Fire Barriers

On this page:

Thermo-Lag Fire Barriers

Generic Letter (GL) 92-08, “Thermo-Lag 330-1 Fire Barriers,” expressed the staff’s concerns with Thermo-Lag 330-1 which included the lack of adequate reviews of the fire test results to determine if the tests were valid and the lack of adequate reviews to determine if the test results applied to plant designs. The NRC issued Supplement 1 to Generic Letter 86-10, “Fire Endurance Test Acceptance Criteria for Fire Barrier Systems Used to Separate Redundant Safe Shutdown Trains Within the Same Fire Area,” on March 25, 1994. Supplement 1 to Generic Letter 86-10, provided licensees with guidance for acceptance testing and equivalency evaluations for future tests of fire barrier systems.

Bulletins

Document Number	Description
BL92-01	Failure of Thermo-Lag 330 Fire barrier System to Maintain Cabling in Wide Cable Trays and Small Conduits Free From Damage, dated June 24, 1992.
BL92-01s1	Sup. 1 Failure of Thermo-Lag 330 Fire barrier System to Perform its Specified Fire Endurance Function, dated August 28, 1992.

Generic Letters

Document Number	Description
GL86-10, Sup. 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
GL92-08	Thermo-Lag 330-1 Fire Barriers, dated December 17, 1992

Information Notices

Document	Description

Number	
IN-91-47	Failure of Thermo-Lag Fire Barrier Material to Pass Fire Endurance Test, dated August 6, 1991.
IN-91-79	Deficiencies Found in Thermo-Lag Fire barrier Installation, dated December 6, 1991.
IN-91-79,Sup 1	Deficiencies Found in Thermo-Lag Fire barrier Installation, dated August 4, 1994.
IN-92-46	Thermo-Lag Fire Barrier Review Team Findings, Current Fire Endurance Tests, and Ampacity Calculation Errors, dated June 23, 1992.
IN-92-55	Current Fire Endurance Test Results for Thermo-Lag Fire Barrier Material, dated July 27, 1992.
IN-92-82	Results of Thermo-Lag 330-1 Combustibility Testing, dated December 15, 1992.
IN-94-22	Fire Endurance and Ampacity Derating Test Results for 3-Hour Fire Rated Thermo-Lag 330-1 Fire barriers, dated March 16, 1994.
IN-94-34	Thermo-Lag 330-660 Flexi-Blanket Ampacity Derating Concerns, dated May 13, 1994.
IN-94-86	Legal Actions Against Thermal Science, Inc., Manufacturer of Thermo-Lag, dated December 22, 1994.
IN-94-86, Sup 1	Legal Actions Against Thermal Science, Inc., Manufacturer of Thermo-Lag, dated November 15, 1995.
IN-95-27	NRC Review of Nuclear Energy Institute, Thermo-Lag 330-1 Combustibility Evaluation Methodology Plant Screening Guide, dated May 31, 1995.
IN-95-32	Thermo-Lag 330-1 Flame Spread Test Results, dated August 10, 1995.
IN-95-49	Seismic Adequacy of Thermo-Lag Panels, dated October 27, 1995.
IN-95-49, Sup 1	Seismic Adequacy of Thermo-Lag Panels," dated December 10, 1997.

Hemyc/MT Fire Barriers

On September 20, 1995, the NRC staff documented its conclusion to the Commission that a broader scope of inspections would be needed to close out the Thermo-Lag Action Plan. Rather than developing a stand-alone Thermo-Lag fire barrier inspection program, a more robust program – the Fire Protection Functional Inspection (FPFI) was proposed. SECY 96-267 provides details of the proposed FPFI. The FPFI included a review of safe shutdown design and licensing bases. It was these inspections, started in 1999, that identified the findings related to the Hemyc and MT fire barrier systems.

As a result of the FPFIs, and also the triennial fire protection inspections that followed the FPFIs, unresolved items (URIs) were opened at some nuclear power stations due to questions raised regarding the fire rating of the Hemyc and MT fire barrier materials. NRR concluded that the original testing (the Spanish Hemyc tests and the Southwest Research MT tests) was insufficient to qualify Hemyc for cable trays or conduits or MT for conduits as rated fire barriers. NRR documented this conclusion in Task Interface Agreement (TIA) response dated August 1, 2000, titled, "NRR Response to Task Interface Agreement (TIA) 99-028, Shearon Harris Nuclear Power Plant, Unit 1 -Resolution of Pilot Fire Protection Inspection Fire Barrier Qualification Issues (TAC No. MA7235)".

Based on the NRC's conclusion that the existing body of testing did not provide sufficient basis

to qualify these fire barriers, the NRC chose to perform confirmatory tests on these materials using the criteria provided in Generic Letter 86-10, Supplement 1. The purpose of these tests was to determine Hemyc and MT's actual fire ratings to meet 10 CFR 50, Appendix R, "Fire Protection Program for Nuclear Facilities Operating Prior to January 1, 1979," Section III.G requirements, 10 CFR 50.48, "Fire Protection, " requirements, and other regulatory commitments.

The Office of Research completed the testing in March 2005. The Office of Nuclear Reactor Regulation shared the test results with the licensees using Information Notice 2005-07 "Results of HEMYC Electrical Raceway Fire Barrier System Full Scale Fire Testing." Subsequently, the NRC issued GL 2006-03 in April 2006. This Generic Letter requested licensees to evaluate their facilities to confirm compliance with the existing applicable regulatory requirements in light of the information provided in the GL and, if appropriate, to take additional actions.

All licensees have provided the information requested by GL 2006-03 about the adequacy of their Hemyc and MT fire barriers, as well as other fire barriers installed at their plants. The staff has reviewed the responses and closed out the generic letter for a large number of plants. The staff has issued requests for additional information and is in the process of closing out the generic letter for the remaining plants.

Some links on this page are to documents in our Agencywide Documents Access and Management System (ADAMS), and others are to documents in Adobe Portable Document Format (PDF). ADAMS documents are provided in either PDF or Tagged Image File Format (TIFF). To obtain free viewers for displaying these formats, see our Plugins, Viewers, and Other Tools page. If you have questions about search techniques or problems with viewing or printing documents from ADAMS, please contact the Public Document Room staff.

Generic Communications

Document Number	Description
GL06-03	Potentially Nonconforming Hemyc and MT Fire Barrier Configurations
IN-05-07	Results of HEMYC Electrical Raceway Fire Barrier System Full Scale Fire Testing

Other Documents

Date	Description
05/14/05	M. T. (3-Hour) Electrical Raceway Fire Barrier System Performance Testing Final Report.
05/03/05	Hemyc Test # 2 Post-Test Photographs
05/03/05	Hemyc Test # 1 Post-Test Photographs
05/03/05	Hemyc Photographs Used at Public Meeting
05/03/05	Memo - Public Availability of Post-Test Photographs MT Omega Point Laboratory (OPL) for Hemyc 1-Hour Fire Rated Electrical Raceway Fire Barrier System (ERFBS) Testing
04/27/05	Preliminary Pass/Fail Test Results for MT 3-Hour Rated Electrical Raceway Fire Barrier Systems.
04/21/05	Sandia National Laboratories Hemyc (1-Hour) ERFBS Test #2 Final Report

	Transmittal Letter
04/18/05	Performance Testing Cable Tray Cable Air Drop and Junction Raceways Final Report
04/15/05	Sandia National Laboratories Hemyc (1-Hour) ERFBS Performance Testing Final Report Transmittal Letter - Test # 1
04/14/05	Pre-test Photographs by OPL #1
04/14/05	Pre-test Photographs by OPL #2
04/14/05	Public Availability of Pre-test Photographs by OMEGA Point Lab. (OPL) for HEMY 1-Hour Fire Rated Electrical Raceway Fire Barrier System (ERFBS) Testing
04/13/05	Materials Characterization for Siltemp and Refrasil.
04/11/05	Hemyc 1-Hour ERFBS Performance Testing Final Report
04/08/05	Plan for Hemyc (1-Hour) and M.T. (3-Hour) Electrical Raceway Fire Barrier System Testing Revision M
04/06/05	Notice of Public Meeting: Forthcoming Public meeting With Stakeholders Regarding Hemyc and MT Electrical Raceway Fire barrier System Performance
04/06/05	Test #1 Hemyc, Direct Attachment, Thermocouple Location Drawings and Test Data
04/01/05	Information Notice 2005-07: Results of Hemyc Electrical Raceway Fire Barrier System Full Scale Fire Testing
03/28/05	Preliminary Pass/Fail Test Results for Hemyc 1-Hour Rated Electrical Raceway Fire Barrier Systems
03/25/05	Guide to Pre-test Photographs by OPL #2
03/11/05	Guide to Pre-test Photographs by OPL #1
01/25/05	Letter from D. Lew to F. Emerson: NRC's response to NEI's comments on the Hemyc and M.T. test plan
12/21/04	Letter from F. Emerson of NEI to S. Weerakkody: Additional Comments on Testing the Hemyc and M.T. Fire Wrap Material
11/18/04	Letter from John Hannon to A. Marion of NEI: Hemyc (1-Hour) and MT (3-Hour) Fire Protection Wrap Performance Testing Fire Test Plan
1/16/03	Program Plan For Hemyc (1-Hour) and M.T. (3-Hour) Fire Protective Wrap Performance Testing, Final, dated January 16, 2003
12/06/02	Letter from A. Marion of NEI to John Hannon: NEI Comments on NRC Hemyc Test Plan
11/22/02	Summary of the October 31, 2002 Public Meeting on the Proposed Plan to Perform Fire Testing of Hemyc (1-Hour) and MT (3-Hour) Fire Protection Wrap
10/09/02	Notice of the Public Meeting on the Proposed Plan to Perform Fire Testing of Hemyc (1-Hour) and MT (3-Hour) Fire Protection Wrap
12/28/01	Letter from F. Emerson to D. Frumkin: NEI Provides Description of Installed Hemyc and MT Configurations
06/20/01	Promatec Hemyc and MT Electrical Raceway Fire Barrier Systems
04/25/01	NEI Document: Promatec 1-Hour and MT 3-Hour Fire Barrier Systems
04/17/01	Shearon Harris Nuclear Power Plant Unit No.1 - Docket No.50-4000: Licensing Basis of Promatec Hemyc Fire Barrier Systems

12/15/00	McGuire Fire Protection Inspection Report
11/29/00	Waterford Steam Electric Station, Unit 3; Fire Protection Report; Fire Protection
08/01/00	Harris Hemyc TIA - Letter from S. Black to L. Plisco
02/02/00	Shearon Harris Fire Protection Inspection Report

Kaowool and FP-60 Fire Barriers

Generic Communications

Document Number	Description
IN 93-41	"One Hour Fire Endurance Test Results for Thermal Ceramics Kaowool, 3M Company FS-195 and 3m Company Interam E-50 Fire Barrier Systems," dated May 28, 1993
IN 93-40	"Fire Endurance Test Results for Thermal Ceramics FP-60 Fire Barrier Material," dated May 26, 1993

Other Documents

Document Number	Description
SECY-99- 204	"Kaowool and FP-60 Fire Barriers," dated August 4, 1999

Other Fire Barriers

Document Number	Description
IN 97-59	"Fire Endurance Test Results of Versawrap Fire Barriers," dated August 1, 1997.
IN 95-52 Supp. 1	"Fire Endurance Test Results for Electrical Raceway Fire Barrier Systems Constructed From 3M Company Interam Fire Barrier Materials," dated March 17, 1998.
IN 95-52	"Fire Endurance Test Results for Electrical Raceway Fire Barrier Systems Constructed From 3M Company Interam Fire Barrier Materials," dated November 14, 1995.
IN 93-41	"One Hour Fire Endurance Test Results for Thermal Ceramics Kaowool, 3M Company FS-195 and 3m Company Interam E-50 Fire Barrier Systems," dated May 28, 1993.
GL86-10, Supp. 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.