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

January 14, 2014

Mr. George T. Hamrick, Vice President
Brunswick Steam Electric Plant
Duke Energy Progress, Inc.
Post Office Box 10429
Southport, North Carolina 28461

SUBJECT: BRUNSWICK STEAM ELECTRIC PLANT, UNITS 1 AND 2 – SECOND REQUEST FOR ADDITIONAL INFORMATION REGARDING VOLUNTARY RISK INITIATIVE NATIONAL FIRE PROTECTION ASSOCIATION STANDARD 805 (TAC NOS. ME9623 AND ME9624)

Dear Mr. Hamrick:

By letter dated September 25, 2012 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML12285A428), Duke Energy Progress, Inc. (the licensee) proposed to amend the operating license for the Brunswick Steam Electric Plant, Units 1 and 2, by adopting a new risk-informed performance-based fire protection licensing basis in accordance with National Fire Protection Association Standard 805. By letter dated May 15, 2013, the Nuclear Regulatory Commission (NRC) requested additional information needed to complete its review (ADAMS Accession No. ML13123A231). The licensee responded by letters dated June 28, July 31, and August 29, 2013.

The NRC staff has reviewed the licensee's application and responses to the NRC staff request for additional information (RAI) and determined that for further information needed to complete its evaluation of the proposed change.

On December 4, 2013, the NRC staff forwarded via e-mail a draft of the second set of RAIs to the licensee. On December 16, 2013, the NRC staff and representatives of the licensee held a conference call to provide the licensee with an opportunity to clarify any portion of the information request and to discuss the response schedule.

The NRC staff's finalized second set of RAIs is enclosed. This request was discussed with Mr. Bill Murray of your staff on January 6, 2014, and it was agreed that the licensee would respond by February 28, 2014.

The NRC staff considers that timely responses to RAIs help ensure sufficient time is available for staff review and contribute toward the NRC's goal of efficient and effective use of staff resources. Please note that review efforts on this task are continuing and additional RAIs may be forthcoming.

If you have any questions regarding this letter, please feel free to contact me at (301) 415-1447.

Sincerely,

Farideh Saba, Senior Project Manager
Plant Licensing Branch II-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-325 and 50-324

Enclosure:
Request for Additional Information

cc w/encl: Distribution via ListServ

REQUEST FOR ADDITIONAL INFORMATON

VOLUNTARY FIRE PROTECTION RISK INITIATIVE

DUKE ENERGY PROGRESS, INC.

BRUNSWICK STEAM ELECTRIC PLANT, UNITS 1 AND 2

DOCKET NOS. 50-325 AND 50-324

Fire Protection Engineering (FPE) Request for Additional Information (RAI) 01.01

In its letter dated July 31, 2013 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML13220B041), Duke Energy Progress, Inc. (the licensee) responded to FPE RAI 01 and stated "the code of record being used in the development of the very early warning fire detection system (VEWFDS) portion of BSEP [Brusnwick Steam Electric Plant] Engineering Change, EC 50724, is National Fire Protection Association (NFPA) 72, National Fire Alarm Code." In addition, the licensee stated that "appropriate sections of NFPA 76, Standard for the Protection of Telecommunications Facilities" are being used for guidance in accordance with Frequently Asked Question (FAQ) 08-0046.

Provide the specific sections and editions of the standards that will serve as the Codes of Record for the design, installation, and maintenance of the VEWFDS.

FPE RAI 15.01

In its letter dated July 31, 2013, the licensee responded to FPE RAI 15 and provided clarification that the pyrocrete installations in diesel generator cell #1 are not credited for separation criteria in the safe shutdown analysis (SSA) or nuclear safety capability assessment (NSCA), but that they are credited for risk reduction purposes in the fire probabilistic risk assessment (PRA).

NFPA 805, "Performance-Based Standard for Fire Protection for Light-Water Reactor Electric Generating Plants," 2001 Edition, Section 4.1 "Methodology," states: "Chapter 4 shall establish the methodology to determine the fire protection systems and features required to achieve the performance criteria outlined in Section 1.5. The methodology shall be permitted to be either deterministic or performance-based. Deterministic requirements shall be 'deemed to satisfy' the performance criteria and require no further engineering analysis. Once a determination has been made that a fire protection system or feature is required to achieve the performance criteria of Section 1.5, its design and qualification shall meet the applicable requirement of Chapter 3."

Enclosure

Through its analysis, the licensee determined that these installations are required to meet the performance criteria. Therefore, the design and qualification of the credited installations should meet the applicable requirements in NFPA 805, Chapter 3.

a. Provide a detailed description of the credited configurations.

b. Provide the fire resistance rating credited for each installation.

c. Provide a justification or technical basis for the credited fire resistance ratings, including alignment with the appropriate NFPA 805 Chapter 3 attribute or attributes related to passive fire protection features (i.e., 3.11.2, 3.11.4, and 3.11.5).

d. Provide updated License Amendment Request (LAR) Attachment A, Table B-1 entries for the appropriate NFPA 805 Chapter 3 attribute or attributes.

e. Provide a revised LAR Attachment C that includes all fire protection features credited for risk reduction purposes.

FPE RAI 20.01

In its letter dated July 31, 2013, the licensee responded to FPE RAI 20 and continued to support the use of video cameras in lieu of a fire watch for hot work operations and the ability to use a single fire watch for multiple hot work activities. The RAI response and LAR Attachment A, Table B-1 indicate compliance with NFPA 805, Section 3.3.1.3.1 and NFPA 51B, "Standard for Fire Prevention during Welding, Cutting, and Other Hot Work."

NFPA 805, Section 3.3.1.3.1, states that a hot work safety procedure shall be developed, implemented, and periodically updated as necessary in accordance with NFPA 51B, and NFPA 241, "Standard for Safeguarding Construction, Alteration, and Demolition Operations."

However, there is no exception for the use of video cameras, as equivalent to a hot work fire watch, identified in these standards. Additionally, there is no exception for the practice of a single fire watch managing multiple hot work locations identified in these standards. Finally, in neither case has the licensee provided a technical analysis that demonstrates equivalency to a conventional hot work fire watch.

These practices represent new and significant changes from the standards; therefore, the Nuclear Regulatory Commission (NRC) staff does not accept these practices as compliant with NFPA 805, NFPA 241, or NFPA 51B.

Provide a revised compliance statement, which demonstrates a compliance strategy in accordance with the requirements and intent of NFPA 805, Section 3.3.1.3.1.

FPE RAI 21.01

In its letter dated July 31, 2013, the licensee responded to FPA RAI 21 and modified the compliance strategy to LAR Attachment A, Table B-1, Section 3.4.1(c). The staff noted that the licensee is not using a fire brigade operations advisor, but will utilize a fire brigade where, during every shift, the brigade leader and at least two brigade members shall have sufficient training and knowledge of nuclear safety systems to understand the effects of fire and fire suppressants on nuclear safety performance.

Describe how it is ensured that the brigade leader and additional members will possess the necessary "training and knowledge" to comply with NFPA 805 Section 3.4.1(c).

Safe Shutdown Analysis (SSA) RAI 02.01

In its letter dated July 31, 2013, the licensee responded to SSA RAI 02 and indicated that raceway fire barriers in the main control room were installed, not for NFPA 805 deterministic compliance, but rather to reduce core damage frequency (CDF) and/or large early release frequency (LERF) by delaying fire damage.

The licensee stated that LAR Attachment S, Table S-1, Modification Item 5, will take the form of a 1-hour rated electrical raceway fire barrier system (ERFBS), however LAR Attachment S, Table S-1 Modification Item #7 will "protect the cables listed in the LAR by providing separation from ignition sources or 1-hour of fire rated protection." The staff noted that the second modification however, is not identified as ERFBS and is not listed in LAR Attachment C, Table B-3 under "Required Regulatory Systems - Fire Area CB-23E."

NFPA 805, Section 4.1 "Methodology," states: "Chapter 4 shall establish the methodology to determine the fire protection systems and features required to achieve the performance criteria outlined in Section 1.5. The methodology shall be permitted to be either deterministic or performance-based. Deterministic requirements shall be "deemed to satisfy" the performance criteria and require no further engineering analysis. Once a determination has been made that a fire protection system or feature is required to achieve the performance criteria of Section 1.5, its design and qualification shall meet the applicable requirement of Chapter 3."

Through its analysis, the licensee has determined that these installations are required to meet the performance criteria. Therefore, the design and qualification of the credited installations should meet the applicable requirements in NFPA 805, Chapter 3.

Provide justification why these should not both be treated as ERFBSs and identified as a required fire protection feature of the fire area, or make appropriate changes.

SSA RAI 15.01

In its letter dated August 29, 2013 (ADAMS Accession No. ML13246A276) the licensee responded to SSA RAI 15 and revised LAR Attachment G, Recovery Actions Transition, and stated that "The assessment of the physical feasibility of new NSCA recovery actions and defense in depth recovery actions is contained in Change Package BNP-0246." The staff noted that numerous locations where an additional operator was needed for recovery actions in the service water building for valves such as 2-SW-V37 and 2-SW-V20 were identified.

Provide a description of the outcome of this change including adding the additional operator.

SSA RAI 15.02

In its letter dated August 29, 2013, the licensee responded to PRA RAI 15 and indicated that major changes have occurred in the analysis for fire areas CB-01 and CB-02, and that each fire area should have variances from deterministic requirements (VFDRs) addressed in the "VFDR Detail Table" for safe shutdown related unprotected cables.

However, the VFDRs do not appear to be included with the August 29, 2013 letter. The licensee references a "VFDR Detail Table" as being included with Enclosure 6 (Attachment C) in the August 29, 2013 letter, but these tables could not be located. By contrast fire areas CB-23E, DG-1, DG-4, DG-5, DG-7, DG-8, DG-11, DG-12, DG-13, DG-14, and DG-16E have detailed VFDR lists for both Units 1 and 2.

Provide a justification of this situation and an update, if necessary.

Fire Modeling (FM) RAI 1h.01

In its letter dated June 28, 2013 (ADAMS Accession No. ML13191B271), the licensee responded to FM RAI 1H and described how intervening combustibles were identified and accounted for in the FM analysis. However, the licensee's response did not describe how noncable intervening combustibles were identified and accounted for in the analysis.

Describe how noncable intervening combustibles were identified and accounted for in the FM analysis. If noncable intervening combustibles were not considered in the analysis, provide justification for neglecting the effect of these secondary combustibles in the analysis or quantify the effect on the risk (CDF, Delta CDF, LERF and Delta LERF) of scenarios that involve noncable secondary combustibles.

FM RAI 2d.01

In its letter dated August 29, 2013, the licensee responded to FM RAI 2d and stated that, "For Main Control Boards, the failure of sensitive electronics is mitigated by incipient detection" but

did not state how the incipient detection system was credited in the analysis. The licensee also stated that, "For sensitive electronics not contained in enclosures, it is very likely that the cables to the components are already failed in the scenarios, even though they are not the limiting failure for the component" but did not elaborate on why such an assumption is valid given that the thermal damage criteria for sensitive electronics is lower than the damage criteria for cables.

Describe whether or how the incipient detection was credited in the main control board analysis and provide a technical justification for the assumption that incipient detection mitigates the failure of a piece of sensitive electronics. In addition, provide a technical justification for assuming that "For sensitive electronics not contained in enclosures, it is very likely that the cables to the components are already failed in the scenarios, even though they are not the limiting failure for the component."

If you have any questions regarding this letter, please feel free to contact me at (301) 415-1447.

Sincerely,

/ RA A. Hon for /

Farideh Saba, Senior Project Manager
Plant Licensing Branch II-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

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