



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

March 10, 2009

Chris L Burton, Vice President
Shearon Harris Nuclear Power Plant
Carolina Power & Light Company
Post Office Box 165, Mail Zone 1
New Hill, North Carolina 27562-0165

SUBJECT: SHEARON HARRIS NUCLEAR POWER PLANT – REGULATORY AUDIT IN SUPPORT OF THE LICENSE AMENDMENT REQUEST TO IMPLEMENT A RISK-INFORMED, PERFORMANCE-BASED FIRE PROTECTION PROGRAM AS ALLOWED BY TITLE 10 OF THE CODE OF FEDERAL REGULATIONS, PARAGRAPH 50.48(c) “FIRE PROTECTION” (TAC NO. MD8807)

Dear Mr. Burton:

This letter is to provide you with a copy of our plan for conducting a regulatory audit in support of the Nuclear Regulatory Commission (NRC) staff review of your license amendment request to implement a risk-informed, performance-based fire protection program as allowed by Title 10 of the *Code of Federal Regulations*, Paragraph 50.48(c), “Fire Protection.”

Enclosed is the NRC plan for conducting the regulatory audit. This audit is currently scheduled to take place at the Shearon Harris Nuclear Power Plant (Harris) site during the week of March 16, 2009. NRC staff and contractors will require access to the documentation that supports the subject license amendment request and to personnel knowledgeable in the related analyses (please refer to Section IV of the enclosed regulatory audit plan). The audit team will also perform plant walk-downs for certain parts of the audit and will require escorted access to portions of the Harris plant in the protected area.

If you have any questions regarding this matter, please contact me at (301) 415-3178.

Sincerely,

A handwritten signature in black ink, appearing to read "Marlayna Vaaler".

Marlayna Vaaler, Project Manager
Plant Licensing Branch II-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-400

Enclosure: As stated

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
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REGULATORY AUDIT IN SUPPORT OF THE LICENSE AMENDMENT REQUEST TO
IMPLEMENT THE NATIONAL FIRE PROTECTION ASSOCIATION STANDARD 805,
"PERFORMANCE-BASED STANDARD FOR FIRE PROTECTION FOR LIGHT WATER
REACTOR ELECTRIC GENERATING PLANTS," AS INCORPORATED INTO TITLE 10 OF
THE CODE OF FEDERAL REGULATIONS, PARAGRAPH 50.48(c) "FIRE PROTECTION"

RENEWED FACILITY OPERATING LICENSE NO. NPF-63

CAROLINA POWER & LIGHT COMPANY

SHEARON HARRIS NUCLEAR POWER PLANT, UNIT 1

DOCKET NO. 50-400

I. BACKGROUND

The Shearon Harris Nuclear Power Plant (Harris) has submitted a license amendment request (LAR) (references 1, 2, and 3) to change its fire protection program to one based on the National Fire Protection Association (NFPA) standard NFPA 805, "Performance-Based Standard for Fire Protection for Light Water Reactor Electric Generating Plants," as incorporated into Title 10 of the *Code of Federal Regulations* (10 CFR), Paragraph 50.48(c), "Fire Protection."

The Nuclear Regulatory Commission (NRC) review of the LAR proceeds in accordance with the Office of Nuclear Reactor Regulation (NRR) Office Instruction LIC-101, "License Amendments." If deemed appropriate for a given review, a regulatory audit of the licensee may be conducted in accordance with LIC-111, "Regulatory Audits," for the staff to gain a better understanding of the licensee's calculations, proposed plant modifications, and other aspects of the LAR.

A regulatory audit is a planned, license or regulation-related activity that includes the examination and evaluation of primarily non-docketed information. A regulatory audit is conducted with the intent to gain understanding, to verify information, and/or to identify information that will require docketing to support the basis of a licensing or regulatory decision. Performing a regulatory audit of licensee information may assist the staff in efficiently conducting its review or help gain insights into the licensee's processes or procedures. Information that the NRC staff relies upon to make the safety determination must be submitted on the docket. However, there may be supporting information retained as records under 10 CFR 50.71 and/or 10 CFR 54.37 that, although not required to be submitted as part of the licensing action, would help the staff better understand licensee submitted information.

The objectives of this regulatory audit are to:

- Gain a better understanding of the detailed calculations, analyses and bases underlying the NFPA 805 LAR and confirm the staff's understanding of the LAR;

Enclosure

- Identify further information that is necessary for the licensee to submit on the docket for the staff to reach a licensing or regulatory decision; this will result in formal requests for additional information (RAIs);
- Verify that the licensee's planned process for self-approval of fire protection program (FPP) changes will meet the proposed NFPA 805 license condition and quality requirements;
- Establish an understanding of proposed plant modifications necessary to implement NFPA 805; and,
- Verify the implementation of processes or procedures that the licensee committed to as part of NFPA 805 implementation.

II. REGULATORY AUDIT BASIS

The basis of this audit is the Standard Review Plan (SRP) Section 9.5.1.2, "Risk-Informed, Performance-Based (RI/PB) Fire Protection" (reference 4), and the LAR (references 1, 2, and 3). References 5 through 9 provide additional information that will be used to support the audit.

III. REGULATORY AUDIT SCOPE OR METHOD

The scope of this audit will be the licensee's proposed transition to NFPA 805, including planned and completed modifications to achieve compliance with that standard, risk assessments of any non-compliant plant configurations going forward, and the process the licensee proposes to use for self-approval of future fire protection changes. Any calculation, evaluation, risk assessment, procedure, or other document related to the licensee's LAR may be reviewed at the discretion of the Audit Leader.

The reviewers will focus the audit on the areas shown in the list below.

1. Fundamental Fire Protection Program Elements and Minimum Design Requirements

- a. Confirm key features of the licensee's fundamental FPP and design elements as required by Chapter 3 of NFPA 805 [SRP III.2].
- b. Perform the following reviews on attributes required by Chapter 3 of NFPA 805 as necessary.
 - i. Verify the accuracy of a sample of performance-based Fire Protection engineering evaluations, which the licensee has performed to demonstrate compliance with the Fundamental FPP and Design Elements.
 - ii. Review the regulatory basis, reference documents, licensing actions, and existing engineering equivalency evaluations (EEEEEs).
 - iii. Review a sample of EEEEEs that the licensee did not submit for NRC review to ensure that the EEEEEs are acceptable for the NFPA 805 licensing basis.

- iv. Review a sample of issues which the licensee has deemed “previously approved” to ensure that appropriate documents exist in support of the licensee’s conclusions.

2. Nuclear Safety Performance Criteria

- a. Non-Power Operational Modes: Review a sample of the licensee’s procedures and calculations related to fires during non-power operations. Verify that the licensee’s processes enable the licensee to demonstrate that the nuclear safety performance criteria are met during Higher Risk Evolutions [SRP III.3.3].
- b. Operational Guidance: Review a sample of the operational guidance required by Section 4.2.4.1.6 of NFPA 805. Review a sample of the licensee’s procedures to provide guidance to plant personnel that detail the credited success path(s) for each fire area, including the performance of recovery actions and repairs [SRP III.3.2.2].
- c. Compliance by Fire Area: Perform the following reviews on one or more fire areas.
 - i. Review the licensee’s evaluation of compliance to NFPA 805 paragraph 4.2.3 deterministic requirements, performance-based methods as allowed under NFPA 805 paragraph 4.2.4, or RI/PB alternatives to compliance with NFPA 805 pursuant to 10 CFR 50.48(c)(4) [SRP III.3.2].
 - ii. Review the process used by the licensee to address multiple spurious operations (MSOs) [SRP III.3.1.3].
 - iii. Review the transition of operator manual actions (OMAs) to recovery actions [SRP III.3.2.2].
 - iv. Verify the accuracy of a sample of Fire Protection engineering evaluations, which the licensee has performed to demonstrate compliance to the deterministic requirements of NFPA 805 Section 4.2.3.
 - v. Review the regulatory basis, performance goal summary, reference documents, licensing actions, and EEEEs [SRP III.3.2].
 - vi. Review a sample of EEEEs, which the licensee did not submit for staff review, to ensure that the EEEEs are acceptable for the NFPA 805 licensing basis [SRP III.3.2].
 - vii. Review a sample of issues which the licensee has deemed “previously approved” to ensure that appropriate documents exist in support of the licensee’s conclusions [SRP III.3.2].

3. Risk Assessments and Plant Change Evaluations

- a. Self-Approval of Certain FPP Changes: Review the licensee’s process for self-approving FPP changes post-transition and determine whether the licensee has adequate processes in place to ensure that acceptable probabilistic risk

analysis (PRA) model quality is maintained and that defense-in-depth and safety margins are appropriately addressed after transition [SRP III.1.3].

- b. Risk Assessments and Plant Change Evaluations:
 - i. Explore any apparent issues with the technical adequacy of the licensee's fire PRA by reviewing a sample of fire PRA calculations, analysis procedures, PRA peer review documentation, system notebooks, or similar information. Review a sample of the processes established by the licensee to maintain the quality of its PRA and Fire Modeling calculations after the licensee receives the NFPA 805 license. As necessary, review a sample of the licensee's resolutions of the findings from the peer review of its Fire PRA [SRP III.5.1].
 - ii. For one or more fire areas, review sample risk assessments and plant change evaluations. The staff will verify that the applicant has provided a risk summary, including identifying fire hazards, reporting changes in core damage frequency (CDF) and large-early release frequency (LERF), identifying the significant core damage sequences and initiating events, and providing other information in accordance with Regulatory Guide 1.174 "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis" [SRP III.3.2; SRP III.5].
- c. Defense-in-Depth and Safety Margins: Review selected plant change evaluations and fire risk evaluations to ensure that the philosophy of defense-in-depth and adequate safety margins are maintained relative to fire protection and nuclear safety [SRP III.5.2].
- d. Monitoring Program: Review a sample of the licensee's procedures to verify that the licensee has established a monitoring program to ensure that the availability and reliability of the fire protection systems and features are maintained and to assess performance of the fire protection program in meeting the performance criteria [SRP III.6].

4. Other Audit Topics

- a. Modifications: Review selected plant modifications that the licensee has identified as necessary to implement the RI/PB FPP to confirm they have been appropriately characterized in the analyses submitted in the LAR. Review the process for controlling compensatory measures to confirm their adequacy while they remain in effect until the modification is completed [SRP III.1.2].
- b. Documentation, Configuration Control, Quality:
 - i. Review a sample of the document(s) the licensee created to document fire hazards identification and nuclear safety capability assessments, on a fire area basis, for all fire areas that could affect the nuclear safety or radioactive release performance criteria defined in NFPA 805 Chapter 1, and verify its adequacy [SRP III.7.1].

- ii. Review the licensee's process for controlling the FPP design basis document. Verify that the configuration management process addresses changes affecting the design, operation, or maintenance of the plant so that they are reviewed to determine if these changes impact the fire protection program documentation [SRP III.7.2].
 - iii. Review the licensee's FPP quality program. Review a sample of the licensee's calculations to verify that they have been subjected to an independent review [SRP III.7.3].
 - iv. Review a sample of the licensee's fire modeling calculations to ensure that the licensee has used fire models acceptable to the NRC, and that the conclusions drawn based on fire models have considered the limitations of the models.
- c. Perform walkdowns as necessary to confirm features of the licensee's FPP and design elements.

IV. INFORMATION AND OTHER MATERIALS NECESSARY FOR THE AUDIT

The NRC audit team will require access to personnel knowledgeable regarding the technical aspects of the Harris LAR. The following documentation should be available to the audit team:

- Calculational models and supporting documentation for PRA models used in support of the LAR, including peer review history and resolution of peer review significant findings;
- Calculational models and supporting documentation for fire models used in support of the LAR;
- Procedures that have been modified or developed to transition to the NFPA 805 licensing basis;
- Procedures that have been modified or developed to maintain the NFPA 805 licensing basis;
- Documentation of changes made to (or planned for) PRA models in support of change analysis;
- Documentation of plant modifications or operational changes identified, screened, and considered (or planned for) during the licensee's transition to NFPA 805; and,
- Any additional documents, which the licensee deems necessary to support the NRC staff's audit, as outlined under audit activities.

V. TEAM ASSIGNMENTS

The audit will be conducted by NRC staff from the Office of Nuclear Reactor Regulation (NRR) Division of Risk Assessment (DRA). Staff from the Fire Protection Branch (AFPB) and the PRA Licensing Branch (APLA), along with contractor personnel knowledgeable in PRA and Fire

Protection, will comprise the audit team. NRC staff members from other organizations may be assigned to the team as appropriate. Other NRC staff members or contractors may participate as observers.

The team lead for this regulatory audit is Mr. Steven Laur. The table below shows the planned audit team composition and their assigned areas for review during the audit.

Team Lead: Steve Laur NRC Technical Lead on Harris NFPA 805 LAR: Harry Barrett NRC Project Manager: Marlayna Vaaler NRC Contractor Team Lead: Rich Denning Team Technical Assistant: Margaret Stambaugh			
Regulatory Audit Team and Assignments			
Audit Plan Review Area/Short Title		Lead	Support
Team 1	Fundamental Fire Protection Program Existing Licensing Actions Engineering Equivalency Evaluations Radioactive Release Transition Fire Modeling	Charles Moulton	Robert Layton, PNNL
Team 2	Nuclear Safety Capability Assessment Systems and Equipment Selection Nuclear Safety Capability Circuit Analysis Fire Area Assessments Non-Power Operation Assessment	Harold Barrett	Ken Sullivan, BNL Mark Mitchell, PNNL
Team 3	Fire Risk Evaluations Fire PRA Scope, Level of Detail & Quality Change Evaluations Modifications	Andrew Howe (Stephen Dinsmore)	Mike Zentner, PNNL Ray Gallucci
Team 4	Programmatic Transition Monitoring Program Documentation Configuration Management Quality	Rich Denning, PNNL	Team
	Plant Walkdowns	As needed	As needed

VI. LOGISTICS

The regulatory audit is planned to take place during the week of March 16, 2009 and last 5 days. This date is subject to change based on mutual agreement between the licensee and the NRC. An entrance meeting for this audit will be held early the first day. An exit meeting will be held early the final day of the audit to provide preliminary feedback to the licensee. The NRC audit leader will provide a brief, daily update on the progress of the audit to licensee personnel on the second, third and fourth days of the regulatory audit.

The audit will take place at the Harris site or other location agreed upon by the licensee and NRC staff where (1) the necessary reference material and (2) appropriate personnel will be available to support the review. Because the audit scope includes NRC staff walkdowns of selected fire areas, the regulatory audit must be conducted in a location that supports escorted access to the plant protected area.

The key milestones for this audit and the relative time period for each are shown in the table:

Audit Milestones and Schedule Relative to First Regulatory Audit Day Onsite		
Activity	Time Frame*	Comments
Onsite audit	3/16-20/2009	Reviewers at licensee location for 5 days
Audit Summary	4/24/09	See Section VIII
RAIs to Licensee	05/1/09	To support safety evaluation

VII. SPECIAL REQUESTS

The regulatory audit team will require the following to support the regulatory audit:

- Escorted access to fire areas within the protected area.
- One or more computers with internet access.
- A private conference room to support document review and audit team meetings.
- Access to the fire protection program documentation, including the Fire Hazards Analysis, Safe Shutdown Analysis and Fire PRA.
- Access to licensee personnel knowledgeable in the fire protection program, safe shutdown analysis, fire PRA and the NFPA 805 fire protection design basis document.

VIII. DELIVERABLES

A regulatory audit summary will be issued within approximately 90 days of the completion of the audit. The audit summary will use the guidance of NRR Office Instruction LIC-111 for content. Because this regulatory audit will likely result in formal requests for additional information from the licensee regarding the LAR, the audit summary itself is expected to be an internal memorandum from the regulatory audit team leader to his responsible supervisor. The audit summary will be placed in ADAMS.

IX. REFERENCES

1. Letter from R. J. Duncan, II, Progress Energy Carolinas Inc. to U.S. Nuclear Regulatory Commission, "Request for License Amendment to Adopt NFPA 805 Performance-Based Standard for Fire Protection for Light Water Reactor Generating Plants (2001 Editions)," Serial No. HNP-08-061, May 29, 2008 (ADAMS accession number ML081560639).
2. Letter from C. L. Burton, Progress Energy Carolinas Inc. to U.S. Nuclear Regulatory Commission, "Supplement to Request for License Amendment to Adopt NFPA 805

Performance-Based Standard for Fire Protection for Light Water Reactor Generating Plants (2001 Editions)," Serial No. HNP-08-113, November 14, 2008 (ADAMS accession number ML083240601).

3. Letter from K. A. Harshaw, Progress Energy Carolinas Inc. to U.S. Nuclear Regulatory Commission, "Supplement 2 to Request for License Amendment to Adopt NFPA 805 Performance-Based Standard for Fire Protection for Light Water Reactor Generating Plants (2001 Editions)," Serial No. HNP-08-121, December 11, 2008 (ADAMS accession number ML083510190).
4. U.S. NRC, Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants, NUREG-0800, Section 9.5.1.2, "Risk-Informed, Performance-Based Fire Protection Program," draft for public comment (Federal Register 74 FR 6181).
5. Title 10 Code of Federal Regulations, Part 50, Section 48 (10 CFR 50.48), "Fire Protection."
6. NFPA 805, "Performance-Based Standard for Fire Protection for Light Water Reactor Electric Generating Stations," 2001 Edition.
7. Regulatory Guide 1.205, "Risk-Informed, Performance-Based Fire Protection for Existing Light-Water Nuclear Power Plants," May 2006.
8. Nuclear Energy Institute, NEI 04-02, "Guidance for Implementing a Risk-Informed, Performance-Based Fire Protection Program Under 10 CFR 50.48(c)," Revision 1, September 2005.
9. Nuclear Energy Institute, NEI 00-01, Guidance for Post-Fire Safe Shutdown Analysis, Rev 1, November 2004.

March 10, 2009

Chris L Burton, Vice President
Shearon Harris Nuclear Power Plant
Carolina Power & Light Company
Post Office Box 165, Mail Zone 1
New Hill, North Carolina 27562-0165

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Sincerely,
/RA/

Marlayna Vaaler, Project Manager
Plant Licensing Branch II-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-400

Enclosure: As stated

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