



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS  
WASHINGTON, DC 20555 - 0001

ACRSR-2172

December 21, 2005

Luis A. Reyes  
Executive Director of Operations  
U. S. Nuclear Regulatory Commission  
Washington, DC 20555-0001

SUBJECT: DRAFT FINAL GENERIC LETTER 2005-XX, "IMPACT OF POTENTIALLY DEGRADED HEMYC/MT FIRE BARRIER MATERIALS ON COMPLIANCE WITH APPROVED FIRE PROTECTION PROGRAMS"

Dear Mr. Reyes:

During the 528<sup>th</sup> meeting of the Advisory Committee on Reactor Safeguards, December 7-10, 2005, we reviewed the draft final Generic Letter 2005-XX, "Impact of Potentially Degraded Hemyc/MT Fire Barrier Materials on Compliance with Approved Fire Protection Programs." During our review, we had the benefit of discussions with representatives of the NRC staff and the documents referenced.

#### **RECOMMENDATION**

The Generic Letter should be issued.

#### **BACKGROUND AND DISCUSSION**

A fundamental principle of a nuclear power plant fire protection program is the protection of at least one train of equipment required to safely shut down the plant. If a fire area contains components from more than one train of safe shutdown equipment, a means must be provided to ensure that a fire within that area would not disable both safe shutdown pathways. One acceptable approach is to provide a fire detection system, an automatic fire suppression system, and an 1-hour fire barrier to separate the trains. In the absence of a fire suppression system, adequate protection can be provided by a 3-hour fire barrier. A number of plants have used the Hemyc and MT electrical raceway fire barrier systems for this purpose. These fire barrier systems consist of Kaowool ceramic fiber insulation with a covering of Refrasil or Siltemp fire-resistant fabric.

The staff raised questions about the fire resistance capability of these systems during fire protection inspections conducted at nuclear plants in 1999 and 2000. The questions led to independent confirmatory testing by the NRC of Hemyc and MT materials at the Omega Point testing laboratory in March and April 2005. Tests were performed on assemblies of components protected by fire barriers. The results failed to meet acceptance criteria for all of the configurations. Shrinkage of the Refrasil covering resulted in gaps and tears in the blankets, allowing localized direct access of the cable to the fire environment. For the 1-hour barriers, failure typically occurred at approximately 30 minutes, and for the 3-hour barriers, failure typically occurred at approximately 120 minutes.

Similar issues with fire barrier materials have been identified in the past. The 1989 test results of the Thermo-lag fire barrier system indicated that it could not satisfy testing standards. The NRC issued a number of generic communications on this subject. These documents provide a precedent for the activities that are currently being undertaken to understand the scope of the Hemyc and MT issue and ensure that appropriate corrective actions are undertaken.

As a consequence of the test results, the staff developed a generic letter that requests the licensees to report whether Hemyc or MT fire barrier materials are installed and relied on for safe shutdown purposes. Also, the generic letter asks licensees to provide a description of existing programmatic controls to ensure that other types of fire barriers will be assessed for potential degradation and resulting adverse effects. Licensees that have installed Hemyc or MT fire barrier materials must describe the extent of installation, compliance with 10 CFR 50.48 in light of recent test findings, compensatory measures that have been implemented, and a general description of the plan and schedule for corrective actions.

The generic letter also states that affected licensees should provide confirmation by December 1, 2007 that their fire protection programs are in compliance with applicable regulatory requirements. They should also provide a summary of the evaluation used to determine the adequacy of the fire protection program in the presence of potentially degraded Hemyc or MT fire barriers, including the results of any supporting tests performed.

The results of the NRC's independent, confirmatory tests indicate that Hemyc and MT fire barrier systems may not provide adequate protection. The generic letter should be issued to seek information from the licensees. We look forward to a briefing by the staff after they have reviewed the responses submitted by the licensees.

Sincerely,

**/RA/**

Graham B. Wallis  
Chairman

References:

1. Memorandum from J. Lyons, NRR, to J. Larkins, ACRS, dated November 8, 2005, Subject: Proposed Generic Letter 2005-XX, "Impact of Potentially Degraded Hemyc/MT Fire Barrier Materials on Compliance with Approved Fire Protection Programs" (ADAMS Accession No. ML053110527)
2. Memorandum from J. Larkins, ACRS, to L. Reyes, EDO, dated July 7, 2005, Subject: Proposed Generic Letter 2005-XX, "Impact of Potentially Degraded Hemyc/MT Fire Barrier Materials on Compliance with Approved Fire Protection Programs" (ADAMS Accession No. ML051940496)
3. Memorandum from D. Lew, RES, to J. Hannon, NRR, dated March 28, 2005, Subject: Preliminary Pass/Fail Test Results for Hemyc 1-Hour Rated Electrical Raceway Fire Barrier Systems (ADAMS Accession No. ML050880176)
4. Information Notice 2005-07, "Results of Hemyc Electrical Raceway Fire Barrier System Full Scale Testing," dated April 1, 2005 (ADAMS Accession No. ML050890089)
5. Regulatory Issue Summary 2005-07, "Compensatory Measures to Satisfy the Fire Protection Program Requirements," dated April 19, 2005 (ADAMS Accession No. ML042360547)

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