UNITED STATES
NUCLEAR REGULATORY COMMISSION
OFFICE OF NUCLEAR REACTOR REGULATION
WASHINGTON, D.C. 20555

August 4, 1994

NRC INFORMATION NOTICE 91-79, SUPPLEMENT 1: DEFICIENCIES FOUND IN THERMO-LAG FIRE BARRIER INSTALLATION

Addressees

All holders of operating licenses or construction permits for nuclear power reactors.

Purpose

The U. S. Nuclear Regulatory Commission (NRC) is issuing this information notice (IN) supplement to alert addressees to additional problems that could result from improperly installing Thermo-Lag 330-1 fire barriers to satisfy NRC fire protection requirements for safe shutdown components. It is expected that recipients will review the information for applicability to their facilities and consider actions, as appropriate, to avoid similar problems. However, suggestions contained in this information notice are not NRC requirements; therefore, no specific action or written response is required.

Background

On December 6, 1991, NRC issued IN 91-79, "Deficiencies in the Procedures for Installing Thermo-Lag Fire Barrier Materials." The IN discussed Thermo-Lag fire barrier configurations that were not installed in accordance with the installation procedures published by the vendor, Thermal Science, Incorporated (TSI). Most of the deficiencies were found by comparing TSI installation procedures with records of methods and procedures used by licensees during actual installation of Thermo-Lag fire barriers. In some cases, the installation methods that deviated from installation procedures recommended by the vendor were found to be unacceptable when subsequent qualification fire endurance testing resulted in fire barrier failures. In other cases, fire endurance test or engineering analysis had not been performed to support the deviating installation.

Description of Circumstances

On July 15, 1994, Detroit Edison Company, the licensee for Enrico Fermi Atomic Power Plant, Unit 2, (Fermi 2) notified NRC pursuant to Part 21, "Reporting of Defects and Noncompliance," of Title 10 of the Code of Federal Regulations (10 CFR Part 21). The Notification reported deviations and defects in Thermo-Lag fire barrier installation at Fermi 2. While removing and replacing Thermo-Lag fire barriers, the licensee found deficiencies such as insufficient Thermo-Lag trowel grade material on interferences, inconsistently positioned ribbed

faces, insufficient cable protection at the fire stops, expanded metal missing from wall assembly, Thermo-lag panels used in place of support steel, failure to fasten the panels to the floor as required, and insufficient clearance around fire dampers. It appears that installation records did not reflect the "as-built" condition of these barriers. Employees from the P. R. Sussman Company of Toledo, Ohio, installed the Thermo-Lag fire barriers at Fermi 2.

The findings at Fermi 2 substantiate NRC concerns stated in IN 92-46, "Thermo-Lag Fire Barrier Material Special Review Team Final Report Findings, Current Fire Endurance Tests, and Ampacity Calculation Error," June 23, 1992. The concerns are that records of methods and procedures used during installation of Thermo-Lag barriers may be inaccurate, incomplete, or missing.

Discussion

On December 17, 1992, NRC issued Generic Letter (GL) 92-08, "Thermo-Lag 330-1 Fire Barriers." The GL requested licensees to confirm that qualified Thermo-Lag fire barriers had been installed with appropriate procedures and quality controls. Most licensees responded that they had followed the procedures recommended by the vendor, TSI. The responses also indicated that most licensees were waiting for the results of the industry test program sponsored by the Nuclear Energy Institute (NEI) before taking corrective actions.

By December 1993, it had become apparent to the NRC staff that the NEI test program, alone, would not be sufficient to resolve the Thermo-Lag fire barrier issues. Therefore, in accordance with 10 CFR 50.54(f), NRC issued requests for additional information (RAI) to the licensees relying on Thermo-Lag to meet Appendix R requirements. The RAI asked each licensee to submit detailed information on such test assembly elements as material thickness, joints, bands, tie-wires, stress skin and supports. The RAI also requested each licensee to state whether the parameters defining these elements were obtained and verified and to describe the type and extent of the unknown parameters. Many licensees did not supply the information requested but stated how they would get it in the future.

In responding to the RAI, Detroit Edison Company advised NRC that it would not wait for the results of the NEI test program and would resolve Thermo-Lag issues at Fermi 2 by either removing or reclassifying Thermo-Lag fire barriers. During these modifications the licensee found installation deficiencies described above and reported them to NRC.

As noted in GL 86-10, Supplement 1, "Fire Endurance Test Acceptance Criteria for Fire Barrier Systems Used to Separate Redundant Safe Shutdown Trains Within the Same Fire Area," dated March 25, 1994, test specimens intended for fire endurance qualification testing of fire barriers should represent the construction of these barriers in material and workmanship. The findings at Fermi 2 illustrate that examination of installation records may not be sufficient to determine how the original Thermo-Lag fire barriers were installed.

Related Generic Communications

- IN 91-47, "Failure of Thermo-Lag Fire Barrier Material to Pass Fire Endurance Test," August 6, 1991.
- IN 92-46, "Thermo-Lag Fire Barrier Material Special Review Team Final Report Findings, Current Fire Endurance Tests, and Ampacity Calculation Errors," June 23, 1992.
- Bulletin (BL) 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
- BL 92-01, Supplement 1, "Failure of Thermo-Lag 330 Fire Barrier System to Perform its Specified Fire Endurance Function," August 28, 1992.
- GL 92-08, "Thermo-Lag 330-1 Fire Barriers," December 17, 1992.
- GL 86-10, Supplement 1, "Fire Endurance Test Acceptance Criteria for Fire Barrier Systems Used to Separate Redundant Safe Shutdown Trains Within the Same Fire Area," March 25, 1994.

This information notice requires no specific action or written response. If you have any questions about the information in this notice, please contact the technical contact listed below or the appropriate Office of Nuclear Reactor Regulation (NRR) project manager.

Brian K. Grimes, Director
Division of Operating Reactor Support
Office of Nuclear Reactor Regulation

Technical contact: Daniele H. Oudinot, NRR
(301) 504-3731

Attachment:
List of Recently Issued NRC Information Notices

Enclosure: Filed in Jacket

LIST OF RECENTLY ISSUED NRC INFORMATION NOTICES

Information Notice No.	Subject	Date of Issuance	Issued to
94-54	Failures of General Electric Magne-Blast Circuit Breakers to Latch Closed	08/01/94	All holders of OLs or CPs for nuclear power reactors.
91-45, Supp. 1	Possible Malfunction of Westinghouse ARD, BFD, and NBFD Relays, and A200 DC and DPC 250 Magnetic Contactors	07/29/94	All holders of OLs or CPs for nuclear power reactors.
94-42, Supp. 1	Cracking in the Lower Region of the Core Shroud in Boiling-Water Reactors	07/19/94	All holders of OLs or CPs for boiling water reactors (BWRs).
94-53	Hydrogen Gas Burn Inside Pressurizer During Welding	07/18/94	All holders of OLs or CPs for nuclear power reactors.
94-52	Inadvertent Containment Spray and Reactor Vessel Draindown at Millstone Unit 1	07/15/94	All holders of OLs or CPs for nuclear power reactors.
94-51	Inappropriate Greasing of Double Shielded Motor Bearings	07/15/94	All holders of OLs or CPs for nuclear power reactors.
94-50	Failure of General Electric Contactors to Pull in at the Required Voltage	07/14/94	All holders of OLs or CPs for nuclear power reactors.
94-49	Failure of Torque Switch Roll Pins	07/06/94	All holders of OLs or CPs for nuclear power reactors.
94-48	Snubber Lubricant Degradation in High-Temperature Environments	06/30/94	All holders of OLs or CPs for nuclear power reactors.

OL = Operating License
CP = Construction Permit

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orig /s/'d by BKGrimes
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OFFICE	*SPLB/NRR	*C:SPLB/NRR	*D:DSSA/NRR	*OGCB/NRR
NAME	DHOudinot	CEMcCracken	MJVirgilio	RJKiessel
DATE	07/29/94	07/29/94	07/29/94	07/29/94

OFFICE	*Tech Ed	*D:OI	*C:OGCB/NRR	D:DORS/NRR
NAME	JMain JM	JAFitzgerald	ELDoolittle	BKGrimes
DATE	07/27/94	08/01/94	08/01/94	08/3 /94

Document Name: 91-79SP1.IN

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Coordinated with J. Pawlik, FOD, RIII; & I this date.