

February 12, 2009

Mr. Dave Baxter
Vice President, Oconee Site
Duke Energy Carolinas, LLC
7800 Rochester Highway
Seneca, SC 29672

SUBJECT: OCONEE NUCLEAR STATION, UNITS 1, 2 AND 3 – 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 NOS. ME0395, ME0396, ME0397)

Dear Mr. Baxter:

This letter is to provide you with a copy of our plan for conducting a regulatory audit in support of 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*, Part 50, Section 50.48(c), “Fire Protection.”

Enclosed is the NRC plan for conducting this regulatory audit. This audit is currently scheduled to take place at the Oconee Nuclear Station, Units 1, 2 and 3 (Oconee) the week of February 23, 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 Oconee plant in the protected area.

If you have any questions regarding this matter, please contact me at (301) 415-1345.

Sincerely,

/RA/

John F. Stang, Project Manager
Plant Licensing Branch II-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-269, 50-270, 50-287

Enclosure: NRC Regulatory Audit

cc w/encl: Distribution via Listserv

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OFFICIAL RECORD COPY

OCONEE NUCLEAR STATION, UNITS 1, 2 AND 3
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”
DOCKET NOS 50-269, 50-270 AND 50-287

I. BACKGROUND

The Oconee Nuclear Station, Units 1, 2 and 3 (Oconee) has submitted a license amendment request (LAR) (References 1 and 2) 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), Part 50, Section 50.48(c), “Fire Protection.”

The Nuclear Regulatory Commission (NRC) staff’s review of the LAR proceeds in accordance with the Office of Nuclear Reactor Regulation’s (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 the licensing or regulatory decision. Performing a regulatory audit of licensee information may assist the staff in efficiently conducting its review or gain insights on 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 the licensee’s 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;
- Identify further information that is necessary for the licensee to submit for the staff to reach a licensing or regulatory decision; this will result in requests for additional information (RAIs);

Enclosure

- 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 draft Standard Review Plan (SRP) Section 9.5.1.2, "Risk-Informed, Performance-Based (R/PB) Fire Protection" (Reference 3), and the LAR (References 1 and 2). References 4 through 8 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 to the Fundamental Fire Protection Program and Design Elements.
 - ii. Review the regulatory basis, reference documents, licensing actions, and existing engineering equivalency evaluations (EEEEEs).
 - iii. Review a sample of EEEEEs, which the licensee did not submit for staff 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 details 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 Risk-Informed/Performance-Based (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 Fire Protection Program (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 FPP 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, and Quality:
 - i. Review a sample of the document the licensee created to document fire hazards identification and nuclear safety capability assessment, 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 MATERIAL NECESSARY FOR THE REGULATORY AUDIT

The NRC audit team will require access to personnel knowledgeable regarding the technical aspects of the Oconee 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,
- Other documents, which the licensee deems as necessary to support the NRC staff's audit, 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 and others may participate as observers.

The NRC team lead for this regulatory audit is Mr. Paul Lain and Steve Laur will attend as a Senior Advisor. The table below shows the planned audit team composition and their assigned areas for review during the audit.

| Regulatory Audit Team and Assignments | | | |
|---------------------------------------|---|---------------------|---------------------------------|
| | Audit Plan Review Area/Short Title | Lead | Support |
| III.1 | Confirm key features fundamental FPP/design elements (NFPA 805 Chapter 3) | Robert Layton, PNNL | Naeem Iqbal |
| III.2.a | Non-power operation | Ken Sullivan, BNL | Ray Gallucci & Jeff Circle |
| III.2.b | Operations guidance for fire modeling PB method | Robert Layton, PNNL | Naeem Iqbal |
| III.2.c.i | Fire area compliance to 4.2.3 deterministic requirements | Robert Layton, PNNL | Naeem Iqbal |
| III.2.c.i | Fire area compliance to 4.2.4.1 fire modeling | Robert Layton, PNNL | Naeem Iqbal |
| III.2.c.i | Fire area compliance to 4.2.4.2 fire risk assessment | Tye Blackburn, PNNL | Stephen Dinsmore |
| III.2.c.i | RI/PB alternatives under 50.48(c)(4) | Team | Team |
| III.2.c.ii | Multiple spurious operation | Ken Sullivan, BNL | Jeff Circle |
| III.2.c.iii | Recovery Actions | Tye Blackburn, PNNL | Stephen Dinsmore & Steven Short |
| III.2.c.iv, v, vi, vii | Engineering evaluations, EEEEs, previous approval | Robert Layton, PNNL | Ray Gallucci |
| III.3.a | Licensee self-approval | Tye Blackburn, PNNL | Stephen Dinsmore |
| III.3.b.i | PRA technical adequacy | Tye Blackburn, PNNL | Stephen Dinsmore |
| III.3.b.ii | Risk assessments | Tye Blackburn, PNNL | Ray Gallucci & Stephen Dinsmore |
| III.3.c | DID and safety margins | Robert Layton, PNNL | Team |
| III.3.d | Monitoring program | Steven Short, PNNL | Team |
| III.4.a | Modifications | Steven Short, PNNL | Ray Gallucci & Stephen Dinsmore |
| III.4.b | Documentation, Configuration Control, Quality | Steven Short, PNNL | Team |
| III.4.c | Plant walk-downs | as needed | as needed |
| | Observers: NRR Program Managers and Various Regional Inspectors | | |

VI. LOGISTICS

This regulatory audit is planned to take place the week of February 23, 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 at 1:00 p.m. on the first day. An exit meeting will be held at 10:00 a.m. the final day of the audit to provide preliminary feedback to the licensee. The NRC audit leader should provide a brief, daily update of 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 Oconee site or other location agreed upon by the licensee and NRC staff where (1) the necessary reference material and (2) appropriate analysts 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 | 02/23 – 27/09 | Reviewers at licensee location for 5 days. |
| Audit Summary (see VIII) | 03/27/09 | To document the audit. |
| RAIs to Licensee | 03/31/09 | 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.
- 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 30 days of the completion of the audit. The summary will use the guidance of NRR Office Instruction LIC-111 for content. Since this regulatory audit will likely result in formal requests for additional information from the licensee regarding the LAR, the summary itself is expected to be an internal memorandum from the regulatory audit team leader to the responsible supervisor. The audit summary will be placed in ADAMS.

IX. REFERENCES

1. Letter from R. A. Jones, Duke Energy Carolinas, LLC, to U.S. Nuclear Regulatory Commission, "Oconee Nuclear Site Units 1, 2, and 3, Docket Numbers 50-269, 50-270 and 50-287, License Amendment Request to Adopt NFPA 805 Performance-Based Standard for Fire Protection for Light Water Reactor Generating Plants (2001 Edition), License Amendment Request No. 2008-01," May 30, 2008 (ADAMS accession no. ML081650507).
2. Letter from D. Baxter, Duke Energy Carolinas, LLC, to U.S. Nuclear Regulatory Commission, "Oconee Nuclear Site Units 1, 2, and 3, Docket Numbers 50-269, 50-270 and 50-287, License Amendment Request to Adopt NFPA 805 Performance-Based Standard for Fire Protection for Light Water Reactor Generating Plants (2001 Edition), License Amendment Request No. 2008-01," October 31, 2008 (ADAMS accession no. ML083120368).
3. 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 (ADAMS accession no. ML090050052).
4. Title 10 Code of Federal Regulations, Part 50, Section 48 (10 CFR 50.48), "Fire Protection."
5. NFPA 805, "Performance-Based Standard for Fire Protection for Light Water Reactor Electric Generating Stations," 2001 Edition.
6. Regulatory Guide 1.205, "Risk-Informed, Performance-Based Fire Protection for Existing Light-Water Nuclear Power Plants," May 2006.
7. 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.
8. Nuclear Energy Institute, NEI 00-01, Guidance for Post-Fire Safe Shutdown Analysis, Rev 1, November 2004.