



JUN 09 2006

L-2006-118
10 CFR 50.54(f)

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
11555 Rockville Pike
Rockville, Maryland 20852

RE: Florida Power and Light Company
St. Lucie Units 1 and 2
Docket Nos. 50-335 and 50-389
Turkey Point Units 3 and 4
Docket Nos. 50-250 and 50-251

FPL Energy Seabrook, LLC
Seabrook Station
Docket No. 50-443

FPL Energy Duane Arnold, LLC
Duane Arnold Energy Center
Docket No. 50-331

**60 – Day Response to NRC Generic Letter 2006-03,
“Potentially Nonconforming Hemyc and MT Fire Barrier Configurations”**

On April 10, 2006, the NRC issued Generic Letter 2006-03, “Potentially Nonconforming Hemyc and MT Fire Barrier Configurations.” Florida Power & Light Company (FPL), the licensee for St. Lucie Nuclear Plant, Units 1 and 2, and Turkey Point Nuclear Plant, Units 3 and 4; FPL Energy Seabrook, LLC, the licensee for Seabrook Station; and FPL Energy Duane Arnold, LLC, the licensee for Duane Arnold Energy Center (collectively FPL), hereby submit their 60-day response to the Generic Letter.

Attachment 1 provides the requested information for St. Lucie Unit 1 and Unit 2.
Attachment 2 provides the requested information for Turkey Point Units 3 and 4.
Attachment 3 provides the requested information for Seabrook Station.
Attachment 4 provides the requested information for Duane Arnold Energy Center.

The attached information is provided pursuant to the requirements of Section 182a of the Atomic Energy Act of 1954, as amended, and 10 CFR 50.54(f).

There are no new commitments within this letter, or within the Attachments.

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St. Lucie Units 1 and 2, Docket Nos. 50-335 and 50-389
Turkey Point Units 3 and 4, Docket Nos. 50-250 and 50-251
Seabrook Station, Docket No. 50-443
Duane Arnold Energy Center, Docket No. 50-331
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Please contact Rajiv S. Kundalkar at (561) 694-4848 if you have any additional questions regarding these responses.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on the 9th day of June 2006

Sincerely yours,



J. A. Stall
Senior Vice President, Nuclear and
Chief Nuclear Officer

Attachments: (4)

cc: Regional Administrator, Region I
Regional Administrator, Region II
Regional Administrator, Region III
USNRC Project Manager, St. Lucie and Turkey Point
USNRC Project Manager, Seabrook Station
USNRC Project Manager, Duane Arnold Energy Center
Senior Resident Inspector, USNRC, St. Lucie
Senior Resident Inspector, USNRC, Turkey Point
Senior Resident Inspector, USNRC, Seabrook Station
Senior Resident Inspector, USNRC, Duane Arnold Energy Center

ATTACHMENT 1

Requested information for St. Lucie Unit 1 and Unit 2

Response to Generic Letter 2006-03, "Potentially Nonconforming Hemyc and MT Fire Barrier Configurations," for St. Lucie Units 1 and 2

1. **Within 60 days of the date of this GL, provide the following:**
 - a. **A statement on whether Hemyc or MT fire barrier material is used at their NPPs and whether it is relied upon for separation and/or safe shutdown purposes in accordance with the licensing basis, including whether Hemyc or MT is credited in other analyses (e.g., exemptions, license amendments, GL 86-10 analyses).**

FPL Response:

FPL uses Hemyc for raceway protection inside St. Lucie Unit 2 Containment. The Hemyc fire barrier material is employed only as a Flame Impingement Shield to satisfy license basis requirements for separation of safe shutdown cables in the event of fire.

Neither Hemyc nor MT fire barrier material is relied upon for separation and/or safe shutdown purposes nor credited in any analyses for St. Lucie Unit 1.

Hemyc was originally installed at St. Lucie Unit 2 as an alternative method to satisfy 10 CFR 50, Appendix R, Section III.G.2(d), (e), and (f) requirements.

As documented in Section 9.5.1.6.C.6 of NUREG 0843, "*Safety Evaluation Report related to the operation of St. Lucie Plant, Unit 2, Docket No. 50-289*," Supplement No. 3, dated April 1983, a deviation request was submitted from providing 20' separation, installing radiant energy shields, or automatic suppression. As an alternate, FPL proposed installing noncombustible radiant energy shields [flame impingement shields] beneath the lowest redundant Division A and Division B cable trays at each elevation.

NRC Letter dated March 27, 1984, states that FPL's installation of noncombustible radiant energy shields [flame impingement shields] beneath certain cable trays inside containment for protection of the cable trays was acceptable.

NRC Generic Letter (GL) 86-10 indicates that the staff has accepted radiant energy shield installations where:

- "...an applicant can justify that a proposed radiant energy shield can achieve an equivalent level of safety, we have been accepting shields

that have not been tested against the acceptance criteria of ASTM E-119.”

- “...we have accepted non-fire-rated radiant energy shields that have been demonstrated by fire hazards analysis to provide an acceptable level of protection against the anticipated hazard of a localized fire within the containment...”

For the St. Lucie Unit 2 Containment, the NRC accepted the following variation, as described on page 9-12 of NUREG 0843, Supplement No. 3:

“By letter dated October 28, 1982 the licensee committed to install noncombustible radiant energy shields beneath the lowest redundant Division A and Division B cable trays at each elevation and to enclose all safe shutdown cables installed in conduit that are not separated from the redundant cable trays by 20 ft, in a 1-hour fire-rated barrier.

Due to the restricted access to this area, an exposure fire from the accumulation of transient combustibles which could cause damage to redundant cables is unlikely. The noncombustible radiant energy shields installed beneath the lowest cable tray of each redundant division will divert the hot gas plume from the cable and the high ceiling will prevent stratification of the hot gases. Therefore, there is reasonable assurance that one train of safe shutdown systems will be free of fire damage.”

Based on the justifications provided, it is concluded that the flame impingement shields are not intended to ensure that protected cables remain free of fire damage for a specific rated duration, nor are they intended to limit the transfer of heat to the unexposed side to a predetermined level, but rather, are intended to deflect heat away from the protected cables so that it will dissipate into the voluminous containment atmosphere.

- b. **A description of the controls that were used to ensure that other fire barrier types relied on for separation of redundant trains located in a single fire area are capable of providing the necessary level of protection. Addressees may reference their responses to GL 92-08 to the extent that the responses address this specific issue.**

FPL Response:

Electrical Raceway Fire Barrier Systems (ERFBS):

Design requirements for Thermo-Lag installations are established and maintained via Specification MN-3.21. The design configurations are qualified by direct testing, by Fire Protection Evaluation Records (FPERs) which document fire resistance equivalency pursuant to GL 86-10 guidance or by a combination of these methods. Materials used in Thermo-Lag applications are Quality Related and procured to ensure that critical properties and characteristics of the procured material are within acceptance limits.

Radiant Energy Shields (RES):

Design requirements for the material and configurations used as radiant energy shield installations (stainless steel or Mecatiss) in containment are established and provided with engineering justification and evaluation in licensing correspondence, plant change modifications, FPERs or by a combination of these methods. The design configurations are qualified by direct testing or by evaluations which document fire resistance equivalency pursuant to GL 86-10 guidance. Because these are applications not utilized outside of containment, their configuration is considered more specific and as such, there are no general plant specifications to control their design configurations.

Materials used in flame impingement shields and radiant energy barrier applications are Quality Related and procured to ensure that critical properties and characteristics of the procured material are within acceptance limits.

Administrative Controls:

Administrative controls including operability requirements, actions and inspection frequencies for the plant fire protection program are provided in St. Lucie Administrative Procedure AP1800022, *Fire Protection Plan*. This procedure describes Fixed Fire Protection Features – Controls and Compensatory Measures including Fire Barriers and Penetration Seals. Included in this procedure is the following statement: “Fire barrier descriptions and design basis information is included in UFSAR Appendix

9.5A, Section 3.11 for each unit.” AP1800022 further notes that fire barriers are a passive element in the facility fire protection program and are subject to periodic inspection. Specific fire barrier surveillance requirements and frequencies are provided in the implementing procedure for inspection of raceway protection installations - Fire Protection Surveillance procedure FPSP-15.01, Fire Barrier Inspection. The implementing procedure for inspection of raceway protection installations prescribes acceptance criteria and immediate compensatory actions if acceptance criteria are not met. Impairments and deviations are entered into and addressed through the station Corrective Action Program.

These controls assure that fire barrier installations relied on for separation of redundant trains at St. Lucie are capable of providing the necessary level of protection.

2. **Within 60 days of the date of this GL, for those addressees that have installed Hemyc or MT fire barrier materials, discuss the following:**
 - a. **The extent of the installation (e.g. linear feet of wrap, areas installed, systems protected).**

FPL Response:

The following describes the extent of Hemyc material installation at St. Lucie Unit 2 :

Linear feet of wrap:

Plant Drawings 2298-G-365 and 2298-G-375 depict Hemyc coverage requirements as a Flame Impingement Shield (FIS). The total length of tray requiring FIS is approximately 110 feet. Drawing 2298-G-271, Sheet 4-7, depicts the installation of Hemyc on the cable trays. Additionally, FPL letter L-83-231, dated April 14, 1983, describes the material as follows:

The 1 1/2” insulating blanket as manufactured by B&B Insulation, Inc...
...The blankets will be employed in a 3’ width which is sufficient to cover the entire tray bottom (2’ width) with 6 inches on each side of the tray and will be strapped on such that it will remain in place after a Design Basis Event (DBE).

Areas installed:

Hemyc horizontal flame impingement shields are installed below the lowest tray in each stack of cable trays that contain redundant safe shutdown cables when 20 foot separation is not met on the 23’ elevation of the Unit 2 Containment Building.

Systems protected:

Hemyc flame impingement shields are installed on cable trays L2211 (NA), L2212 (NB), and L2214 (SB). The following systems are protected by the presence of the flame impingement shields based on a review of the Essential Cables in the Safe Shutdown Analysis:

CVCS Chemical Volume Control System
HLP High Low Pressure Interface
HSP Hot Shutdown Panel
INST Instrumentation
MS Main Steam
SI Shutdown Cooling/Safety Injection
RCS Reactor Coolant System

- b. Whether the Hemyc and/or MT installed in their plants is conforming with their licensing basis in light of recent findings, and if these findings do not apply, why not.**

FPL Response:

The Hemyc Flame Impingement Shields installed at St. Lucie Unit 2 are in conformance with the licensing basis.

Based on Appendix R guidelines describing separation of cables and equipment and associated non-safety circuits of redundant trains by a noncombustible radiant energy shield, FPL committed in Letter L-82-467, dated October 28, 1982, to install noncombustible radiant energy shields beneath the lowest redundant Division A and Division B cable trays at each elevation.

The application of the Hemyc material as an FIS and supporting fire test documentation supporting the application/configuration were documented in detail in FPL Letter L-83-231 to NRC dated April 14, 1983. This configuration was acknowledged and accepted by the NRC in NUREG 0843, Supplement 3, and in NRC Letter dated March 27, 1984.

The St. Lucie Unit 2 UFSAR related to fire rated barriers inside containment reads: "...All redundant cable trays containing safe shutdown cables are protected by horizontal flame impingement shields located below the lowest tray in each stack, when 20 foot separation is not met. These flame impingement shields consist of 1 ½" insulating blanket and have been subjected to fire tests in accordance with ASTM E-119 fire exposure and ANI/MAERP Bulletin No. 5 (79) and achieved a fire resistance of 1-hour or Mecatiss material, also tested per ASTM E-119. The blankets are employed in a width sufficient to cover the entire tray bottom (2' width) with a 6" overlap on each side of the tray and are strapped as such that it will remain

in place after a DBE. ..." The Unit 2 FSAR as it pertains to the FIS installed using Hemyc materials correctly cites those passages used to communicate the configuration to the NRC in FPL Letter L-83-231, dated April 14, 1983.

FPL design drawing 2998-B-271, Sheet 4-7, depicts the same Hemyc configuration as described in the above mentioned licensing correspondence. Therefore, the as installed configuration of Hemyc is considered to meet the original Unit 2 licensing basis.

Based upon the application and testing of Hemyc, as described above, the plant-specific findings and configuration testing described in Generic Letter 2006-03 are not applicable to St. Lucie Unit 2.

- c. The compensatory measures that have been implemented to provide protection and maintain the safe shutdown function of affected areas of the plant in light of the recent findings associated with Hemyc and MT installations, including evaluations to support the addressees' conclusions.**

FPL Response:

Based on FPL's response to Section 2.b above, compensatory measures are not required to provide protection and maintain the safe shutdown function of affected areas of the plant.

- d. A description of, and implementation schedules for, corrective actions, including a description of any licensing actions or exemption requests needed to support changes to the plant licensing basis.**

FPL Response:

The above information shows that the installation of Hemyc at St. Lucie Unit 2 complies with the original licensing basis. Accordingly, no corrective actions are required.

- 3. No later than December 1, 2007, addressees that identified in 1.a. Hemyc and/or MT configuration are requested to provide a description of actions taken to resolve the nonconforming conditions described in 2.d.**

FPL Response:

Since no corrective actions were identified in 2.d. above, this question is not applicable.

ATTACHMENT 2

Requested information for Turkey Point Unit 3 and Unit 4

Response to Generic Letter 2006-03, "Potentially Nonconforming Hemyc and MT Fire Barrier Configurations," for Turkey Point Units 3 and 4

1. **Within 60 days of the date of this GL, provide the following:**
 - a. **A statement on whether Hemyc or MT fire barrier material is used at their NPPs and whether it is relied upon for separation and/or safe shutdown purposes in accordance with the licensing basis, including whether Hemyc or MT is credited in other analyses (e.g., exemptions, license amendments, GL 86-10 analyses).**

FPL Response:

Turkey Point Units 3 and 4 use Thermo-Lag systems for raceway protection. Neither Hemyc nor MT fire barrier material is relied upon for separation and/or safe shutdown purposes nor credited in any analyses.

- b. **A description of the controls that were used to ensure that other fire barrier types relied on for separation of redundant trains located in a single fire area are capable of providing the necessary level of protection. Addressees may reference their responses to GL 92-08 to the extent that the responses address this specific issue.**

FPL Response:

For Turkey Point Units 3 and 4, Thermo-Lag system designs are based on direct qualification testing or fire resistance equivalency evaluations performed using guidance from GL 86-10 and Supplement 1. Thermo-Lag design and material procurement requirements are prescribed by engineering specification. Installation and inspection guidelines are also provided in the design specification and the scope of Thermo-Lag installations is indicated on plant drawings.

Operability requirements, actions and inspection frequencies are prescribed by the Fire Protection Specifications incorporated in the Fire Protection Program. The implementing procedure for inspection of raceway protection installations prescribes acceptance criteria and immediate compensatory actions if acceptance criteria are not met. Impairments and deviations are entered into and addressed through the station Corrective Action Program.

These controls assure that Thermo-Lag fire barrier installations relied on for separation of redundant trains located in a single fire area are capable of providing the necessary level of protection. The associated licensing bases are referenced in License Condition 3.D of the respective unit operating license as Safety Evaluations dated February 24, 1998, October 8, 1998, May 4, 1999 and May 5, 1999.

- 2. Within 60 days of the date of this GL, for those addressees that have installed Hemyc or MT fire barrier materials, discuss the following in detail:**
- a. The extent of the installation (e.g., linear feet of wrap, areas installed, systems protected),**
 - b. Whether the Hemyc and/or MT installed in their plants is conforming with their licensing basis in light of recent findings, and if these recent findings do not apply, why not,**
 - c. The compensatory measures that have been implemented to provide protection and maintain the safe shutdown function of affected areas of the plant in light of the recent findings associated with Hemyc and MT installations, including evaluations to support the addressees' conclusions, and**
 - d. Description of, and implementation schedules for, corrective actions, including a description of any licensing actions or exemption requests needed to support changes to the plant licensing basis.**

FPL Response:

Not applicable to Turkey Point.

- 3. No later than December 1, 2007, addressees that identified in 1.a. Hemyc and/or MT configurations are requested to provide a description of actions taken to resolve the nonconforming conditions described in 2.d.**

FPL Response:

Not applicable to Turkey Point.

ATTACHMENT 3

Requested information for Seabrook Station

Response to Generic Letter 2006-03, "Potentially Nonconforming Hemyc and MT Fire Barrier Configurations," for Seabrook Station

1. **Within 60 days of the date of this GL, provide the following:**
 - a. **A statement on whether Hemyc or MT fire barrier material is used at their NPPs and whether it is relied upon for separation and/or safe shutdown purposes in accordance with the licensing basis, including whether Hemyc or MT is credited in other analyses (e.g., exemptions, license amendments, GL 86-10 analyses).**

FPL Response:

Seabrook uses 3M Interamtm E-50 series fire wrap system for separation of redundant trains located in a single fire area. Neither Hemyc or MT fire barrier material is relied upon for separation and/or safe shutdown purposes nor credited in any analyses.

- b. **A description of the controls that were used to ensure that other fire barrier types relied on for separation of redundant trains located in a single fire area are capable of providing the necessary level of protection. Addressees may reference their responses to GL 92-08 to the extent that the responses address this specific issue.**

FPL Response:

For Seabrook Station, the 3M Interamtm E-50 series fire wrap system designs are based on fire resistance testing. Design and material procurement requirements are prescribed by engineering specification. Installation and inspection guidelines in plant procedures are in conformance with original equipment manufacturer's requirements and specifications.

Fire barrier operability, actions and inspection frequencies are prescribed in Seabrook Station Technical Requirements Manual. The implementing procedure for inspection of fire barriers includes inspection criteria, and applicable compensatory measures to be implemented if acceptance criteria are not met.

These controls assure that the 3M Interamtm E-50 series fire wrap system relied on for separation of redundant trains located in a single fire area are capable of providing the necessary level of protection.

- 2. Within 60 days of the date of this GL, for those addressees that have installed Hemyc or MT fire barrier materials, discuss the following in detail:**
- a. The extent of the installation (e.g., linear feet of wrap, areas installed, systems protected),**
 - b. Whether the Hemyc and/or MT installed in their plants is conforming with their licensing basis in light of recent findings, and if these recent findings do not apply, why not,**
 - c. The compensatory measures that have been implemented to provide protection and maintain the safe shutdown function of affected areas of the plant in light of the recent findings associated with Hemyc and MT installations, including evaluations to support the addressees' conclusions, and**
 - d. description of, and implementation schedules for, corrective actions, including a description of any licensing actions or exemption requests needed to support changes to the plant licensing basis.**

FPL Response:

Not applicable to Seabrook Station.

- 3. No later than December 1, 2007, addressees that identified in 1.a. Hemyc and/or MT configurations are requested to provide a description of actions taken to resolve the nonconforming conditions described in 2.d.**

FPL Response:

Not applicable to Seabrook Station.

ATTACHMENT 4

Requested information for Duane Arnold Energy Center

Response to Generic Letter 2006-03, "Potentially Nonconforming Hemyc and MT Fire Barrier Configurations," for Duane Arnold Energy Center (DAEC)

1. **Within 60 days of the date of this GL, provide the following:**
 - a. **A statement on whether Hemyc or MT fire barrier material is used at their NPPs and whether it is relied upon for separation and/or safe shutdown purposes in accordance with the licensing basis, including whether Hemyc or MT is credited in other analyses (e.g., exemptions, license amendments, GL 86-10 analyses).**

FPL Response:

MT fire barrier material has never been installed at DAEC and, therefore, is not relied upon for separation and/or safe shutdown purposes nor credited in any analyses.

Hemyc fire barrier material is not currently installed at DAEC. DAEC does not rely on Hemyc fire barrier material for separation and/or safe shutdown purposes and does not credit Hemyc in any other analyses. DAEC does have an approved exemption for the use of an untested flexible conduit wrapping material (Hemyc) as documented in NRC letter from Cappucci to Liu, dated October 14, 1987, titled "Exemption from Appendix R to 10 CFR 50 Concerning Separating Redundant Train by 3-Hour Fire Barriers and Providing Automatic Fire Suppression and Detection System." DAEC, however, is no longer utilizing this exemption and no longer has Hemyc installed.

- b. **A description of the controls that were used to ensure that other fire barrier types relied on for separation of redundant trains located in a single fire area are capable of providing the necessary level of protection. Addressees may reference their responses to GL 92-08 to the extent that the responses address this specific issue.**

FPL Response:

As part of the DAEC Thermo-lag Issue Resolution, Darmatt was installed on certain electrical raceways in Fire Zone 2A, as described in letter dated October 31, 1997, from J Franz (IES) to S Collins (NRC) titled "Thermo-lag Final Resolution Report." In addition, two masonry walls were constructed to separate Division 2 post fire safe shutdown cables within Appendix R Fire Zones 7A and 7C. These masonry block walls are installed to Uniform Building Code Chapter 43 to provide a minimum equivalent thickness required for a 3-hour rated installation.

- 2. Within 60 days of the date of this GL, for those addressees that have installed Hemyc or MT fire barrier materials, discuss the following in detail:**
- a. The extent of the installation (e.g., linear feet of wrap, areas installed, systems protected),**
 - b. Whether the Hemyc and/or MT installed in their plants is conforming with their licensing basis in light of recent findings, and if these recent findings do not apply, why not,**
 - c. The compensatory measures that have been implemented to provide protection and maintain the safe shutdown function of affected areas of the plant in light of the recent findings associated with Hemyc and MT installations, including evaluations to support the addressees' conclusions, and**
 - d. description of, and implementation schedules for, corrective actions, including a description of any licensing actions or exemption requests needed to support changes to the plant licensing basis.**

FPL Response:

Not applicable to Duane Arnold Energy Center.

- 3. No later than December 1, 2007, addressees that identified in 1.a. Hemyc and/or MT configurations are requested to provide a description of actions taken to resolve the nonconforming conditions described in 2.d.**

FPL Response:

Not applicable to Duane Arnold Energy Center.