

December 17, 2008

MEMORANDUM TO: John A. Grobe, Associate Director  
Engineering and Safety Systems  
Office of Nuclear Reactor Regulation

FROM: Mark A. Cunningham, Director */RA/*  
Division of Risk Assessment  
Office of Nuclear Reactor Regulation

SUBJECT: HEMYC AND MT ELECTRICAL RACEWAY FIRE BARRIER SYSTEM  
CLOSEOUT ACTIONS

The Division of Risk Assessment (DRA), using information from the regional offices, has been monitoring the industry closeout actions for Hemyc and MT electrical raceway fire barrier systems (ERFBS). Specifically, we have been monitoring close out actions related to Generic Letter 2006-03, "Potentially Nonconforming Hemyc and MT Fire Barrier Configurations," dated April 10, 2006, Agencywide Documents Access & Management System (ADAMS) Accession No. ML053620142. The results of these closeout actions are described in the enclosures.

Enclosure 1 lists plants that are resolving their Hemyc or MT fire barriers issues during their transition to Title 10 of the *Code of Federal Regulations* 50.48(c), National Fire Protection Association Standard 805 (NFPA 805). Enclosure 1 describes how the Office of Nuclear Reactor Regulation (NRR) staff and regional staff have confirmed that compensatory measures are in place at all plants which rely on nonconforming Hemyc or MT fire barriers. That is, NRR and regional staff have verified that plants transitioning to NFPA 805 are maintaining safety using compensatory measures while resolving the Hemyc or MT fire barrier issues during their transition to NFPA 805.

Enclosure 2 describes how NRR and regional staff confirmed that plants that formerly relied on these nonconforming ERFBS have either received approval for amendments or exemptions, or have completed plant modifications to achieve compliance. In summary, NRR and regional staff have verified that plants not adopting NFPA 805 have resolved the Hemyc and MT fire barrier issues.

Plants not discussed in Enclosure 1 or 2 did not rely on Hemyc or MT material.

This memorandum closes out the action on Hemyc and MT ERFBS, committed to in the Fire Protection Closure Plan, Stabilizing Fire Protection Regulatory Infrastructure, dated October 2008, ADAMS Accession No. ML082840659. Based on this memorandum, DRA will status the Hemyc and MT fire barrier issue as resolved in future versions of the Fire Protection Closure Plan.

Enclosures:

1. Verification of Compensatory Measures
2. Modifications or Exemptions or Amendments to Close Fire Barrier Issues

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Hemyc and MT Electrical Raceway Fire Barrier System  
Closeout Actions  
**Verification of Compensatory Measures**

In 2005, when tests performed by NRC's Office of Nuclear Regulatory Research concluded that Hemyc and MT fire barriers were potentially nonconforming, the Office of Nuclear Reactor Regulation (NRR) issued Generic Letter (GL) 2006-03, "Potentially Nonconforming Hemyc and MT Fire Barrier Configurations," dated April 10, 2006, Agencywide Documents Access & Management System (ADAMS) Accession No. ML053620142, requesting that licensees take appropriate actions to establish compliance with the fire protection regulations. As a result, the licensees that relied on Hemyc and MT fire barriers responded to the GL 2006-03 with their plans to resolve nonconformances. The NRC staff reviewed licensees' responses to the GL, and issued closeout letters for each licensee. The NRC staff found that the licensee's planned actions were appropriate to bring closure to this issue. The table below lists the reactor units, areas affected, and ADAMS Accession Numbers for licensee's response letters to GL and NRC documents that provide the bases for closure of GL 2006-03.

Reactor Unit	Fire Area/Zones Known to be Containing Hemyc or MT ERFBS	Licensee Response Letter(s) ADAMS Accession No.	NRC Closeout Letter(s) ADAMS Accession No.
Arkansas Nuclear One Unit 1	Fire Zone 149-S; Fire Zones 20-Y and 34-Y; Intake; Fire Zones 34-YV, 40-Y, and 73-W; Fire Zone 38-Y	ML061720459	ML062620115
Arkansas Nuclear One Unit 2	Intake, Fire Zone 2006-LL, Fire Zone 2040-JJ, Fire Zone 2073-DD	ML061720459	ML062620115
Catawba Nuclear Station Units 1 and 2	AFW Pump Room	ML061640310	ML071430127
R.E. Ginna Nuclear Power Plant	Battery Room, Intermediate Building Clean Side Basement, Auxiliary Building Intermediate Floor and Basement Level	ML061650026	ML070940337
McGuire Nuclear Station Units 1 and 2	Turbine-Driven Auxiliary Feedwater (TDAFW) Pump Rooms	ML061640310	ML071430162
Shearon Harris Nuclear Power Plant Unit 1	Reactor Auxiliary Building	ML061240052 ML061710062	ML062900541
St. Lucie Plant Unit 2	Cable trays L2211 (NA) L2212 (NB), and L2214 (SB) in Containment building	ML061640269 ML062680162	ML063310442 ML070160123
Waterford Steam Electric Station Unit 3	Has approximately 2000 feet of Hemyc in 19 fire areas/zones.	ML061600210	ML062300315

ENCLOSURE 1

After issuing the closeout letters, NRR staff requested regional staff to verify that compensatory measures were in place for ERFBS that had been determined to be nonconforming and for which no immediate action was planned.<sup>1</sup> Specifically, NRR staff wanted to verify that licensees who plan to resolve Hemyc and MT fire barriers issues during their transition to NFPA 805 were maintaining safety using compensatory measures.

The Regional Staff verified that the licensees had established compensatory measures during their triennial and annual/quarterly inspections, by implementing Inspection Procedures (IPs) 71111.05T and 71111.05AQ, "Fire Protection." Details are provided below:

- Arkansas Nuclear One Unit 1: Regional Staff have verified that the licensee had established compensatory measures. See inspection report, Arkansas Nuclear One, Units 1 and 2, NRC Triennial Fire Protection Inspection Report 05000313/2007006; 05000368/2007006 and Exercise of Enforcement Discretion, December 3, 2007 (ADAMS Accession No. ML073390373).
- Arkansas Nuclear One Unit 2: Regional Staff have verified that the licensee had established compensatory measures. See inspection report, Arkansas Nuclear One, Units 1 and 2, NRC Triennial Fire Protection Inspection Report 05000313/2007006; 05000368/2007006 and Exercise of Enforcement Discretion, December 3, 2007 (ADAMS Accession No. ML073390373).
- Catawba Nuclear Station Units 1 and 2: Regional Staff have verified that the licensee had established compensatory measures. See inspection report, Catawba Nuclear Station - NRC Triennial Fire Protection Inspection Report 05000413/2007007 and 05000414/2007007 and Exercise of Enforcement Discretion, September 14, 2007 (ADAMS Accession No. ML072600324).
- R.E. Ginna Nuclear Power Plant: Regional Staff have verified that the licensee had established compensatory measures. See inspection report, R.E. Ginna Nuclear Power Plant - NRC Integrated Inspection Report 05000244/2008003, July 25, 2008 (ADAMS Accession No. ML082110555).
- McGuire Nuclear Station Units 1 and 2: Regarding the closeout activities for GL 2006-03 at McGuire Nuclear Station, the Resident Inspectors inspected the Unit 1 and Unit 2 TDAFW pump rooms to ensure that the licensee has established compensatory measures. The Resident Inspectors confirmed that the licensee continues to track Hemyc installations as fire protection system impairments and that compensatory measures (fire watches and administrative control of combustibles) remain in place pending completion of the modifications and evaluations. See Region II Staff email (ADAMS Accession No. ML083520610).
- Shearon Harris Nuclear Power Plant Unit 1: Regional Staff have verified that the licensee had established compensatory measures. See inspection report, Shearon

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<sup>1</sup> See memorandum from F. D. Brown to regional staff, dated April 10, 2008 (ADAMS Accession No. ML080930608).

Harris Nuclear Power Plant - NRC Integrated Inspection Report 05000400/2008002, April 21, 2008 (ADAMS Accession No. ML081130049).

- St. Lucie Plant Unit 2: The licensee stated in response to GL 2006-03 03 (ADAMS Accession No. ML061640269) that their use of Hemyc as a flame impingement shield inside their Containment building is in conformance with their licensing basis. The licensee further stated that compensatory measures are not required. NRR staff reviewed the licensee response and found it acceptable in letter dated January 23, 2007 (ADAMS Accession No. ML070160123).
- Waterford Steam Electric Station Unit 3: Regional Staff have verified that the licensee had established compensatory measures. See inspection report, Waterford Steam Electric Station, Unit 3 - NRC Integrated Inspection Report 05000382/2007004, November 9, 2007 (ADAMS Accession No. ML073180738).

Hemyc and MT Electrical Raceway Fire Barrier System  
Closeout Actions  
**Plant Modifications or Exemptions/Amendments**

This enclosure describes the modifications performed or exemptions or amendments that have been accepted by the NRC to assure compliance with respect to Title 10 of the *Code of Federal Regulations* Section 50.48 (10 CFR 50.48), "Fire protection," and each plant's approved fire protection program.

The following reactor units relied upon design modifications, license amendments, and exemptions from Appendix R to 10 CFR Part 50, to assure compliance:

- (1) Beaver Valley Power Station Unit 1
- (2) Comanche Peak Steam Electric Station Units 1 and 2
- (3) James A. FitzPatrick Nuclear Power Plant
- (4) Indian Point Nuclear Generating Unit 2
- (5) Indian Point Nuclear Generating Unit 3
- (6) H.B. Robinson Steam Electric Plant Unit 2<sup>2</sup>
- (7) Vermont Yankee Nuclear Power Station

The NRR staff has confirmed the closeout for each of these reactor units based on input provided by the Regional Staff to ensure that licensees have assured compliance. Details are provided below:

- Beaver Valley Power Station (BVPS) Unit 1: During the June 2001 triennial fire protection inspection at BVPS Unit 1, the inspection team noted that Hemyc was used to protect electrical raceways associated with charging pump feeder cable CH-P-1B. The inspectors created Unresolved Item 50-334/01-05-01, to address concerns with the fire barrier. BVPS Unit 1 replaced the Hemyc fire barrier with Darmatt KM-1 material. Regional Staff have verified the Darmatt KM-1 fire barrier installation and configuration in the field. See inspection report, Beaver Valley Power Station - NRC Inspection Report 50-334/02-04, 50-412/02-04, May 30, 2005, ADAMS Accession No. ML021510069.
- Comanche Peak Steam Electric Station (CPSES) Units 1 and 2: The licensee informed the NRC that it used Hemyc as a radiant energy shield inside the containment building and committed to evaluate the NRC test results and testing configurations for applicability to its design. In addition, CPSES committed to inform the NRC if it determined that the installed Hemyc fire barrier research was nonconforming, and take compensatory and corrective actions as appropriate. On December 20, 2007, the licensee informed the NRC that, after evaluating new information regarding the NRC's testing; it concluded that CPSES's use of Hemyc as a radiant energy shield continues to meet its licensing basis (ADAMS Accession No. ML073620447). Regional Staff verified that the licensee has appropriately dispositioned the issue. See inspection report, Comanche Peak Steam Electric Station, Units 1 and 2 – NRC Triennial Fire Protection Inspection Report 05000445/2008006 and 05000446/2008006IR 50-445; 446/2008-006, July 3, 2008, ADAMS Accession No. ML081890579.

ENCLOSURE 2

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<sup>2</sup> H.B. Robinson Steam Electric Plant Unit 2 is adopting NFPA 805, but does not plan to rely on NFPA 805 for resolution of fire barrier issues.

- James A. FitzPatrick Nuclear Power Plant (JAFNPP): On September 27, 2006, NRC issued a safety evaluation (SE) approving JAFNPP's request for an exemption from 10 CFR 50.48 (ADAMS Accession No. ML062190377). The regional integrated inspection report, James A. Fitzpatrick Nuclear Power Plant - NRC Integrated Inspection Report 05000333/2006005, January 19, 2007, ADAMS Accession No. ML070190021, documents the inspector's verification of the Hemyc fire barrier issue for JAFNPP. The NRC staff has no further follow up actions regarding Hemyc for JAFNPP and considers the issue closed for that plant.
- Indian Point Nuclear Generating Unit 2 (IP2): In response to GL 2006-03, the licensee committed to install additional protection of the electrical raceway supports associated with the existing Hemyc fire barriers at IP2 by October 31, 2007. Furthermore, IP2 indicated that it relied on Hemyc as a radiant energy shield and that it is in compliance with its licensing basis. In a letter dated November 28, 2007, ADAMS Accession No. ML073390309, the licensee informed the NRC that it had completed the modification and removed the compensatory measures. Regional Staff verified that corrective actions were appropriate. See inspection report, Indian Point Nuclear Generating Unit 2 – NRC Integrated Inspection Report 05000247/2008004, November 6, 2008, ADAMS Accession No. ML083110566.
- Indian Point Nuclear Generating Unit 3 (IP3): On September 28, 2007, the NRC issued an SE approving the request from IP3 for an exemption from 10 CFR 50.48 (ADAMS Accession No. ML072410254). The exemption was contingent upon a commitment to install additional protection regarding a revision to the existing electrical raceway support exemptions and certain metallic penetrating items associated with the existing Hemyc fire barriers located outside containment at IP3. In response to GL 2006-03, the licensee committed to complete the design modification by December 1, 2008. On March 17, 2008, Regional Staff documented their recent inspection and confirmed that the licensee had established compensatory measures. See inspection report, Indian Point Nuclear Generating Unit 3 – NRC Triennial Fire Protection Inspection Report Integrated Inspection Report 05000286/2008007, March 17, 2008, ADAMS Accession No. ML080770172. Also, Regional Staff verified that the corrective actions were appropriate. See inspection report, Indian Point Nuclear Generating Unit 3 – NRC Integrated Inspection Report 05000286/2008004, November 12, 2008, ADAMS Accession No. ML083180080.
- H. B. Robinson Steam Electric Plant Unit 2: In response to GL 2006-03, the licensee committed to install new ERFBS (3M fire barrier material) that provided a 1-hour rating. In a supplemental response submitted on August 2, 2007, (ADAMS Accession No. ML072250063), the licensee informed the NRC that it has completed the committed design changes. As a part of a triennial fire protection inspection, the Regional Staff verified the licensee's installation of the 3M fire barrier. See inspection report, H. B. Robinson Steam Electric Plant - NRC Triennial Fire Protection Inspection Report 05000261/2007007 and Exercise of Enforcement Discretion, December 20, 2007, ADAMS Accession No. ML073620541.
- Vermont Yankee Nuclear Power Station (VYNPS): During a fire protection inspection at VYNPS, the inspection team noted that Hemyc was used to protect electrical raceways

associated with the power supply for residual heat removal pump 'A'. The inspectors created Unresolved Item 05000271/2001-003-01, to address concerns with the fire barrier. See inspection report Vermont Yankee Nuclear Power Station - NRC Inspection Report 05000271/2001-003, July 27, 2001, ADAMS Accession No. ML012080293. To address concerns regarding Hemyc, in 2005 VYNPS replaced the Hemyc fire barrier with 3M Interam. Regional Staff determined that there were no performance deficiencies associated with the licensee's replacement of the Hemyc material with the 3M Interam fire barrier material. See inspection report, Vermont Yankee Nuclear Power Station - NRC Integrated Inspection Report 05000271/2006005, January 19, 2007, ADAMS Accession No. ML070190286.