



ENTERGY

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R. F. Burski
Director
Nuclear Safety
Waterford 3

W3F1-93-0027
A4.05
QA

April 16, 1993

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

Subject: Waterford 3 SES
Docket No. 50-382
License No. NPF-38
Response to NRC Generic Letter 92-08, "Thermo-Lag 330-1 Fire Barriers"

Gentlemen:

NRC Generic Letter 92-08, dated December 17, 1992, requested information from licensees to verify that Thermo-Lag 330-1 fire barrier systems comply with NRC requirements. Entergy Operations, Inc. has reviewed the generic letter and confirms that: 1) Waterford 3 Steam Electric Station depends on Thermo-Lag to satisfy licensing commitments, 2) Thermo-Lag installations at the Waterford 3 Steam Electric Station are not qualified by site specific or generic fire tests which are presently acceptable to the NRC, 3) ampacity derating issues are not applicable to the Waterford 3 Steam Electric Station because Thermo-Lag is not utilized for the protection of electrical raceway or to achieve physical independence of electrical systems per Regulatory Guide 1.75.

As noted in previous correspondence with the NRC, Entergy Operations, Inc. now considers the performance of Thermo-Lag to be questionable and will ultimately requalify these barriers in accordance with new guidance developed by the industry. Entergy Operations, Inc. is participating in the industry program, coordinated by NUMARC, to provide generic testing and information necessary to accomplish corrective actions. In the mean time, compensatory measures, consistent with the actions normally taken for inoperable fire barriers, have been implemented at the Waterford 3 Steam Electric Station.

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Generic Letter 92-08 included four items requiring a written response within 120 days from the date of the generic letter. The responses to these items are provided by Entergy Operations, Inc. for the Waterford 3 Steam Electric Station in Attachment 1.

As requested in Generic Letter 92-08, this information is being submitted under affirmation in accordance with 10 CFR 50.54(f) (Attachment 2). Please contact Oscar Pipkins at (504) 739-6707 should you have any questions, or require additional information regarding this matter.

Very truly yours,



R.F. Burski
Director
Nuclear Safety

RFB/OPP/dc

Attachments: 1) Response to Generic Letter 92-08
2) Affirmation per 10 CFR 50.54(f)

cc: (w/Attachment)
J.L. Milhoan (NRC Region IV)
D.L. Wigginton (NRC-NRR)
N.S. Reynolds
R.B. McGehee
B. Bradley (NUMARC)
NRC Resident Inspectors Office

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Generic Letter 92-08, Item 1:

State whether Thermo-Lag 330-1 barriers are relied upon (a) to meet 10 CFR 50.48, to achieve physical independence of electrical systems, (b) to meet a condition of a plant's operating license, or (c) to satisfy a licensing commitment. If applicable, state that Thermo-Lag 330-1 is not used at the facility. This generic letter applies to all 1-hour and 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.

Response to Item 1 for the Waterford 3 Steam Electric Station:

(a) For the purpose of this response, item 1, part (a) is assumed to be requesting information on: 1) the use of Thermo-Lag 330-1 materials for compliance with 10 CFR 50.48, (Fire Protection) and 2) the use of Thermo-Lag 330-1 materials for compliance with Criterion 17, of Appendix A to 10 CFR 50 (Electric Power Systems).

The requirements provided in 10 CFR 50.48 specify, in part, that Appendix R to 10 CFR 50 establishes fire protection features required to satisfy Criterion 3 of Appendix A to 10 CFR 50 regarding certain generic issues for nuclear power plants licensed to operate prior to January 1, 1979. Entergy Operations, Inc. was licensed to operate the Waterford 3 Steam Electric Station after January 1, 1979; consequently, Appendix R is not applicable under the rule. Therefore, Waterford 3 Steam Electric Station does not rely upon Thermo-Lag to meet 10 CFR 50.48.

General Design Criterion 17 specifies, in part, that onsite electric power supplies, including the batteries, and the onsite electric distribution system have sufficient independence to perform their safety functions assuming a single failure. Regulatory Guide 1.75, "Physical Independence Of Electric Systems," describes a method acceptable to the NRC for complying with General Design Criteria 17. Waterford 3 Steam Electric Station does not utilize Thermo-Lag 330-1 fire barrier materials for the protection of electrical

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raceway or to achieve physical independence of electrical systems per the requirements of Regulatory Guide 1.75.

(b) Operating License Condition 2.C.9. specifies that Entergy Operations, Inc. shall implement and maintain in effect all provisions of the approved fire protection program as described in the Final Safety Analysis Report for the facility through Amendment 36 and as approved in the SER through Supplement 9, subject to the following provision. "Entergy Operations, Inc. may make changes to the approved fire protection program without prior approval of the Commission only if those changes would not adversely affect the ability to achieve and maintain safe shutdown in the event of a fire."

Thermo-Lag 330-1 fire barriers were installed to comply with Section III.G. of Appendix R in accordance with previous commitments; however, a combination of fire protection features and other provisions of the approved fire protection program are utilized to satisfy License Condition 2.C.9. Given the performance of certain Thermo-Lag 330-1 configurations in recent fire tests, Entergy Operations, Inc. believes some Thermo-Lag barriers may be degraded and is participating in the industry program to assess the level of degradation and implement necessary corrective actions.

(c) By letter dated November 10, 1981, Waterford 3 Steam Electric Station committed to comply with Appendix R to 10 CFR 50. The Waterford 3 fire protection program describes 3-hour rated fire barriers that incorporate Thermo-Lag 330-1 fire barrier materials and are required for compliance with Section III.G. of Appendix R. Consequently, Waterford 3 Steam Electric Station depends on Thermo-Lag 330-1 fire barrier materials to satisfy licensing commitments.

Generic Letter 92-08, Item 2(a):

If Thermo-Lag 330-1 barriers are used at the facility, state whether or not the licensee 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.

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Response to Item 2(a) for the Waterford 3 Steam Electric Station:

Fire tests were not performed to justify the site specific Thermo-Lag 330-1 installations at Waterford 3 Steam Electric Station. Recently, questions have risen relative to the performance of Thermo-Lag and the conduct of previous tests that were widely used as a qualification basis. The NRC has since declared previous tests and their corresponding installations to be indeterminate and is reevaluating the test and acceptance criteria and the degree of detail necessary in comparing installed to tested configurations. Although previously believed to be qualified, Entergy Operations, Inc. now considers the performance of Thermo-Lag to be questionable and will ultimately requalify these barriers in accordance with new guidance developed by the industry.

Generic Letter 92-08, Item 2(b):

If Thermo-Lag 330-1 barriers are used at the facility, 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 the licensee has evaluated any deviations from the tested configurations.

Response to Item 2(b) for the Waterford 3 Steam Electric Station:

(1) Thermo-Lag fire barriers utilized at Waterford 3 Steam Electric Station resemble but do not exactly replicate fire tested configurations; however, initial NRC guidance did not require detailed consideration of all the attributes mentioned above. NRC requirements for test performance, acceptance, and comparison of tested to installed configurations evolved over time and were provided in documents such as Generic Letter 86-10. The NRC recognized that fire endurance testing of every as-built fire barrier configuration was not possible. Where exact replication of a tested configuration could not be achieved in field installations, NRC guidance provided that: continuity of the fire barrier should be maintained, thickness of the barrier should be maintained, the nature of the support assembly should be unchanged, the application of the fire barrier should be unchanged, and

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review by a qualified fire protection engineer should determine that an equivalent level of protection is provided.

(2) Fire barriers of this nature were still in the developmental stages when Thermo-Lag was installed at the Waterford 3 Steam Electric Station and the complexities of its physical properties and failure mechanisms were unrecognized. At the time of their installation, Thermo-Lag barriers were considered to be representative of test and installation information provided by Thermal Science, Inc. Subtle differences were not perceived to be a deviation from a tested configuration and such conditions were not considered when comparing tested to installed configurations. Consequently, documented evaluations associated with Thermo-Lag deviations at Waterford 3 Steam Electric Station were not performed.

Generic Letter 92-08, Item 2(c):

If Thermo-Lag 330-1 barriers are used at the facility, 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.

Response to Item 2(c) for the Waterford 3 Steam Electric Station:

(1)&(2) Thermo-Lag 330-1 fire barrier materials are not utilized at the Waterford 3 Steam Electric Station to protect electrical raceway for fire protection of safe shutdown capability or to achieve physical independence of electrical systems.

Thermo-Lag 330-1 materials were previously utilized at the Waterford 3 Steam Electric Station to protect the Reactor Auxiliary Building side of a containment electrical penetration; however, this material was permanently removed during refueling outage five for reasons unrelated to present concerns

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regarding Thermo-Lag performance. The ampacity margin of the electrical penetration protected with Thermo-Lag was evaluated. The evaluation concluded that a derating factor of at least 75 percent could be applied to the penetration circuits without exceeding necessary ampacities.

Given the wide margins between published Thermo-Lag derating factors for similar configurations, Entergy Operations, Inc. believes the original Thermal Science, Inc. (TSI) ampacity test results may be questionable. Additionally, the 75 percent derating margin of the electrical penetration far exceeds the most conservative ampacity derating factors known to be published for Thermo-Lag fire barrier configurations. Therefore, Entergy Operations, Inc. has no plans to compare the Thermo-Lag configuration previously installed on the containment penetration to the original tested configurations reported by TSI.

Generic Letter 92-08, Item 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. When corrective actions have been completed, confirm in writing their completion.

Response to Item 3 for the Waterford 3 Steam Electric Station:

(a) Entergy Operations, Inc. is participating in the industry program, coordinated by NUMARC, to provide generic testing and information necessary to accomplish corrective actions. Corrective actions may include evaluation of new fire tests that demonstrate rated performance, Thermo-Lag upgrades, fire protection program changes or deviation requests based on analyses of actual fire loading, or product substitutions. Specific schedules with respect to the industry program will be provided to the NRC by NUMARC.

(b) Information regarding implementation of compensatory measures was provided in response to NRC Bulletin 92-01, Supplement 1, by letter dated September 29, 1992. Entergy Operations, Inc. established compensatory measures consistent

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with the actions normally taken for inoperable fire barriers. These measures consist of roving hourly fire watches as directed by the Waterford 3 Steam Electric Station fire protection program. Upon completion of the Thermo-Lag reevaluation, Entergy Operations, Inc. will provide a summary of the evaluation process, corrective actions, and programmatic changes.

Generic Letter 92-08, Item 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.

Response to Item 4 for the Waterford 3 Steam Electric Station:

Entergy Operations, Inc. has answered items 2(a), 2(b), and 2(c) above; consequently, item four is not applicable.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the matter of

Entergy Operations, Incorporated
Waterford 3 Steam Electric Station

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Docket No. 50-382

AFFIDAVIT

R.F. Burski, being duly sworn, hereby deposes and says that he is Director Nuclear Safety - Waterford 3 of Entergy Operations, Incorporated; that he is duly authorized to sign and file with the Nuclear Regulatory Commission the attached response to Generic Letter 92-08; that he is familiar with the content thereof; and that the matters set forth therein are true and correct to the best of his knowledge, information and belief.

R.F. Burski
R.F. Burski
Director Nuclear Safety - Waterford 3

STATE OF LOUISIANA

PARISH OF ST. CHARLES

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Subscribed and sworn to before me, a Notary Public in and for the Parish and State above named this 16TH day of APRIL, 1992.

St. E. Talbot
Notary Public

Commission expires WITH LIFE.

In the matter of)
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Entergy Operations, Incorporated) Docket No. 50-382
Waterford 3 Steam Electric Station)

My Commission expires WITH LIFE

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the matter of)
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Waterford 3 Steam Electric Station)

AFFIDAVIT

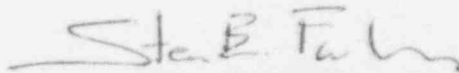
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R.F. Burski
Director Nuclear Safety - Waterford 3

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