. The NRC is concerned that some licensees may not have adequately accounted for the insulating effects of the Thermo-Lag material in their derating analyses and, therefore, may not be meeting the requirements of GDC 17.

To notify the licensees of apparent failures of Thermo-Lag 330-1 fire barriers and materials during

fire endurance testing, the NRC issued Bulletins 92-01, "Failure of Thermo-Lag 330 Fire Barrier System to Maintain Cabling in Wide Cable Trays and Small Conduits Free from Fire Damage," June 24, 1992, and 92-01, Supplement 1, "Failure of Thermo-Lag 330-1 Fire Barrier System to Perform its Specified Fire Endurance Function," August 28, 1992. In the bulletin and its supplement, the NRC requested that each licensee determine which plant areas use 1-hour or 3-hour prefabricated Thermo-Lag 330-1 panels or conduit shapes for raceway, wall, ceiling, or equipment enclosure fire barriers; determine the plant areas that use these materials to protect or separate the safe shutdown capability; implement, in accordance with plant procedures, compensatory measures until it can declare the fire barriers operable; and inform the NRC whether or not the above actions have been taken and describe the measures being taken to ensure or restore fire barrier operability.

The NRC is issuing GL 92-XX to expand the scope of Bulletin 92-01 and its supplement to include all 1-hour and all 3-hour Thermo-Lag 330-1 materials and barrier systems fabricated by any assembly method such as by assembling preformed panels and conduit shapes and by applying the Thermo-Lag 330-1 material using a spray, trowel, and brush. The staff is also addressing the ampacity derating issues, which apply where Thermo-Lag 330-1 barriers are used either to protect the safe shutdown capability from fire or to achieve physical independence of electrical systems. The staff will require each licensee and applicant to submit a written report within 120 days. Where applicable, the licensees can reference previous responses to the bulletin and its supplement in their responses to GL 92-XX.

Responding to a request made by the staff at the public meeting of February 12, 1992, NUMARC stated during public meetings on July 7 and August 12 that it would coordinate the industry's response to the proposed generic letter.

The staff received comments on the proposed generic letter from NUMARC, Thermal Sciences, Incorporated (the sole manufacturer and supplier of Thermo-Lag 330-1), and the Nuclear Information and Resource Service. The staff considered each comment and revised the proposed generic letter to address

some of the comments. The staff included its response to each comment with the generic letter review package it provided to the Committee to Review Generic Requirements (CRGR). The CRGR review package will be placed in the NRC public document room. The staff also revised the draft generic letter to reflect Bulletin 92-01 and Supplement 1 to Bulletin 92-01.

The staff considers the relative safety significance of the fire barrier concerns to be low for the following reasons. In a fire, the fire resistance required of a barrier depends on the expected severity of the fire to which it may be exposed. Typical fire loads in plant areas that contain safe shutdown equipment are not great enough to produce a fire approaching the severity of a test fire. A fire in a nuclear power plant would have a slower temperature rise than would a test fire. In large open volumes, such as most nuclear plant fire areas, a fully developed fire may occur in one part of the area, but it is not probable that the entire fire area would become fully involved by fire. Unless the fire area becomes fully involved, the fire would not likely present a credible challenge to any fire barriers in a nuclear power plant. Recent NRC and industry fire tests have demonstrated that Thermo-Lag barriers will provide some level of fire protection. Most plant areas have controlled ignition sources, which help reduce the occurrences of fires, and are equipped with other passive and active fire protection features that contribute to early fire detection and suppression activities. Responding to Bulletin 92-01 and its supplement, the licensees have implemented compensatory measures for inoperable Thermo-Lag barriers. To respond to GL 92-XX, some licensees may have to implement compensatory measures in other areas of the plant. The compensatory measures will provide an adequate level of safety until the licensees develop and complete corrective actions.

The staff is continuing to evaluate the safety significance of the ampacity derating concern but believes that this issue primarily affects cable insulation aging rather than safety. If the licensees' cable derating calculations are based on low derating factors, the raceways enclosed in Thermo-Lag 330-1 barriers could have internal temperatures that exceed the design operating

temperature. The higher temperatures could accelerate the aging of the cable insulation, which will reduce the expected design life of the cables. However, the cables in an ampacity derating test are configured for a worst case condition. In most applications, the actual thermal loads on a Thermo-lag barrier will not likely approach those of a standard test. Therefore, lower cable temperatures would be expected.

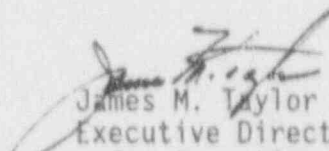
The staff is continuing to review technical issues associated with Thermo-Lag 330-1 barriers. The NRC staff also plans to evaluate other fire barrier materials and systems used by the licensees. If the staff finds concerns, it will address them through appropriate communications. GL 92-XX does not require actions for barrier materials and systems other than the Thermo-Lag 330-1 fire barrier system.

The staff plans to issue GL 92-XX 10 working days after the date of this paper.

Coordination:

On October 6, 1992, the staff met with the Committee to Review Generic Requirements (CRGR) to discuss GL 92-XX. The staff incorporated the CRGR's comments into the generic letter.

The Office of the General Counsel reviewed GL 92-XX and had no legal objections to it.


James M. Taylor
Executive Director
for Operations

Enclosure:

Generic Letter 92-XX, "Thermo-Lag
330-1 Fire Barriers"

DISTRIBUTION:

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TO: ALL HOLDERS OF OPERATING LICENSES OR CONSTRUCTION PERMITS FOR
NUCLEAR POWER REACTORS

SUBJECT: THERMO-LAG 330-1 FIRE BARRIERS (GENERIC LETTER 92-XX)

PURPOSE

The U.S. Nuclear Regulatory Commission (NRC) is issuing this generic letter (GL) to obtain additional information needed from licensees to verify that Thermo-Lag 330-1 fire barrier systems manufactured by Thermal Science, Incorporated (TSI, the vendor), St. Louis, Missouri, comply with the NRC's requirements. Many licensees use Thermo-Lag 330-1 fire barriers to satisfy the NRC's fire protection requirements for the safe shutdown capability. Some licensees also use Thermo-Lag 330-1 barriers to create physical independence between the circuits and electric equipment in and associated with the Class 1E power system, the protection system, systems actuated or controlled by the protection system, and auxiliary or supporting systems that must be operable for the protection system and the systems it actuates to perform their safety-related functions.

BACKGROUND

The NRC began a review of Thermo-Lag 330-1 fire barrier system fire endurance and ampacity derating test reports, installation procedures, and as-built configurations after receiving reports from Gulf States Utilities (GSU) about failed qualification fire tests and installation problems. The staff issued the results of the NRC's initial review in NRC Information Notice (IN) 92-46, "Thermo-Lag Fire Barrier Material Special Review Team Findings, Current Fire Endurance Tests, and Ampacity Calculation Errors," June 23, 1992. The special review team report enclosed with IN 92-46 included the technical bases for this generic letter. The NRC staff found the following regarding Thermo-Lag 330-1 barriers: incomplete or indeterminate fire test results, questionable ampacity derating test results and a wide range of documented ampacity derating factors, some barrier installations that are not constructed in accordance with the vendor's recommended installation procedures, incomplete installation procedures, and as-built fire barrier configurations that may not be qualified by a valid fire endurance test or evaluated in accordance with the guidance previously provided by the staff in GL 86-10, "Implementation of Fire Protection Requirements," April 24, 1986.

Texas Utilities Electric Company (TU Electric) later conducted a series of full-scale fire endurance tests to qualify the Thermo-Lag 330-1 electrical raceway fire barrier configurations installed at its Comanche Peak Steam Electric Station. The NRC also conducted a series of small-scale fire tests of 1-hour and 3-hour Thermo-Lag prefabricated panels at the National Institute of Standards and Technology to assess the fire performance of the panels. The results of these fire tests raised additional concerns about the ability of

Thermo-Lag 330-1 fire barriers to provide fire protection according to their specified fire-resistance ratings.

The staff issued the results of the TU Electric and NRC fire tests in Bulletins 92-01, "Failure of Thermo-Lag 330 Fire Barrier System to Maintain Cabling in Wide Cable Trays and Small Conduits Free from Fire Damage," June 24, 1992, and 92-01, Supplement 1, "Failure of Thermo-Lag 330-1 Fire Barrier System to Perform its Specified Fire Endurance Function," August 28, 1992. In the bulletin and its supplement, the NRC notified the licensees of apparent failures of Thermo-Lag 330-1 fire barriers and materials during fire endurance testing. The bulletin and its supplement requested that each licensee determine which plant areas use 1-hour or 3-hour prefabricated Thermo-Lag 330-1 panels or conduit shapes for raceway, wall, ceiling, or equipment enclosure fire barriers; determine the plant areas that use these materials to protect or separate the safe shutdown capability; implement, in accordance with plant procedures, compensatory measures until it can declare the fire barriers operable; and required each licensee to inform the NRC in writing whether or not the above actions have been taken and describe the measures being taken to ensure or restore fire barrier operability.

AREAS OF CONCERN

The NRC has three principal areas of concern: the fire endurance capability of Thermo-Lag 330-1 barriers, the ampacity derating of cables enclosed in Thermo-Lag 330-1 barriers, and the evaluation and application of the results of tests conducted to determine the fire endurance ratings and the ampacity derating factors of Thermo-Lag 330-1 barriers.

The NRC is concerned that the Thermo-Lag 330-1 fire barrier systems may not provide the level of fire endurance intended by the licensees and, therefore, that the licensees that use Thermo-Lag 330-1 fire barriers may not be meeting the requirements of Section 50.48, "Fire protection," and General Design Criterion (GDC) 3, "Fire protection," of Appendix A, "General Design Criteria for Nuclear Power Plants," to Part 50 of Title 10 of the Code of Federal Regulations (10 CFR Part 50).

Cables routed in electrical raceways are derated to ensure that systems have sufficient capacity and capability to perform their intended safety functions. Cables routed in raceways enclosed in fire barriers require additional derating because of the insulating effect of the fire barrier materials. Cable derating calculations that are based on inaccurate or nonconservative derating factors could result in installation of undersized cables or raceway overfilling. This could cause operating temperatures to exceed design limits within the raceways thereby reducing the expected design life of the cables. The NRC is concerned that because of the wide range of ampacity derating factors documented for Thermo-Lag 330-1 materials, some licensees may not have adequately accounted for the insulating effects of the Thermo-Lag material in their derating analyses and, therefore, may not be meeting the requirements of GDC 17, "Electric power systems." This concern applies where Thermo-Lag 330-1 barriers are used either to protect the safe shutdown capability from fire or to achieve physical independence of electrical systems.

The NRC is also concerned that some licensees have not adequately reviewed and evaluated the fire endurance test results and ampacity derating test results used as the licensing basis for their Thermo-Lag 330-1 barriers to determine the validity of the tests and the applicability of the test results to their plant designs.

The NRC is requiring information added to verify compliance with 10 CFR 50.48, GDC 3, and GDC 1 associated license conditions under the provisions of 10 CFR 50.54(f) where Thermo-Lag 330-1 barriers are used.

FIRE ENDURANCE CAPABILITY

The NRC's Qualification Requirements and Guidance for Fire Barriers

Section 50.48 of 10 CFR requires that each operating nuclear power plant have a fire protection plan that satisfies GDC 3. GDC 3 requires that structures, systems, and components important to safety be designed and located to minimize, in a manner consistent with other safety requirements, the probability and effects of fires and explosions. Fire protection features required to satisfy GDC 3 include features to ensure that one train of those systems necessary to achieve and maintain shutdown conditions be maintained free of fire damage.¹ One means of complying with this requirement is to separate one safe shutdown train from its redundant train with fire-rated barriers. The level of fire resistance required of the barriers, 1 hour or 3 hours, depends on the other fire protection features provided in the fire area.

The NRC issued guidance on acceptable methods of satisfying the regulatory requirements of GDC 3 in Branch Technical Position (BTP) Auxiliary and Power Conversion Systems Branch (APCSB) 9.5-1, "Guidelines for Fire Protection for Nuclear Power Plants;" Appendix A to BTP APCS 9.5-1; BTP Chemical Engineering Branch (CMEB) 9.5-1, "Fire Protection For Nuclear Power Plants," July 1981; and GL 86-10. In the BTPs and in GL 86-10, the staff stated that the fire resistance ratings of fire barriers should be established in accordance with National Fire Protection Association (NFPA) Standard 251, "Standard Methods of Fire Tests of Building Construction and Materials," by subjecting a test specimen that represents the materials, workmanship, method of assembly, dimensions, and configuration for which a fire rating is desired to a "standard fire exposure" at a nationally recognized laboratory.² In GL 86-10, the staff included guidance on fire test acceptance criteria and for evaluating deviations from tested configurations.

¹ See Appendix R to 10 CFR Part 50, "Fire Protection Program for Nuclear Power Facilities Operating Prior to January 1, 1979."

² American Society for Testing and Materials (ASTM) Standard E119 was adopted by the National Fire Protection Association (NFPA) as NFPA Standard 251.

Fire Endurance Testing and the Evaluation and Application of Fire Test Results

On October 26, 1989, the Southwest Research Institute (SwRI) performed a 3-hour fire endurance test of a cable tray and support protected by a Thermo-Lag 330-1 fire barrier for GSU. SwRI found that temperatures within the test assembly exceeded the NRC's acceptance criteria within 60 minutes and that the test assembly collapsed in less than 90 minutes. These test results raised concerns about the adequacy of Thermo-Lag 330-1 cable tray enclosures. The staff informed the licensees of these test results in NRC IN 91-47, "Failure of Thermo-Lag Fire Barrier Material to Pass Fire Endurance Test," August 6, 1991. NRC IN 92-46 contains the staff's evaluation of this fire test.

While conducting its review, the NRC staff found that many fire endurance tests have been conducted on electrical raceways protected with Thermo-Lag 330-1 fire barrier systems. The staff reviewed about forty 1-hour and 3-hour fire endurance test reports from various testing facilities and found that testing methods and procedures used during some of the qualification tests did not meet the NRC's guidance and deviated from good engineering practices. In NFPA 251, the NFPA advised that the test conditions should be evaluated carefully because variations from the construction of the test specimen or from the conditions in which it is tested may substantially change the performance characteristics of the assembly. The test reports reviewed did not contain sufficient details of the construction methods used for the test specimens, did not contain details of the materials used, and did not contain dimensioned drawings. Most of the test configurations were atypical of the as-built field configurations observed by the staff.

The NRC recognized that fire endurance testing of every as-built fire barrier configuration is not possible. In GL 86-10, the NRC issued guidance for reviewing deviations from tested fire barrier configurations. While reviewing the Thermo-Lag 330-1 fire barriers, the NRC staff found several instances in which licensees installed fire barrier configurations that may not have been qualified by fire endurance testing or may not have been reviewed in accordance with the guidance in GL 86-10. For example, when the NRC conducted its initial review, some licensees could not justify their practice of extrapolating test results from small barrier enclosures to significantly larger enclosures or installing barriers using procedures and materials that were different from those tested. The NRC visited five sites after issuing IN 91-47 and also found several licensees that had constructed fire walls, partitions, and vaults using Thermo-Lag 330-1 as a component. These licensees could not provide qualification test reports or justify deviations from tested configurations to demonstrate the acceptability of these fire barriers. The staff informed the licensees of these issues in IN 91-79, "Deficiencies in the Procedures for Installing Thermo-Lag Fire Barrier Materials," December 6, 1991.

The staff is concerned that some licensees have not adequately reviewed the fire endurance test results to determine if the tests are valid and if the test results apply to their plant designs.

Deficiencies in the Fire Barrier Installation and Inspection Procedures

While conducting site visits after issuing IN 91-47, the NRC staff observed that the vendor had revised its recommended installation procedures without notifying the licensees, that the vendor's installation procedures are incomplete, that a number of field installations were not constructed in accordance with the vendor's recommended installation procedures, that some installations did not appear to be qualified by fire endurance testing, and that some installations deviated from the tested configurations without justification. In IN 91-79, the NRC staff discussed installation problems resulting from TSI's incomplete installation procedures, licensees' inadequate installation procedures, installer errors, incomplete or incorrect design documents, and inadequate quality control oversight. In IN 91-79, the staff also listed the installation details in which it found differences between the field installations, the tested configurations, and the vendor's installation procedures. These details are not repeated herein.

AMPACITY DERATING

The NRC's Requirements and Guidance for Ampacity Derating

GDC 17 requires that onsite electric power systems be provided to permit the functioning of structures, systems, and components important to safety. The onsite electrical power system is required to have sufficient capacity and capability to ensure that vital functions are maintained. The Institute of Electrical and Electronics Engineers (IEEE) Standard 279, "Criteria for Protection Systems for Nuclear Power Generating Stations," includes guidance on acceptable methods of satisfying GDC 17. IEEE states that the quality of protection system components shall be achieved by specifying requirements known to promote high quality, such as the requirements for the derating of components, and that the quality shall be consistent with minimum maintenance requirements and low failure rates. Furthermore, IEEE 279 requires that type test data or reasonable engineering extrapolation based on test data be made available to verify that protection system equipment continually meets the performance requirements determined to be necessary for achieving the system requirements.

In Regulatory Guide (RG) 1.75, "Physical Independence of Electric Systems," the NRC staff gave guidance for complying with IEEE Standard 279 and GDC 17 for the physical independence of the circuits and electric equipment comprising or associated with the Class 1E power system, the protection system, systems actuated or controlled by the protection systems, and auxiliary or supporting systems that must be operable for the protection system and the systems it actuates to perform their safety-related functions. Some licensees use Thermo-Lag 330-1 barriers to achieve physical independence of electrical systems in accordance with RG 1.75. The staff's concerns about ampacity derating apply to Thermo-Lag 330-1 barriers installed to achieve physical independence of electric systems and to those installed to protect the safe shutdown capability from fire.

Ampacity Derating Tests and the Application of Ampacity Derating Test Results

Cables enclosed in electrical raceways protected with fire barrier materials are derated because of the insulating effect of the fire barrier material. Other factors that affect ampacity derating include cable fill, cable loading, cable type, raceway construction, and ambient temperature. The National Electrical Code, Insulated Cable Engineers Association (ICEA) publications, and other industry standards provide general ampacity derating factors for open air installations, but do not include derating factors for fire barrier systems. Although a national standard ampacity derating test method has not been established, ampacity derating factors for raceways enclosed with fire barrier material have been determined for specific installation configurations by testing.

The vendor has documented a wide range of ampacity derating factors that were determined by testing. For example, between 1981 and 1985, the vendor provided test reports to licensees that document ampacity derating factors for cable trays that range from 5.3 to 12.48 percent for 1-hour barriers and from 16.15 to 20.55 percent for 3-hour barriers. On October 2, 1986, TSI informed the NRC and its customers by Mailgram that, while conducting a special services investigation in September 1986 at the Underwriters Laboratories, Incorporated (UL), it found that the ampacity derating factors for Thermo-Lag 330-1 barriers were greater than previous tests indicated (28.04 percent for 1-hour barriers and 31.15 percent for 3-hour barriers). However, the cable fill and tray configuration differed for each test than those tested previously. The NRC learned that UL performed duplicate cable tray baseline tests using a longer stabilization period (4 hours instead of 15 minutes) after the final current adjustment and obtained a higher baseline current, which yielded higher derating factors (36.1 percent for 1-hour barriers and 38.9 percent for 3-hour barriers). UL gave these test results to the vendor, but they were not submitted to the NRC or to the licensees. While reviewing tests conducted at SWRI in 1986, the staff learned that the ampacity derating factor for the tested configuration was 37.4 percent for a 1-hour Thermo-Lag 330-1 barrier. The test procedures and test configurations differed for each of the aforementioned tests. Therefore, the results from these different ampacity tests may not be directly comparable to each other.

The staff is concerned that the ampacity derating factors derived from the UL tests for similar Thermo-Lag 330-1 barrier designs are inconsistent with one another because of differing stabilization times, which calls into question the validity of the ampacity derating tests. While reviewing Industrial Testing Laboratories (ITL) test reports, the NRC staff noticed that ambient temperature and maximum cable temperature were allowed to vary widely for some tests (48 °C instead of 40 °C for ambient temperature and 94.4 °C instead of 90 °C for maximum cable temperature). ITL then used an ICEA procedure to calculate the ampacity derating factors by adjusting the tested current to 40 °C ambient and 90 °C cable temperature. Those tests may not be valid because the ambient and maximum cable temperatures were not maintained within specified limits in some tests. In IN 92-46, the NRC informed the licensees that a licensee also discovered a mathematical error in the calculation of the ampacity derating factor as published in an ITL test report. A preliminary assessment of the use of lower-than-actual ampacity derating factors indicates

that Thermo-Lag 330-1 barrier installations may allow cables to reach temperatures that exceed their ratings, which could accelerate cable aging.

The staff is also concerned that some licensees have not adequately reviewed the results of ampacity derating tests to determine if the tests are valid and if the test results apply to their plant designs. The staff's ampacity derating concerns apply to the use of Thermo-Lag 330-1 on electrical raceways both as fire barriers to protect the safe shutdown capability and as barriers to create physical independence between electrical systems.

ACTIONS ADDRESSED

The NRC's regulations require that safe shutdown equipment be protected from fire, that onsite electric power systems have sufficient capacity and capability to ensure that vital functions are maintained, and that certain circuits and electric equipment be physically independent. The NRC has found test assemblies that failed qualification fire tests, fire test results that are incomplete and indeterminate, installation problems, questionable ampacity derating tests, and differences between reported ampacity derating factors. The NRC also found that licensees have not adequately evaluated the results of tests for fire endurance and ampacity derating. Therefore, the licensees should confirm that the Thermo-Lag 330-1 barrier systems have been qualified by representative fire endurance tests, that the ampacity derating factors have been derived by valid tests, and that these qualified barriers have been installed with appropriate procedures and quality controls to ensure that they comply with the NRC's requirements.

The staff is continuing to review technical issues associated with Thermo-Lag 330-1 barriers. The NRC staff will evaluate other fire barrier materials and systems used by the licensees to satisfy the NRC's requirements. If the staff finds concerns, it will address them through appropriate communications. This generic letter does not require actions for barrier materials and systems other than the Thermo-Lag 330-1 fire barrier system. However, the staff expects that the recipients of this generic letter will review the information to determine if it applies to the other barrier materials and systems used at their facilities and consider actions, as appropriate, to avoid similar problems.

REPORTING REQUIREMENTS

All addressees are required, pursuant to Section 182(a) of the Atomic Energy Act of 1954, as amended, and 10 CFR 50.54(f), to submit a written report within 120 days from the date of this generic letter. In this written report, the licensee shall address the following items. Where applicable, the written report can reference previous responses to Bulletin 92-01 and Supplement 1 to Bulletin 92-01 in its response to this generic letter.

1. State whether Thermo-Lag 330-1 barriers are relied upon to meet 10 CFR 50.48, to achieve physical independence of electrical systems, to meet a condition of a plant's operating license or to satisfy a licensing commitment, or, if applicable, state that it does not use Thermo-Lag 330-1 at the facility. This generic letter applies to all 1-hour and all 3-hour Thermo-Lag 330-1 materials and barrier systems

assembled by any assembly method such as by assembling preformed panels and conduit shapes, as well as spray, trowel and brush-on applications.

2. If Thermo-Lag 330-1 barriers are used at the facility,
 - (a) State whether or not it has qualified the Thermo-Lag 330-1 fire barriers by conducting fire endurance tests in accordance with the NRC's requirements and guidance or licensing commitments.
 - (b) State (1) whether or not the fire barrier configurations installed in the plant represent the materials, workmanship, methods of assembly, dimensions, and configurations of the qualification test assembly configurations; and (2) whether or not it has evaluated the deviations from the tested configurations.
 - (c) State (1) whether or not the as-built Thermo-Lag 330-1 barrier configurations are consistent with the barrier configurations used during the ampacity derating tests relied upon by the licensee for the ampacity derating factors used for all raceways protected by Thermo-Lag 330-1 (for fire protection of safe shutdown capability or to achieve physical independence of electrical systems) and (2) whether or not the ampacity derating test results relied upon by the licensee are correct and applicable to the plant design.
3. With respect to any answer to items 2(a), 2(b), or 2(c) above in the negative, (a) describe all corrective actions needed and include a schedule by which such actions shall be completed and (b) describe all compensatory measures taken in accordance with the technical specifications or administrative controls.
4. List all Thermo-Lag 330-1 barriers for which answers to item 2 cannot be provided in the response due within 120 days from the date of this generic letter, and include a schedule by which such answers shall be provided.

The licensee should retain all documentation of any reviews performed to satisfy the reporting requirements for future NRC audits or inspections.

If the addressee cannot submit the information required or meet the reporting deadline, it shall include in the response due within 120 days from the date of this generic letter, a justification, a description of any proposed alternative approaches, and a schedule under which responses and proposed actions will be completed. The NRC encourages licensees to work together to develop acceptable generic solutions to the problems addressed in this generic letter.

The written reports required shall be addressed to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, D.C. 20555 under oath or affirmation. A copy of the report shall also be submitted to the appropriate regional administrator.

BACKFIT DISCUSSION

The types of barriers addressed in this generic letter are currently installed at many operating power reactor sites and are required to meet either a condition of a plant's operating license or NRC requirements such as Section III.G of Appendix R to 10 CFR Part 50. The information required by this generic letter is necessary to verify licensees' compliance with their current licensing bases. There is no new staff position reflected in this generic letter. Therefore, any actions taken by licensees concomitant with responding to this generic letter are necessary to bring licensees into compliance with existing NRC rules and regulations, and are not the result of any new staff requirement or position. Accordingly, this generic letter is being issued as a compliance backfit under the terms of 10 CFR Section 50.109(a)(4).

The staff evaluated this generic letter in accordance with the charter of Committee to Review Generic Requirements (CRGR) and will place that evaluation in the NRC's public document room with the minutes of the October 6, 1992, meeting of the CRGR.

REQUEST FOR VOLUNTARY SUBMITTAL OF IMPACT DATA

This request is covered by Office of Management and Budget Clearance Number 3150-0011, which expires May 31, 1994. The estimated average number of burden hours is 300 person-hours for each addressee's response, including the time required to assess the requirements for information, search data sources, gather and analyze the data, and prepare the required letters. This estimated average number of burden hours pertains only to the identified response-related matters and does not include the time to implement the actions required to comply with the applicable regulations, license conditions, or commitments. Comments on the accuracy of this estimate and suggestions to reduce the burden may be directed to Ronald Minsk, Office of Information and Regulatory Affairs (3150-0011), NEOB-3019, Office of Management and Budget, Washington, D.C. 20503, and to the U.S. Nuclear Regulatory Commission, Information and Records Management Branch, Division of Information Support Services, Office of Information and Resources Management, Washington, D.C. 20555.

Although not required, the following information would assist the NRC in evaluating the cost of complying with this generic letter:

1. The licensee staff's time and costs to perform requested inspections, corrective actions, and associated testing;
2. the licensee staff's time and costs to prepare the required reports and documentation;
3. the additional short-term costs incurred as a result of the inspection findings such as the costs of the corrective actions or the costs of down time; and

4. an estimate of the additional long-term costs that will be incurred in the future to implement commitments such as the estimated costs of conducting future inspections or increased maintenance.

If you have any questions about this matter, please contact the technical contact or the lead project manager listed below.

Sincerely,

James G. Partlow
Associate Director for Projects
Office of Nuclear Reactor Regulation

Enclosure:
List of Recently Issued Generic Letters

TECHNICAL CONTACT: Steven West, U.S. Nuclear Regulatory Commission,
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LEAD PROJECT MANAGER: Armando Masciantonio, U.S. Nuclear Regulatory
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Stop 13 D18, Washington, D.C. 20555, telephone
(301) 504-1337