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Edison

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NRC-94-0072

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

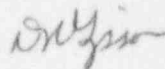
References: 1) Fermi 2
NRC Docket No. 50-341
NRC License No. NPF-43
2) Telephone Conversation with Lynne Goodman (Detroit
Edison) and Joe Sebrosky (NRC Operations Center) on
July 15, 1994

Subject: 10 CFR Part 21 Notification - Improper Installation of
Thermo-Lag Fire Barriers at Fermi 2

On July 15, 1994, Detroit Edison notified the NRC Operations Center (Reference 2) of a 10 CFR Part 21 condition identified at Fermi 2. The specific condition involved discrepancies noted in the installation of Thermo-Lag 330-1 fire barrier material at Fermi 2 discovered during removal and replacement of these barriers in the on-going fourth refueling outage.

Enclosed is the written report which is being submitted in accordance with 10 CFR 21. If you have any questions, please contact Mr. Girija S. Shukla at (313) 586-4270.

Sincerely,



Enclosure

cc: T. G. Colburn
M. P. Phillips
K. R. Riemer
Regional Administrator, USNRC Region III

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10 CFR 21 REPORT - IMPROPER INSTALLATION
OF THERMO-LAG FIRE BARRIERS AT FERMI 2

- o 10 CFR 21.21 (c)(4)(i) Name and address of the individual or individuals informing the Commission.

Mr. D. R. Gipson
Senior Vice President
Detroit Edison Company, Fermi 2
6400 N. Dixie Highway
Newport, Michigan 48166
- o 10 CFR 21.21(c)(4)(ii) Identification of the facility, the activity, or the basic component supplied for such facility or such activity within the United States which fails to comply or contains a defect.

Facility: Fermi 2, Detroit Edison Company

Basic Component: Thermo-Lag 330-1 Fire Barriers
- o 10 CFR 21.21(c)(4)(iii) Identification of the firm constructing the facility or supplying the basic component which fails to comply or contains a defect.

Supplier of Basic Component: Thermal Science, Inc.

Installer of Basic Component: Thermal Science, Inc., and Sussman Asbestos Company/The P.R. Sussman Company
- o 10 CFR 21.21(c)(4)(iv) Nature of the defect or failure to comply and the safety hazard which is created or could be created by such defect or failure to comply.

During removal and replacement of the Thermo-Lag fire barriers at Fermi 2 the following installation discrepancies were observed:

1) Generic Problems:

- o Interferences/heat transfer surfaces such as insulated pipe, conduits, cable tray supports, and pipe supports were not encased

or coated with sufficient amount of trowel grade Thermo-Lag material.

- o Panels were not always installed uniformly (e.g. with the ribs facing out), as required for wall assemblies.

2) Relay Room Stairwell (El. 613'-6"):

Where the cable tray wrap system terminated at the two existing silicone foam seals, the Thermo-Lag material stopped at the outer edge of the foam providing no protection for the cables imbedded in the foam seal, below the Thermo-Lag seal, once an inch of foam was burned away (foam burns away at approximately 3 inches per hour). This installation did not properly interface with the foam seal to prevent flame spread into/out of the Thermo-Lag cable vault.

3) Cable Tray Vault (El. 677'-6"):

- o The expanded metal which is required to achieve the 3 hour fire rating for a wall type assembly was completely omitted.
- o Panels were used to support each other in lieu of support steel. In one instance a panel cantilevered out approximately four feet to a second panel cantilevered down about three feet forming a right angle.
- o Small pieces of plywood were also used to support panels.

4) Control Center HVAC Area (El. 677'-6"):

- o Panels were simply sitting on the floor without actually being fastened to the floor, or supplied with cross member supports.
- o Outside the control room ventilation duct work, adjacent to fire dampers in the duct work, support steel was installed around the dampers without the fire damper vendor's specified clearance. The effect of this installation on the dampers is being evaluated separately. These dampers serve solely as a fire barrier function and the observed condition has no effect on the operability of the control room ventilation system.
- o The steel support system design was inadequate, and the Thermo-Lag panels were simply bolted together for mutual support.
- o Small pieces of plywood were also used to support the Thermo-Lag panels.

Thermal Science, Inc. (TSI) furnished and delivered the Thermo-Lag trowel grade and pre-fabricated panel material. Per the contract and Detroit Edison Specification for the Thermo-Lag installation TSI was required to provide 3-hour rated fire barriers.

Detroit Edison Project Specification 3071-336 required that the manufacturer shall warrant all fireproofing material systems when applied in strict accordance with written application procedures subjected to normal use and exposure. The Specification required that the approved fireproofing material system provide three (3) hour fire resistance for application to fire walls is the Thermo-Lag 330 Conformable Stress Skin Fire Wall System. The Specification required that the approved fireproofing material system provide three (3) hour fire resistance for application to cable tray envelope system is the Thermo-Lag 330-1 Subliming Coating Envelop System. The Specification also required that:

- o The Thermo-Lag 330-1 Conformable Stress Skin Fire Wall System shall be installed to provide a three (3) hour fire resistance rated design in accordance with TSI's Technical Note 80581 dated February, 1982, and approved shop drawings.
- o The Thermo-Lag 330-1 Subliming Coating Envelope System shall be applied to cable trays, conduits, air cable drops, ducts, junction boxes, transitions and their structural supports to provide a three (3) hour fire resistance rated design in accordance with TSI's Technical Note 80181, Rev. II, dated December, 1981, and approved shop drawings.

TSI also furnished technical assistance to develop a procedure to support the installation requirements as defined in Detroit Edison's specifications with Detroit Edison's site contractor responsible for the installation of the material. TSI provided field service engineers for on-site technical assistance and provided site visits to investigate interferences and to recommend the installation process. TSI also trained and certified the crew of the site contractor responsible for installation and inspection of the material at Fermi 2. The installation was required to be performed by personnel certified by TSI.

Installation of the Thermo-Lag material at Fermi 2 and first line supervision of the installation was performed by the P. R. Sussman Company of Toledo, Ohio per the contract. The P. R. Sussman Company also furnished verification records showing acceptance of the Thermo-Lag installation at Fermi 2. In addition, TSI issued a letter to P. R. Sussman Company stating that the installation of the Thermo-Lag material at Fermi 2 was completed according to TSI's published application guide and generic test report.

These identified improper installation conditions concern an activity or a basic component which is necessary to ensure the capability to shutdown the reactor and maintain it in a safe shutdown condition because these installations may not be capable of providing the required protection from fire to structures, systems, and components important to safety.

These installations appear to contain deviations and defects, as defined in 10 CFR 21, because they resulted in a product that does not meet the requirements of the Detroit Edison procurement documents for providing qualified fire protection barriers at Fermi 2.

The defect of improper installation of Thermo-Lag fire barriers is such that it may not provide required fire protection to essential safety systems. This could result in a major degradation of these systems such that a required safety function may not be performed during or after a fire. Therefore, this defect could create a substantial safety hazard, as defined in 10 CFR 21.

Therefore, the condition of improper installation of discussed Thermo-Lag fire barriers at Fermi 2 is reportable under the requirements of 10 CFR 21.

o 10 CFR 21.21(c)(4)(v)

The date on which the information of such defect or failure to comply was obtained.

The condition involving the discussed discrepancies was observed between late May, 1994 and early July, 1994.

On July 14, 1994 it was determined that the condition described herein meets the criteria of reportability under 10 CFR 21.

o 10 CFR 21.21(c)(4)(vi)

In the case of a basic component which contains a defect or fails to comply, the number and location of all such components in use at, supplied for, or being supplied for one or more facilities or activities subject to the regulations in this part.

Out of the total eleven (11) Thermo-Lag fire barriers that were installed at Fermi 2, the following ten (10) barriers were installed by the P.R. Sussman company:

- 1) Enclosure for the Relay Room stairwell on El. 613'-6".
- 2) Cable tray wrap for cable tray 1K-034 in the Relay Room stairwell on elevations 613'-6" and 630'-6".
- 3) Floor seal for an HVAC duct chase in the Relay Room ceiling on elevation 630'-6".
- 4) Floor seal for the electrical blackout in the cable spreading room above the cable tunnel on elevation 630'-6".
- 5) Floor seal for the electrical blackout in the cable tray area above the cable tunnel on elevation 631'-0".
- 6) Seal around HVAC ductwork entering an HVAC chase in the ventilation equipment area on elevation 659'-6".
- 7) Separation barrier between the Division I and II CCHVAC return air fans in the CCHVAC equipment area on Elevation 677'-6".
- 8) Seals in openings in the one hour rated barrier separating the Division I and Division II equipment in the CCHVAC equipment area on Elevation 677'-6".
- 9) Cable vault enclosure for cable trays 1C-037 and 1P-070 where they traverse the Division II CCHVAC area on Elevation 677'-6".
- 10) Cable vault enclosure for cable trays 1C-078 and 1P-073 where they traverse the Division II CCHVAC area on Elevation 677'-6".

The 11th Thermo-Lag fire barrier (HVAC chase floor closure, El. 613' - 6") was not installed by the P. R. Sussman Company, and is being reclassified as non-fire rated smoke and gas barrier.

o 10 CFR 21.21(c)(4)(vii)

The corrective action which has been, is being, or will be taken; the name of the individual or organization responsible for the action; and the length of time that has been or will be taken to complete the action.

The following corrective action is being taken by Detroit Edison:

Eight (8) of the ten (10) Thermo-Lag fire barriers installed by the P. R. Sussman Company are being removed and replaced with fully qualified fire rated barriers during the current refueling outage. The remaining two (numbers 1 and 3), are being reclassified as non-fire rated smoke and gas barriers. Hence at the conclusion of this effort, there will not be any Thermo-Lag material fire barriers on site at Fermi 2.

Details of the corrective actions being taken have been provided in Detroit Edison's response to NRC Request for Additional Information regarding Generic Letter 92-08, NRC-94-0011, dated February 11, 1994.

- o 10 CFR 21.21(c)(4)(viii) Any advice related to the defect or failure to comply about the facility, activity or basic component that has been, is being, or will be given to purchasers or Licensees.

Applicable to vendors only, not applicable to Fermi 2.