

SEMIANNUAL STATUS REPORT BY  
THE OFFICE OF NUCLEAR REACTOR REGULATION  
FIRE PROTECTION ENGINEERING SECTION  
ON  
THE THERMO-LAG ACTION PLAN AND  
THE FIRE PROTECTION TASK ACTION PLAN

## 1 INTRODUCTION

During July 1992, the U.S. Nuclear Regulatory Commission (NRC) staff developed the Thermo-Lag Action Plan to address generic issues related to the use by nuclear reactor licensees of Thermo-Lag 330-1 fire barriers. Later, the staff reassessed the NRC reactor fire protection program in response to programmatic concerns it raised during its review of Thermo-Lag fire barriers. The staff gave its findings in the "Report on the Reassessment of the NRC Fire Protection Program," dated February 27, 1993. The Fire Protection Task Action Plan (FP-TAP) addresses implementation of the recommendations made in the reassessment report. This is the third semiannual report on the status of the Thermo-Lag Action Plan and the FP-TAP.

## 2 THERMO-LAG FIRE BARRIERS

### 2.1 Thermo-Lag Action Plan

Since the last status report, the staff completed the Thermo-Lag Action Plan. Specifically, the staff completed the mechanical properties test program and the fire curve feasibility study. These accomplishments are discussed below. The staff has closed the Thermo-Lag Action Plan.

#### 2.1.1 Mechanical Properties Test Program - Complete (WITS 9200188)

The staff has completed its confirmatory mechanical properties test program at the National Institute of Standards and Technology (NIST). This program included shear, flexural, and compression tests, and pure tension tests of Thermo-Lag 330-1 materials at various temperatures. NIST documented the results of the tests in a letter report titled "Mechanical Properties of Samples of a Subliming Fire-Barrier Panel Material as a Function of Temperature," July 1996. The staff has completed a preliminary review of the test results. On the basis of this review, the staff found that at the ambient temperature ( $\approx 23^{\circ}\text{C}$  or  $72^{\circ}\text{F}$ ), the reduced mechanical properties do not pose a concern regarding the adverse impact of non-seismic Thermo-Lag panels on seismic Category I systems and components. However, at  $50^{\circ}\text{C}$  ( $122^{\circ}\text{F}$ ), the integrity of Thermo-Lag panels attached to cable trays could be jeopardized depending upon the level of seismic loading. This could be a concern for certain Thermo-Lag configurations constructed with Thermo-Lag panels (not preshaped conduit sections, which are fully supported) installed at locations where the panels would experience large seismic loading, and are subjected to sustained elevated temperatures. The staff is considering the impact of the test results on its previous evaluations of Thermo-Lag seismic performance. If it finds that a previous evaluation or conclusion is impacted by the new test data, the staff will take additional action, as appropriate.

ATTACHMENT

### 2.1.2 Fire Curve Feasibility Study - Complete (Yellow Ticket 0940144)

In June 1996, NIST submitted its final report regarding the feasibility of developing fire curves for rating fire barriers on the basis of representative nuclear power plant fire hazards rather than the fire curves specified in existing fire test standards. On the basis of its work, NIST concluded that it would be possible to develop nuclear power plant-specific fire curves for rating fire barriers on the basis of representative nuclear power plant fire hazards. The staff forwarded the results of the NIST study to the Commission in SECY-96-162, "Nuclear Power Plant-Specific Time-Temperature Curves for Testing and Qualifying Fire Barriers," July 19, 1996 (Yellow Ticket 0940144). In addition, by letter dated July 29, 1996, the staff provided the feasibility study to the Nuclear Energy Institute (NEI) for industry consideration in accordance with a Staff Requirements Memorandum of June 27, 1994. The staff also published the study as NUREG-1547, "Methodology for Developing and Implementing Alternative Temperature-Time Curves for Testing the Fire Resistance of Barriers for Nuclear Power Plant Applications," August 1996. Staff action on the fire curve feasibility study is complete.

### 2.2 Plant-Specific Status

As reported in the last status report, the staff is handling the review of plant-specific corrective actions as multiplant action MPA-L208 under Generic Letter (GL) 92-08, "Thermo-Lag 330-1 Fire Barriers," and the review of related plant-specific issues, such as fire protection exemption requests and ampacity derating evaluations and analyses, as plant-specific licensing actions. The MPA and plant-specific licensing actions are tracked by the Workload Information and Scheduling Program (WISP) and are not a part of the Thermo-Lag Action Plan. Appendices 1 and 2 to this report give the respective status of Thermo-Lag plant-specific corrective actions and of exemption requests.

In GL 92-08 and subsequent requests for additional information (RAIs), the staff requested that licensees submit plans and schedules for resolving the Thermo-Lag issues. The staff has obtained and reviewed all licensees' corrective plans and schedules. The results of the review indicate that most licensee corrective actions plans are acceptable and, overall, many licensees are making progress. Of the original 86 units, 3 have permanently shut down and construction has stopped on one unit. Therefore, the licensees for 82 units need to address the Thermo-Lag problems. Of these 82 units, to date, the licensees for 32 units have informed the staff that they have completed all corrective actions. Of the remaining units, licensees of 18 have committed to completion dates during 1996, 10 during 1997, 9 during 1998, 7 during 1999, and 6 during 2000.

The staff is concerned, however, that some licensees may not be making progress toward resolving the plant-specific issues, and some implementation schedules may be either too tenuous or too protracted. For example, within the past month, several licensees informed the staff that their completion dates had slipped by 1 year (Perry and Turkey Point 3 and 4) and 3 years (Sequoyah 1 and 2). In these, and other cases, additional interactions with the licensees are needed. Therefore, the staff cannot accept the schedules of a number of licensees at this point. To address these concerns, the staff has

initiated a series of management meetings with the licensees that have submitted completion dates between late 1997 and the year 2000. During these meetings, and through followup RAIs, if needed, the staff will obtain details on planned corrective actions and progress reports and will determine if the licensees' schedules are justified on the basis of plant-specific considerations. These include, for example, the amount of installed Thermo-Lag, the complexity of the plant-specific fire barrier configurations and issues, the need to perform certain plant modifications during outages as opposed to those that can be performed while the plant is at power, and integration with other significant, but unrelated issues that the licensee is addressing at the plant. The following plants (proposed completion dates are shown in parentheses) are candidates for management meetings:

Sequoyah 1/2	(01/00)	Oyster Creek	(12/98)
Turkey Point 3/4	(05/99)	Hatch 1/2	(10/98)
Perry	(12/96)	St. Lucie 1/2	(03/98)
Susquehanna 1/2	(12/00)	Vogtle 1/2	(05/98)
Crystal River 3	(06/00)	Davis Besse	(04/98)
Millstone 2	(01/00)	Millstone 1	(12/97)
TMI-1	(12/99)	River Bend	(11/97)
Peach Bottom 2/3	(10/99)	Summer	(11/97)
Limerick 1/2	(04/99)	Clinton	(06/98)

The first meeting is being scheduled for November 4, 1996, with Tennessee Valley Authority, the licensee for Sequoyah 1 and 2. If, on the basis of a case-by-case review and evaluation, the staff finds that a schedule is not justified or is too tenuous or protracted, it will take appropriate action, such as enforcement, or if warranted, issuance of an order. The staff will report the results of the management meetings in weekly highlights and in meeting summaries. The staff estimates that it will complete the meetings in about 4 months and will summarize the results of the meetings in the next semiannual status report.

Since the last status report, the staff has also established a process for monitoring the completion of the licensees' plans and schedules. This process, which is summarized below, will help ensure that the licensees complete corrective action programs in accordance with schedular commitments and will provide early notification of potential problems and schedule changes. This process includes quarterly interactions between the staff and the individual licensees to review plant-specific progress and to ensure that implementation of GL 92-08 is on schedule. These staff-licensee interactions may take place through telephone calls, meetings, or plant site visits. The results of the interactions will be reviewed by NRR management.

These staff actions respond to WITS 9600035 (Chairman's tracking list item II.M.1.a., "NRC staff reviewed and approved all licensee plans and schedules") and complete WITS 9600035 (Chairman's tracking list item II.M.1.b., "NRC staff established process for monitoring licensee completion of plans on schedule").

### 3 FIRE PROTECTION TASK ACTION PLAN

The FP-TAP tracks the implementation of a wide range of technical and programmatic fire protection issues. It includes recommendations for action

(Part I), recommendations for further study (Part II), confirmation issues (Part III), and lessons learned (Part IV). The status of each part of the FP-TAP, along with important accomplishments, is provided below.

Each operating reactor has an NRC-approved fire protection plan that meets 10 CFR 50.48, "Fire protection," and General Design Criterion 3, "Fire protection," and satisfies the defense-in-depth concept. Licensees have also implemented GL 86-10 (i.e., incorporated the NRC-approved fire protection plan into the updated safety analysis report, removed certain aspects of the fire protection plan from technical specifications, and adopted a standard fire protection license condition). When fire protection features are degraded or inoperable, the licensees implement NRC-approved measures, such as fire watches, to compensate for the condition. This combination of a defense-in-depth fire protection plan and compensatory measures ensures that an adequate level of fire protection is provided at each operating reactor while the staff completes the FP-TAP.

### 3.1 Recommendations for Action

#### 3.1.1 Revision of the Fire Protection Regulation

In SECY-96-134, "Options for Pursuing Regulatory Improvement in Fire Protection Regulations for Nuclear Power Plants," dated June 12, 1996, the staff provided the progress made in developing a risk-informed, performance-based regulation for fire protection, provided the results of its review of NEI petition for rulemaking, and requested Commission approval of a recommendation for rulemaking. In a staff requirements memorandum (SRM) of September 30, 1996, the Commission approved the staff recommendations to revise 10 CFR 50.48, modify or remove Appendix R, and reject the revision to the regulation proposed by NEI. The staff will proceed with the rulemaking in accordance with the SRM.

In the SRM of September 30, 1996, the Commission directed the staff to develop a plan for transitioning the fire protection regulation to a more risk-informed and performance-based structure. The rulemaking plan is due February 28, 1997. The staff is drafting a rulemaking plan, with milestones and schedules, that it will use to plan, manage, and implement the revised fire protection regulation. In the future, to eliminate duplication of effort, the staff will track completion of the rulemaking issues in the fire protection rulemaking plan rather than in the FP-TAP.

#### 3.1.2 Fire Barrier Systems Other Than Thermo-Lag

Since the last status report, the staff has completed additional small-scale fire tests of fire barrier materials other than Thermo-Lag at NIST. The test results were provided by NIST in its Report of Test FR 4008, "Pilot-Scale Fire-Endurance Tests of Fire-Barrier Panels and Panel/Blanket Combinations," dated August 20, 1996. In the quarterly report to the Commission dated June 10, 1994, the staff discussed the earlier small-scale fire tests of fire barrier materials other than Thermo-Lag performed at NIST and documented in the Report of Test FR 3994, "Pilot-Scale Fire-Endurance Tests of Fire-Barrier Mats, Blankets and Panels." The Reports of Test FR 3994 and FR 4008 jointly



provide the results of small-scale 1-hour and 3-hour fire tests of fire barrier materials currently used or proposed by licensees to protect safe shutdown functions, to upgrade 1-hour and 3-hour Thermo-Lag 330-1 panels, or to replace Thermo-Lag fire barriers. The NRC small-scale fire barrier scoping tests are complete. The staff's review of the Report of Test FR 4008 is ongoing.

### 3.1.3 Coordination of Fire Protection Reviews and Inspections

In a memorandum to the Commission of September 20, 1995, the staff documented its conclusion that an inspection of broader scope than that originally specified in the Thermo-Lag Action Plan was needed. The staff also informed the Commission that instead of the stand-alone Thermo-Lag fire barrier inspection program that it had proposed, it would develop and implement the Fire Protection Functional Inspection (FPFI) program that it had outlined in SECY-95-034, "Status of Recommendations Resulting from the Reassessment of the NRC Fire Protection Program," dated February 13, 1995. The FPFI program will address the reassessment recommendation that the staff reevaluate the scope of the reactor fire protection inspection program and develop a coordinated approach for the fire protection and safe shutdown systems inspections.

The staff is currently drafting a SECY paper to inform the Commission of the details of the FPFI program and to provide staff plans for implementing the program. (The staff estimates that this paper will be provided to the Commission during November 1996). In summary, the Fire Protection Engineering Section of NRR is developing the FPFI procedures and guidelines with technical assistance from Brookhaven National Laboratory (BNL) and Sciencetech, Incorporated.

The first week of the onsite inspection will consist of a broad-based inspection of the plant's overall fire protection and post-fire safe shutdown program. During the second week, the team will inspect areas of emphasis based on the results of the first week of the inspection. For example, if during the first week the team finds as part of the basic inspection program that the licensee has a weak configuration control program, the team could inspect this program in depth during the second week. Since the last status report, the staff has prepared a detailed outline of this FPFI procedure. The procedure has, in summary, the following major features:

- use of risk insights
- first week (core or basic inspection elements)
  - fire protection design and licensing bases
  - basic fire protection program
  - post-fire safe shutdown capability
- second week (in-depth inspection elements)
  - configuration control and management
  - fire protection features, organization, controls, and practices
  - potential fire related plant vulnerabilities
  - event initiated fires
  - fire induced reactor transients
  - seismic fire interaction
  - post-fire safe shutdown implementation

The NRR staff is drafting the FPGI procedures that it will use to conduct the pilot FPGIs and is working with the regional offices to select 4 candidate plants (1 per region) for the FPGI pilot inspections. The staff plans to begin the pilot inspections no later than the first quarter of calendar year 1997.

The staff presented its plans for the FPGI program to the nuclear industry at the Regulatory Information Conference of May 1996 and at the NEI fire protection forum during September 1996.

#### 3.1.4 Self-Induced Station Blackout Study

As reported in the last status report, BNL representatives and the staff developed a probabilistic risk assessment (PRA) model for assessing the risk associated with the post-fire safe-shutdown methodology that imposes a self-induced station blackout. The staff and BNL representatives presented the draft station blackout study to the Advisory Committee on Reactor Safeguards (ACRS) on February 29, 1996. The staff is assessing the recommendations made by the ACRS and has referred these comments to the PRA Coordination Committee for further consideration. (The PRA Coordination Committee is a standing committee of line managers from each of the four program offices that provides interoffice coordination and technical guidance.) The staff is planning to apply the PRA model to two plant-specific cases.

#### 3.2 Recommendations for Further Study

Part II of the FP-TAP contained four issues for further study. As reported earlier, the biofouling issue has been completed. With the assistance of BNL, the staff has completed a preliminary assessment of the second issue, fire barrier reliability (Generic Safety Issue 149). The staff and BNL representatives discussed the preliminary results of this assessment with the ACRS on February 29, 1996. The staff is assessing the recommendations made by the ACRS and has referred these comments to the PRA Coordination Committee for further consideration.

In SECY-96-134 (see Section 3.1.1 of this status report), the staff stated that it would develop risk-informed, performance-based methods to support the new fire protection regulation in a manner that complements the existing deterministic approaches and supports the traditional defense-in-depth philosophy. The staff also stated that as part of the rulemaking, it would review operating experience and would address a variety of fire safety issues. Consistent with this commitment, the staff will include its review of the two remaining issues for further study, adequacy of operability requirements for post-fire safe shutdown equipment and adequacy of fire barrier surveillance requirements, in its plan for the fire protection rulemaking (see Section 3.1.1 of this status report). In the future, to eliminate duplication of effort, the staff will track these issues in the fire protection rulemaking plan rather than in the FP-TAP. Therefore, Part II of the FP-TAP is complete.

### 3.3 Confirmation Issues

Part III of the FP-TAP is divided into four main issues. As reported in SECY-95-034, the staff has completed three of these issues: fire-related control systems interactions, equipment protection from fire suppression system actuation, and broken or leaking flammable gas lines. The fourth main issue is adequacy of manual firefighting. Part III also includes a number of confirmation issues. These include, for example, adequacy of fire brigade notification and response procedures, adequacy of sprinkler systems, and adequacy of fire hazards analyses. In SECY-96-134 (see Section 3.1.1 of this status report), the staff stated that as part of the new fire protection rulemaking, it would review operating experience and would address a variety of fire safety issues. Consistent with this commitment, the staff will include its review of the fourth main issue, adequacy of manual firefighting, and of the remaining confirmation issues in its plan for the fire protection rulemaking (see Section 3.1.1, of this status report). In the future, to eliminate duplication of effort, the staff will track the confirmation issues in the fire protection rulemaking plan rather than in the FP-TAP.

Finally, Part III of the reassessment report recommended that the staff perform a programmatic assessment of the fire protection review and inspection programs. The FPGI program (see Section 3.1.3 of this status report) addresses this reassessment recommendation.

### 3.4 Lessons Learned (Complete)

As reported in previous status reports, Part IV of the FP-TAP (WITS 9200200) has been completed and closed.

**STATUS OF GENERIC LETTER 92-08  
"THERMO-LAG 330-1 FIRE BARRIERS"  
AS OF OCTOBER 15, 1996**

PLANT	CORRECTIVE ACTION PLANS/STATUS	LICENSING ACTION COMPLETE <sup>1</sup>	LICENSEE SCHEDULED COMPLETION <sup>2</sup>	LICENSEE IMPL. DATE <sup>3</sup>
Arkansas Nuclear One 2	In a letter of 02/17/94, the licensee stated that it had reassessed the safe shutdown analysis for Thermo-Lag fire barriers in the intake structure and concluded that the barriers were not required. The licensee also stated that the use of Thermo-Lag is no longer included in the fire protection program and that the issues raised in BUL 92-01, BUL 92-01, Supplement 1, and GL 92-08 were resolved. With respect to ampacity derating, the licensee will assess potential age-related effects of Thermo-Lag on cables for the time period prior to removal and maintain the evaluation on site for future inspection.	06/21/94	COMPLETE	02/17/94
Beaver Valley 1	In a letter of 04/16/93, the licensee stated that engineering evaluations had been developed to qualify the Thermo-Lag barriers in the cable mezzanine area. With respect to ampacity derating, the licensee will assess potential age-related effects of Thermo-Lag on cables for the time period prior to removal and maintain the evaluation on site for future inspection.	09/23/94	COMPLETE	04/16/93
Beaver Valley 2	FIRE: In a letter of 12/22/94 the licensee stated that it planned to revise the safe shutdown analysis, replace barriers, modify circuits, and perform engineering evaluations. In letters of 03/23/95 and 12/01/95, the licensee confirmed that, in spite of some delays in the industry test program, it would meet its completion date of 12/31/96.		12/96	
	AMPACITY: Evaluation to provide reasonable assurance that all applicable power cables have sufficient margin. Licensee stated that its evaluation will be completed by 12/96. The staff is awaiting a complete response (i.e., a copy of the licensee's evaluation) to its RAI.		12/96	
Braidwood 1/2	FIRE: In letters of 02/10/94 and 12/16/94, the licensee stated that it would revise the safe shutdown analysis, replace Thermo-Lag barriers with Darmatt barriers, downgrade certain 3 hour barriers to 1 hour barriers and request exemptions. Later, in a letter of 03/21/96, the licensee stated that cable rerouting was the preferred option, Darmatt would not be used, Thermo-Lag barriers would be abandoned in place, and all corrective actions would be completed on schedule.		12/96	
	AMPACITY: The Licensee developed an analytical model to assess the ampacity derating factor for installed fire barriers. The staff/Sandia National Laboratories (SNL) review is ongoing.		COMPLETE	
Browns Ferry 1/2/3	FIRE: The licensee replaced its single application in the intake pumping station with new Thermo-Lag configurations qualified by the Watts Bar test program. The staff accepted this corrective action in a safety evaluation of 10/12/95 for the fire protection program for combined Unit 2 and Unit 3 operation.	10/12/95	COMPLETE	10/12/95
	AMPACITY: Licensee will use Watts Bar test data. GL 92-08 will be closed after staff/SNL complete the review of Watts Bar ampacity tests.		COMPLETE	

<sup>1</sup> Licensing Action Complete: Date of NRC letter accepting licensee's corrective action plan and schedule.

<sup>2</sup> Licensee Scheduled Completion: Licensee's scheduler commitment for implementing corrective action plan.

<sup>3</sup> Licensee Implementation Date: Date of licensee letter confirming completion of corrective actions.



PLANT	CORRECTIVE ACTION PLANS/STATUS	LICENSING ACTION COMPLETE <sup>1</sup>	LICENSEE SCHEDULED COMPLETION <sup>2</sup>	LICENSEE IMPLEM. DATE <sup>3</sup>
Brunswick 1/2	In letters of 02/14/94 and 03/23/95, the licensee stated it planned to revise the safe shutdown analysis, modify circuits, request exemptions, upgrade barriers, replace Thermo-Lag barriers with Darmatt barriers, and perform engineering evaluations. In a letter of 01/10/96, the licensee provided additional details of the corrective actions and confirmed completion by the end of the 1996 refueling outage. The licensee submitted an exemption on 08/31/95 (see Appendix 2). With respect to ampacity derating, in its closeout letter, the staff will inform the licensee to keep its assessment of potential age-related effects of Thermo-Lag on cables for the time period prior to removal on site for future inspection.		02/97	
Byron 1/2	FIRE: In a letter of 09/20/95, the licensee stated that it would replace most Thermo-Lag barriers using three resolution methods: revise the safe shutdown analysis, reroute cables, and replace Thermo-Lag barriers with Darmatt barriers. In a letter of 03/21/96, the licensee stated that rerouting was the option chosen for barriers not yet replaced with Darmatt barriers and that all corrective actions would be completed on schedule.		12/96	
	AMPACITY: Licensee stated that original analytical method used to determine ampacity derating values are conservative with respect to IN 92-22 values. Licensee anticipates that methodology used for Braidwood is also applicable to Byron. Staff/SNL review is ongoing.		COMPLETE	
Callaway	FIRE: The licensee originally planned to use the EPRI tailored Collaboration Fire Modeling Tools Methodology and the FIVE Methodology. In a letter of 05/31/96 the licensee stated that would revise the safe shutdown analysis, reroute cables, and replace Thermo-Lag barriers with Darmatt barriers.		12/96	
	AMPACITY: Licensee stated that it will use a similarity analysis, based on the TUE test results, to complete the resolution of ampacity issues by 12/30/96.		12/96	
Clinton	FIRE: In a letter of 02/09/94, the licensee stated that it planned to eliminate the need for 7 Thermo-Lag barriers by engineering evaluations. For the remaining 5 barriers, the corrective actions included revising the safe shutdown analysis, upgrading or replacing the barriers, rerouting cables, and adding detection and suppression systems. After meetings on 05/16/96 and 07/25/96 to discuss staff concerns with the licensee's engineering evaluations, the licensee revised its approach for these barriers. The licensee submitted its new plans by letter of 10/09/96. The letter is under review.		06/98	
	AMPACITY: The licensee conducted a 50.59 evaluation. The staff issued a follow-up request for additional information on 10/04/95. Staff/SNL review is ongoing.		COMPLETE	
Comanche Peak 1	By letter of 03/24/94, the licensee provided its evaluation of installed Thermo-Lag barriers, the results of plant-specific testing, and the program to upgrade barriers. On 05/22/96, the staff issued a safety evaluation that approved upgrades for a number of barrier configurations. It also contained open items for other configurations. The licensee has not responded to the open items. With respect to ampacity derating, the licensee stated that Unit 1 configurations are identical to Unit 2. Therefore, it used the Unit 2 test results for Unit 1.		COMPLETE	

<sup>1</sup> Licensing Action Complete: Date of NRC letter accepting licensee's corrective action plan and schedule.

<sup>2</sup> Licensee Scheduled Completion: Licensee's scheduler commitment for implementing corrective action plan.

<sup>3</sup> Licensee Implementation Date: Date of licensee letter confirming completion of corrective actions.

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Comanche Peak 2	The staff approved the fire protection aspects of the Thermo-Lag program in Supplements 26 and 27 of NUREG-0797, "Safety Evaluation Report related to the operation of Comanche Peak Steam Electric Station, Unit 2." The staff approved the ampacity derating aspects of the program in a safety evaluation that it provided to the licensee with a letter of 06/14/95.	02/93	COMPLETE	02/93
Cooper	In a letter of 02/09/94, the licensee stated that it had removed Thermo-Lag from 3 radiant energy heat shields and that there were no Thermo-Lag fire barriers at the plant. Ampacity derating is not applicable.	05/30/95	COMPLETE	02/09/94
Crystal River 3	FIRE: Nuclear Energy Institute (NEI) lead plant. The licensee originally planned to use the EPRI Tailored Collaboration Fire Modeling Tools Methodology. In a letter of 12/21/95, the licensee stated it had selected four options for the resolution of Thermo-Lag: revise safe shutdown analysis, modify circuits, upgrade or replace Thermo-Lag barriers with Mecatiss, and request exemptions. In a letter of 12/21/95, the licensee stated that it expects to complete all corrective actions by 12/31/96, with the exception of the plant modifications scheduled for refueling outage 12 (spring 2000). The licensee has completed its Mecatiss fire test program. The staff witnessed the tests and is currently reviewing the test results. The staff will meet with the licensee to discuss its proposed completion schedule.		06/00	
	AMPACITY: Licensee conducted ampacity derating tests. Test results were submitted on 07/31/96. Staff/SNL review is ongoing.		COMPLETE	
Davis Besse	FIRE: In a letter of 02/20/96, the licensee stated it had divided the removal and replacement into four phases starting during the third quarter of 1996 with completion during the fourth quarter of 1998 (11th refueling outage). In a letter of 06/26/96, the licensee stated it planned to remove and replace 1-hour barriers, 3-hour barriers and radiant energy shields with 3M Company Interam. The staff will meet with the licensee to discuss its proposed completion schedule.		04/98	
	AMPACITY: Licensee submitted a response to staff RAI on 06/26/96. Staff/SNL review ongoing.		12/98	
D.C. Cook 1/2	FIRE: In a letter of 12/21/94, the licensee stated it planned to revise the safe shutdown analysis, replace or upgrade barriers, modify circuits, request exemptions, downgrade 3-hour Thermo-Lag barriers to 1-hour, and conduct additional fire tests. In a letter of 07/17/96, the licensee stated that it would submit a final report by 12/30/96.		12/96	
	AMPACITY: Licensee stated that its original ampacity derating program, which did not rely on TSI data, adequately addressed concerns for existing Thermo-Lag installations. Staff/SNL review is ongoing.		COMPLETE	
Diablo Canyon 1/2	In a letter of 01/12/95, the licensee stated that, where the safe shutdown analysis indicates that fire barriers are necessary, it replaced the Thermo-Lag barriers with other fire barrier. These modifications were completed by 12/31/94. With respect to ampacity derating, the licensee will assess potential age-related effects of Thermo-Lag on cables for the time period prior to removal.	04/20/95	COMPLETE	01/12/95

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<sup>2</sup> Licensee Scheduled Completion: Licensee's scheduler commitment for implementing corrective action plan.

<sup>3</sup> Licensee Implementation Date: Date of licensee letter confirming completion of corrective actions.

PLANT	CORRECTIVE ACTION PLANS/STATUS	LICENSING ACTION COMPLETE <sup>1</sup>	LICENSEE SCHEDULED COMPLETION <sup>2</sup>	LICENSEE IMPLEM. DATE <sup>3</sup>
Duane Arnold	FIRE: In letters of 06/30/95 and 12/01/95, the licensee stated that it would maintain 3 Thermo-Lag installations: a raceway fire barrier for which an exemption was submitted on 06/28/96 (See Appendix 2), fire proofing of structural steel, which was qualified by test, and a wall barrier. For the remaining barriers which have not been eliminated by reanalysis, the licensee will replace the Thermo-Lag barriers with Dermatt barriers.		12/96	
	AMPACITY: Staff/SNL review is ongoing.		COMPLETE	
Fermi 2	In a letter of 02/11/94, the licensee identified 8 of 11 areas for replacement of Thermo-Lag barriers with approved barriers. The remaining 3 barriers were reclassified as smoke and gas barriers. In a letter of 06/15/96, the licensee confirmed that it had completed all modifications. With respect to ampacity derating, the licensee will assess potential age-related effects of Thermo-Lag on cables for the time period prior to removal and maintain the evaluation on site for future inspection.	04/18/95	COMPLETE	06/15/96
Grand Gulf 1	FIRE: NEI Lead Plant. In a letter of 12/21/94, the licensee stated that would ensure that all Thermo-Lag barriers would provide at least a 1 hour fire rating. The licensee also plans to install or take credit for partial suppression in conjunction with the 1 hour ratings, in cases where three hour assemblies were originally installed. In a letter of 06/28/96, the licensee stated that it will confirm completion of all corrective actions by 11/96.		11/96	
	AMPACITY: Licensee provided a response to the staff RAI on 06/28/96. Staff/SNL review is ongoing.		COMPLETE	
Haddam Neck	The licensee resolved the 2 Thermo-Lag applications described in its letter of 02/11/94, as follows: Developed a cold shutdown repair procedure to replace the RHR pump power cable after a fire and abandoned the Thermo-Lag barrier in place (3/31/95 letter) and upgraded the cable vault barrier to 1 hour. In a letter of 10/20/95, the licensee confirmed completion of the corrective actions. The licensee developed an analytical model to assess ampacity derating factor for the installed configuration. Staff/SNL review is ongoing.		COMPLETE	10/20/95
Hatch 1/2	FIRE: In a letter of 12/13/94, the licensee stated it would modify circuits, realign fire areas, revise the safe shutdown analysis, and adjust manual operator actions. In view of the ampacity derating and combustibility concerns, the licensee decided to remove Thermo-Lag rather than abandon the barriers in place (3/28/95 letter). The staff will meet with the licensee to discuss its proposed schedule.	06/29/95	10/98	
	AMPACITY: Licensee will assess potential age-related effects of Thermo-Lag on cables for the time period prior to removal.		COMPLETE	
Indian Point 2	In a letter of 12/19/94, the licensee indicated it planned to remove Thermo-Lag except for one application for which it requested an exemption on 03/30/95 (see Appendix 2). Ampacity derating is not applicable because power cables were not enclosed in Thermo-Lag.		06/97	

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<sup>2</sup> Licensee Scheduled Completion: Licensee's scheduler commitment for implementing corrective action plan.

<sup>3</sup> Licensee Implementation Date: Date of licensee letter confirming completion of corrective actions.

PLANT	CORRECTIVE ACTION PLANS/STATUS	LICENSING ACTION COMPLETE <sup>1</sup>	LICENSEE SCHEDULED COMPLETION <sup>2</sup>	LICENSEE IMPLM. DATE <sup>3</sup>
LaSalle 1/2	By letter of 04/06/94, the licensee informed the staff it intended to replace Thermo-Lag barriers with Darmatt barriers. On 11/20/95, the staff issued a safety evaluation for plant-specific use of Darmatt barriers fire barriers. On 03/29/96, the staff issued a safety evaluation regarding the seismic capabilities of Darmatt barriers. With respect to ampacity derating, the staff/SNL review of the methodology used for Braidwood will be the basis for the closeout. Staff/SNL review is ongoing.		COMPLETE	
Limerick 1/2	FIRE: NEI Lead Plant. In a letter of 12/19/94, the licensee stated it planned to revise the safe shutdown analysis, replace or upgrade barriers, add suppression, reroute cables, and request exemptions. The staff will meet with the licensee to discuss its progress and proposed completion schedule.		04/99	
	AMPACITY: In 05/02/96 response to staff RAI, the licensee stated that the ampacity derating evaluation will be performed in conjunction with the fire endurance qualification evaluation which is scheduled to be completed by 12/31/97. The staff is awaiting a complete response to its RAI.		12/97	
Maine Yankee	In a letter of 05/17/95, the licensee stated that all corrective actions were complete. The licensee rerouted cables, performed reanalysis, changed procedures, and replaced Thermo-Lag with 3-hour rated block walls. The licensee submitted an exemption on 09/27/95 for Thermo-Lag radiant energy heat shield (see Appendix 2). Ampacity derating is not applicable because there are only radiant energy heat shield applications.		COMPLETE	5/17/95
McGuire 1/2	In a letter of 11/28/94, the licensee stated that it planned to modify the standby shutdown system to eliminate Thermo-Lag for one application and replace cables with mineral insulated cables for other application. Ampacity derating is not applicable because power cables were not enclosed in Thermo-Lag.	04/07/95	05/91	
Millstone 1/2	FIRE: In a letter of 02/27/96, the licensee stated that it would reanalyze the safe shutdown analysis, upgrade certain Thermo-Lag fire barriers, add suppression and detection, replace certain Thermo-Lag barriers, and implement design changes to meet Appendix R separation criteria. As stated in the 02/27/96 letter, the selection of products for performing upgrades or design changes will be completed by 12/31/96 for Unit 1 and by 01/31/98 for Unit 2. The staff will meet with the licensee to discuss its progress and proposed completion schedule.		12/97 Unit 1 01/00 Unit 2	
	AMPACITY: The licensee developed an analytical model to assess the ampacity derating factor for installed fire barriers. Staff/SNL review is ongoing.		COMPLETE	
Millstone 3	In a letter of 01/03/94, the licensee stated that it had eliminated reliance on Thermo-Lag by replacing certain cables with 1-hour fire-rated cables. With respect to ampacity derating, the licensee will assess potential age-related effects of Thermo-Lag on cables for the time period prior to removal and maintain the evaluation on site for future inspection.	04/11/95	COMPLETE	01/03/94

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Monticello	In a letter of 04/16/93, the licensee stated that all corrective actions were complete. The licensee rerouted cables to achieve the required separation and removed all Thermo-Lag material. With respect to ampacity derating, the licensee will assess potential age-related effects of Thermo-Lag on cables for the time period prior to removal and maintain the evaluation on site for future inspection.	05/27/93	COMPLETE	04/16/93
Nine Mile Point 1	In a letter of 12/14/94, the licensee stated it planned to replace all Thermo-Lag with another fire barrier material. In a letter of 12/13/95, the licensee informed the staff that it had completed the replacement of Thermo-Lag. With respect to ampacity derating, the licensee will assess potential age-related effects of Thermo-Lag on cables for the time period prior to removal and maintain the evaluation on site for future inspection.	03/19/95	COMPLETE	12/13/95
Nine Mile Point 2	In a letter of 12/14/94, the licensee stated it planned to replace all Thermo-Lag with an acceptable fire barrier material except for one application (HVAC ducts). In a letter of 01/30/96 the licensee informed the staff that engineering analysis had further eliminated the need for two additional barriers and that its corrective the actions were complete. With respect to ampacity derating, the licensee will assess potential age-related effects of Thermo-Lag on cables for the time period prior to removal and maintain the evaluation on site for future inspection.	08/09/95	COMPLETE	01/30/96
North Anna 1/2	In letters of 12/23/93 and 01/27/94, the licensee stated that it had replaced Thermo-Lag with 3M Interam in one application, added Gypsum Board over Thermo-Lag in another application, and performed engineering evaluations for the remaining applications. In a letter of 03/28/95 the licensee stated that, except for radiant energy shields, it did not rely any longer on Thermo-Lag barriers. The licensee submitted an exemption for radiant energy heat shields in reactor building on 12/15/95 (see Appendix 2). Ampacity derating is not applicable because power cables were not enclosed in Thermo-Lag.		COMPLETE	03/28/95
Oyster Creek	FIRE: In letters of 02/10/94, 09/16/94, and 12/27/94, the licensee stated it planned to revise the safe shutdown analysis, perform engineering evaluations, request exemptions, modify circuits, replace or upgrade some barriers. The licensee submitted an exemption on 12/29/95 (see Appendix 2). The staff will meet with the licensee to discuss its progress and proposed completion schedule.		12/98	
	AMPACITY: Licensee evaluating effects of upgrades on existing barriers. Calculations indicate that maximum allowable derating factors exceed TSI specifications (8% for 1-hour and 11% for 3-hour). Staff/ SNL review of licensee response is ongoing.		COMPLETE	
Palisades	FIRE: In a letter of 02/10/94, the licensee stated it planned to reroute cables or remove all Thermo-Lag and replace cables with 1-hour fire-rated cables, embed conduit in concrete, and complete all corrective actions by the end of the 1996 refueling outage.	04/17/95	12/96	
	AMPACITY: Licensee will assess potential age-related effects of Thermo-Lag on cables for the time period prior to removal.		COMPLETE	

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Palo Verde 1/2/3	FIRE: In letters of 02/07/94 and 12/22/94, the licensee stated it planned to revise safe shutdown analysis, perform engineering evaluations, credit operator actions, upgrade barriers, and perform additional fire tests. In a letter of 12/20/95, the licensee stated that it had eliminated the need for about 80 percent of the Thermo-Lag and confirmed completion of the corrective actions by 12/31/96.		12/96	
	AMPACITY: Licensee will review power cables to verify that the actual amperage does not exceed the ampacity derating factor. The derating factors will be based on the latest available industry data. If ampacity derating factors are exceeded, reviews will be conducted to determine whether credit can be taken for conservatism such as cable diversity. Licensee responded to followup RAI on 12/20/95. Licensee resolution of ampacity derating issue is scheduled for 12/31/96.		12/96	
Peach Bottom 2/3	FIRE: In a letter of 12/19/94, the licensee stated it planned to revise the safe shutdown analysis, replace or upgrade barriers, add suppression, reroute cables, and request exemptions. The staff will meet with the licensee to discuss its progress and proposed completion schedule.		10/99	
	AMPACITY: In its 05/02/96 response to a staff RAI, the licensee stated that the ampacity derating evaluation will be performed in conjunction with the fire endurance qualification evaluation which is scheduled to be completed by 12/31/97.		12/97	
Perry 1	FIRE: In letters of 02/11/94 and 12/15/94, the licensee stated it was considering engineering evaluations, revision of the safe shutdown analysis, exemptions, and rerouting of cables. The licensee committed to complete corrective actions by 12/96. Following a site visit the week of 09/09/96, for a separate fire protection issue, the staff questioned whether the licensee would meet its commitment of 12/96. The licensee informed the staff that it had slipped its schedule by 1 year. The licensee has not documented this change, but indicated it will submit this change in writing. The staff will meet with the licensee to discuss its proposed completion schedule.		12/96	
	AMPACITY: Licensee provided response to staff RAI on 06/28/96. Staff/SNL review is ongoing.		COMPLETE	
Prairie Island 1/2	FIRE: In a letter of 02/10/94, the licensee stated it planned to revise the safe shutdown analysis, reroute cables, and replace Thermo-Lag barriers with Darmatt barriers. In letters of 03/29/95 and 06/30/95, the licensee stated that it planned to replace all Thermo-Lag with Darmatt barriers.		12/96	
	AMPACITY: Licensee will submit an ampacity derating analysis for final closeout review.		12/96	
River Bend 1	FIRE: In letters of 02/09/94 and 12/21/94, the licensee stated it planned to revise the safe shutdown analysis, replace or upgrade Thermo-Lag barriers, modify circuits, downgrade 3-hour barriers to 1-hour and add suppression, and perform additional fire testing. In a letter of 06/28/96, the licensee confirmed that corrective actions are on schedule. The staff will meet with the licensee to discuss its progress and completion schedule.		11/97	
	AMPACITY: Follow-up RAI issued 09/25/95. Staff/ SNL review is ongoing.		COMPLETE	

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River Bend 1	FIRE: In letters of 02/09/94 and 12/21/94, the licensee stated it planned to revise the safe shutdown analysis, replace or upgrade Thermo-Lag barriers, modify circuits, downgrade 3-hour barriers to 1-hour and add suppression, and perform additional fire testing. In a letter of 06/28/96, the licensee confirmed that corrective actions are on schedule. The staff will meet with the licensee to discuss its progress and completion schedule.		11/97	
	AMPACITY: Follow-up RAI issued 09/25/95. Staff/ SNL review is ongoing.		COMPLETE	
Saint Lucie 1/2	FIRE: The licensee originally planned to use a performance-based approach as outlined in a letter of 02/11/94. Plans from the 03/28/95 and 10/27/95 letters were to revise safe shutdown analysis, modify circuits, replace or upgrade barriers, add suppression, exemptions, and perform additional fire testing. In a letter of 08/27/96, the licensee indicated that modifications would be completed during the Spring of 1997 for Unit 2 and earlier than planned (fall of 1997) for Unit 1, with closure of Thermo-Lag issues and submittal of a summary report within 6 months of the outages. The staff may meet with the licensee to discuss its proposed completion schedule.		03/98	
	AMPACITY: Staff to issue RAI to obtain licensee evaluation.		COMPLETE	
San Onofre 1	Shutdown.	N/A	N/A	N/A
San Onofre 2/3	In a deviation request approved by the NRC staff on 06/29/88 the licensee committed to replace its 4 barriers with 2-hour fire resistive barriers. By letter of 12/21/93, the licensee confirmed it had completed the replacement and that all actions related to the resolution of the Thermo-Lag issue were implemented. With respect to ampacity derating, the licensee will assess potential age-related effects of Thermo-Lag on cables for the time period prior to removal.	10/25/93	COMPLETE	12/21/93
Sequoyah 1/2	FIRE: In letters of 02/10/94 and 03/25/95, the licensee stated it planned to perform tests to qualify the installed Thermo-Lag material, upgrade conduits smaller than 3-inch diameter, junction boxes, and other unique configurations. In letters of 06/15/95, 01/12/96 and 09/09/96, the licensee discussed fire tests it conducted to evaluate potential chemical differences between Thermo-Lag used for qualification testing and some of the Thermo-Lag installed at the site. Based on the results of the tests, the licensee concluded that there was no differences between the two materials. In the letter of 09/09/96, the licensee informed the staff that it had changed its completion date for resolving the Thermo-Lag issues from 10/96 to 01/00. The staff will meet with the licensee to discuss its proposed completion schedule.		01/00	
	AMPACITY: Licensee will use Watts Bar test data. Staff/SNL review is ongoing.		COMPLETE	

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Shearon Harris 1	FIRE: In letters of 02/14/94 and 12/27/95, the licensee stated that it planned to revise the safe shutdown analysis, reroute cables, and remove/replace Thermo-Lag.		04/97	
	AMPACITY: Licensee will evaluate instrument and control circuits for the anticipated temperature rise.		03/97	
South Texas 1/2	FIRE: In letters of 12/19/94 and 03/28/95, the licensee stated that it reduced reliance on Thermo-Lag by requiring only one of three trains of safe shutdown equipment to be available. For the remaining Thermo-Lag applications, the licensee submitted, on 04/13/95, an exemption to downgrade the Thermo-Lag barriers from 3-hours to 1-hour (see Appendix 2).		COMPLETE	
	AMPACITY: The licensee considers site-specific tests performed by Underwriters Laboratories acceptable for existing plant design. Staff/SNL review is ongoing.		COMPLETE	
Summer	FIRE: In letters of 02/11/94, 03/23/95, and 03/29/96, the licensee stated it planned to eliminate the use of Thermo-Lag in five locations by installing fire-rated cables and by performing engineering evaluations. In a letter of 08/23/96, the licensee submitted a deviation request for the fire-rated cables. The staff will meet with the licensee to discuss its proposed completion schedule.		11/97	
	AMPACITY: Licensee will replace/remove Thermo-Lag material except for barrier protecting Conduit VUL21A. The licensee contends that this conduit is outside of the scope of GL 92-08. The staff disagrees with this position and is seeking resolution of related ampacity concerns.		11/97	
Surry 1/2	In letters of 12/23/93 and 01/27/94, the licensee stated that it had replaced Thermo-Lag with Pyrocrete 241 in one application and performed engineering evaluations for the remaining applications. In a letter of 03/28/95, the licensee stated it no longer relied on Thermo-Lag. In a letter of 12/15/95, the licensee submitted an exemption for Thermo-Lag radiant energy heat shields (see Appendix 2). Ampacity derating is not applicable because power cables were not enclosed in Thermo-Lag.		COMPLETE	03/28/95
Susquehanna 1/2	FIRE: NEI Lead Plant. In a letter of 02/03/94, the licensee stated that the options considered were to revise the safe shutdown analysis, perform engineering evaluations, request deviations, replace or upgrade barriers, and modify circuits. In a letter of 12/22/94, the licensee stated that Thermo-Lag resolution through reanalysis was the only realistic approach to resolve the issue, that the reanalysis would be completed during the second quarter of 1997, and that it would provide, at that time, a schedule for completing any required modifications. The staff will meet with the licensee to discuss its progress and proposed completion schedule.		12/00	
	AMPACITY: Licensee stated that a detailed response relative to the ampacity issue could not be provided until the technical issues between the NRC and the industry are resolved. Evaluation to determine maximum allowable ampacity derating provide excess margin with respect to actual test values. Licensee responded to followup RAI on 08/02/95. The staff will issue a follow up RAI to obtain information it needs to complete its assessment of the licensee's ampacity derating approach.		12/00	

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Three Mile Island 1	FIRE: In a letter of 02/10/94, the licensee stated that plans were to revise the safe shutdown analysis, request exemptions, replace/upgrade Thermo-Lag, reroute cables, and install detection and/or suppression. In a letter of 07/07/95, the licensee stated it would submit a description of the planned modifications and exemption requests by 12/96. In a letter of 05/25/95, the licensee requested an exemption for the Thermo-Lag barrier in the intake screen and pump house. In a letter of 01/05/96, the staff denied the exemption request. The staff will meet with the licensee to discuss its proposed completion schedule.		12/99	
	AMPACITY: Licensee found that internal envelope temperature measure in the field would not result in long term cable degradation. Based on those test results, the licensee determined that the ampacity derating values were acceptable. No further actions will be taken for existing Thermo-Lag barriers. Future upgrades will be evaluated on an approach similar to the original analytical methodology. Staff/SNL review is ongoing.		COMPLETE	
Trojan	Shutdown.	N/A	N/A	N/A
Turkey Point 3/4	FIRE: In a letter of 02/07/94, the licensee stated it planned to revise the safe shutdown analysis and use a performance-based approach. The staff and the licensee have met several times to discuss concerns with the licensee's plans. During 05/96, the staff visited the site to review Thermo-Lag configurations. At the conclusion of the site visit, the licensee informed the staff that it would revise its corrective action plans. In a letter of 09/27/96, the licensee stated that it would begin to implement modifications for indoor Thermo-Lag fire barriers during the 1997 refueling outages and complete the modifications in 1999, a year later than originally scheduled. The licensee has not submitted its revised plan and schedule for the Thermo-Lag barriers installed in outdoor areas. The staff will meet with the licensee to discuss its proposed corrective action program and completion schedule.		05/99	
	AMPACITY: Licensee responded to followup RAI on 07/13/95. Second follow-up RAI issued 09/29/95. Licensee response of 11/06/95, describes plans for resolution of ampacity issue by analysis of tested configurations. Under staff/SNL review.		COMPLETE	
Vermont Yankee	By letter of 06/01/93, the licensee informed the staff that it no longer relied on Thermo-Lag and that the Thermo-Lag barriers had been abandoned in place. In response to a staff RAI, the licensee provided details regarding corrective actions to eliminate reliance on Thermo-Lag in a letter of 06/28/93. The license stated that, in one application, cables were rerouted and in another application, the Thermo-Lag was replaced with 3M Interam. With respect to ampacity derating, the licensee will assess potential age-related effects of Thermo-Lag on cables for the time period prior to removal and maintain the evaluation on site for future inspection.		COMPLETE	06/01/93

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Vogtle 1/2	FIRE: In a letter of 12/19/94, the licensee stated it planned to revise the safe shutdown analysis, modify circuits, and possibly redefine fire areas. In a letter of 05/10/95, the licensee stated that it had decided to remove Thermo-Lag. All required evaluations and modifications are to be completed by startup of the 1998 refueling outage. The staff will meet with the licensee to discuss its proposed schedule.		05/98	
	AMPACITY: Licensee will assess potential age-related effects associated with the installation of Thermo-Lag material for the time period prior to removal and maintain the evaluation on site for future inspection.		COMPLETE	
Washington Nuclear 2	FIRE: In letters of 02/11/94 and 11/09/94, the licensee stated it planned to revise the safe shutdown analysis and plant design, reroute cables, operator actions, replace or upgrade Thermo-Lag, add suppression, and revise fire area boundaries. In a letter of 05/10/95, the licensee stated that it would replace Thermo-Lag with other fire barriers materials in areas where barriers cannot be eliminated.	08/10/95	05/97	
	AMPACITY: Licensee will assess potential age-related effects associated with the installation of Thermo-Lag material for the time period prior to removal and maintain on site for future inspection.		COMPLETE	
Waterford 3	In a letter of 05/18/94, the licensee stated that it would install upgrades, removal/replacement barriers, and request exemptions. In a letter of 12/21/94, the licensee stated that its Thermo-Lag applications involved HVAC ducts and that it had been found these applications acceptable on the basis of engineering evaluations. Ampacity derating is not applicable because Thermo-Lag is only used to protect HVAC ducts.		COMPLETE	12/21/94
Watts Bar 1	FIRE: The staff approved the Thermo-Lag barrier program in Supplement 18 to NUREG-0847, "Safety Evaluation Report related to the operation of Watts Bar Nuclear Power Plant, Units 1 and 2."	10/16/95	COMPLETE	12/18/95
	AMPACITY: Staff/SNL review of ampacity test results is ongoing.		COMPLETE	
Watts Bar 2	Cancelled.	N/A	N/A	N/A
Wolf Creek 1	FIRE: In letters of 02/09/94, 02/15/95, 03/10/95, and 06/27/95, the licensee considered revising the safe shutdown analysis, rerouting circuits, performing engineering evaluations, installing detection and suppression, and replacing barriers. In a letter of 06/20/96, the licensee stated it had decided to replace Thermo-Lag with another material.		12/96	
	AMPACITY: Staff/SNL review is ongoing.		COMPLETE	
Yankee Rowe	Shutdown.	N/A	N/A	N/A

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Zion 1/2	In a letter of 07/12/96, the licensee stated that, as of 07/95, the Thermo-Lag barriers had been removed and replaced with Dermatt barriers except for radiant energy shields in two applications involving pressurizer level transmitter signal cables. In a letter of 01/11/96, the licensee submitted an exemption for these radiant energy heat shields (see Appendix 2). Ampacity derating is not applicable because power cables were not enclosed with Thermo-Lag.	09/05/96	COMPLETE	07/12/96

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**STATUS OF THERMO-LAG EXEMPTION REQUESTS  
AS OF OCTOBER 15, 1996**

PLANT	TAC	EXEMPTION REQUEST	REVIEWER	STATUS
Brunswick 1/2	M93545/6	08/31/95 and 01/10/96 submittals. Section III.L.2.b. Requested approval to use alternate means to maintain reactor coolant level above top of the core during use of alternative shutdown system.	None	Review pending
Crystal River 3	M95817	06/21/96 submittal. Section III.G.2.c, fire rating of barriers is less than 1 hour. RAI issued 09/24/96.	Connell	Awaiting response to RAI
Duane Arnold	M96097	06/28/96 submittal. Section III.G.2.a, derating of 3-hour barriers. RAI issued 08/22/96.	Connell	Awaiting response to RAI
Indian Point 2	M91943	11/30/93 and 03/30/95 submittals. Section III.G.2.a, lack of separation for instrument sensing lines inside containment. During a telecon of 06/15/96, the licensee informed the staff that was considering withdrawing the exemption and resubmit.	Oudinot	On hold
Maine Yankee	M93941	09/27/95 submittal. Section III.G.2.f, use of Thermo-Lag as radiant energy shields. RAI issued 03/29/96. In a letter of 09/26/96, the licensee withdrew the exemption request.	Madden	<b>WITHDRAWN</b>
North Anna 1/2	M89192/3	12/11/92 and 08/18/94 submittals. Section III.G.2.b, cover plates on openings through charging pump cubicle walls not fire rated. The staff approved the exemption in a letter of 09/12/95.	Connell	<b>APPROVED</b>
North Anna 1/2	M94581/2	12/15/95 submittal. Section III.G.2.f, use of Thermo-Lag as radiant energy shields. RAI issued 10/15/96.	Oudinot	Awaiting response to RAI
Oyster Creek	M94481	12/29/95 submittal. Section III.G.2.c, fire rating of barrier is less than 1 hour and lack of automatic suppression. In a letter of 03/05/96, the licensee stated that it would revise its exemption request and requested that the staff not review the submittal of 12/29/95.	Connell	On hold



PLANT	TAC	EXEMPTION REQUEST	REVIEWER	STATUS
South Texas 1/2	M92177/8	02/10/94 and 09/14/95 submittals. Section III.G.2.c, derating 3-hour barriers. RAI issued 07/26/96.	Oudinot	Awaiting response to RAI
Surry 1/2	M94330/1	12/15/95 submittal. Section III.G.2.f, use of Thermo-Lag as radiant energy shields inside containment. RAI issued 10/15/96.	Oudinot	Awaiting response to RAI
Three Mile Island 1	M92617	05/25/95 submittal. Section III.G.2.c, fire rating of barrier less than 1 hour. By letter dated 01/05/96, the staff denied the exemption request and provided to the licensee its safety evaluation.	Connell	<b>DENIED</b>
Three Mile Island 1	M96473	08/16/96 submittal. Section III.G.2.c, derating of 3-hour barriers.	Bajwa	Under review
Turkey Point 3/4	M89668/9	06/15/94 submittal. Sections III.G.2.a and III.G.2.c, derating of 1-hour barriers to 30 minutes. RAI issued 10/12/94. Licensee responded by letter of 08/29/95. During 04/96, the staff visited the site to review with the licensee the Thermo-Lag configurations. By letter dated 06/15/94, the licensee withdrew its exemption request.	Madden	<b>WITHDRAWN</b>
Zion 1/2	M94422/3	01/11/96 submittal. Section III.G.2.e, lack of area-wide detection and suppression. Section III.G.2.f, use of Thermo-Lag in containment as radiant energy shields. RAI issued 03/29/96.	Madden	Awaiting response to RAI