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

December 2, 2016

Mr. Marty L. Richey
Site Vice President
FirstEnergy Nuclear Operating Company
Beaver Valley Power Station
Mail Stop A-BV-SEB1
P.O. Box 4, Route 168
Shippingport, PA 15077

SUBJECT: BEAVER VALLEY POWER STATION, UNIT NOS. 1 AND 2 – REQUEST FOR ADDITIONAL INFORMATION RELATED TO LICENSE AMENDMENT REQUEST TO ADOPT NATIONAL FIRE PROTECTION ASSOCIATION STANDARD 805 (CAC NOS. MF3301 AND MF3302)

Dear Mr. Richey:

By letter dated December 23, 2013 (Agencywide Documents Access and Management System (ADAMS) Package Accession No. ML14002A086), as supplemented by letters dated February 14, 2014; April 27, 2015; May 27, 2015; June 26, 2015; November 6, 2015; December 21, 2015; February 24, 2016; and May 12, 2016 (ADAMS Accession Nos. ML14051A499, ML15118A484, ML15147A372, ML15177A110, ML15313A306, ML15356A136, ML16055A160, and ML16133A340, respectively), FirstEnergy Nuclear Operating Company (FENOC) submitted a license amendment request to change the Beaver Valley Power Station, Units Nos. 1 and 2, fire protection program to one based on the National Fire Protection Association Standard 805, "Performance-Based Standard for Fire Protection for Light Water Reactor Electric Generating Plants," 2001 Edition. The U.S. Nuclear Regulatory Commission (NRC) staff is reviewing your submittal and has determined that additional information is needed to complete the review, as listed in the enclosed request for additional information (RAI).

A draft RAI was sent to your staff by e-mail dated November 2, 2016, to ensure that the questions were understandable, the regulatory basis for the questions was clear, and to determine if the information was previously docketed. A clarification call with FENOC was held on November 22, 2016. During the call, it was agreed that FENOC would provide a response within 60 days from the date of this letter.

If you have any questions, or if circumstances result in the need to revise the agreed upon response date, please contact me at (301) 415-2871 or by e-mail at Michael.Marshall@nrc.gov.

Sincerely,

Michael L. Marshall, Jr., Senior Project Manager
Plant Licensing Branch 1-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-334 and 50-412

Enclosure:
Request for Additional Information

cc w/enclosure: Distribution via Listserv

REQUEST FOR ADDITIONAL INFORMATION

LICENSE AMENDMENT REQUEST TO ADOPT NFPA 805

FIRSTENERGY NUCLEAR OPERATING COMPANY

BEAVER VALLEY POWER STATION, UNIT NOS. 1 AND 2

DOCKET NOS. 50-334 AND 50-412

By letter dated December 23, 2013 (Agencywide Documents Access and Management System (ADAMS) Package Accession No. ML14002A086), as supplemented by letters dated February 14, 2014; April 27, 2015; May 27, 2015; June 26, 2015; November 6, 2015; December 21, 2015; February 24, 2016; and May 12, 2016 (ADAMS Accession Nos. ML14051A499, ML15118A484, ML15147A372, ML15177A110, ML15313A306, ML15356A136, ML16055A160, and ML16133A340, respectively), FirstEnergy Nuclear Operating Company submitted a license amendment request to change the Beaver Valley Power Station, Units Nos. 1 and 2, fire protection program to one based on the National Fire Protection Association Standard 805 (NFPA 805), "Performance-Based Standard for Fire Protection for Light Water Reactor Electric Generating Plants," 2001 Edition, as incorporated in Title 10 of the *Code of Federal Regulations* Section 50.48(c). The U.S. Nuclear Regulatory Commission (NRC) staff has determined that additional information is needed to complete its review of the license amendment request.

**Probabilistic Risk Assessment (PRA) Request for Additional Information 27, "Very Early Warning Fire Detection System (VEWFDS) Credit"**

Section 2.4.3.3 of NFPA 805 states that the probabilistic safety analysis (also referred to as PRA) approach, methods, and data shall be acceptable to the authority having jurisdiction, which is the NRC. Section 2.4.4.1 of NFPA 805 further states that the change in public health risk arising from transition from the current fire protection program to an NFPA 805-based program, and all future plant changes to the program, shall be acceptable to the NRC.

Regulatory Guide (RG) 1.174, Revision 2, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis" (ADAMS Accession No. ML100910006), provides quantitative guidelines on core damage frequency (CDF), large early release frequency (LERF), and identifies acceptable changes to these frequencies that result from proposed changes to the plant's licensing basis and describes a general framework to determine the acceptability of risk-informed changes. The NRC staff's review of the information in the license amendment request identified additional information that is needed to fully characterize the risk estimates.

New guidance on the credit taken for VEWFDS is available in NUREG-2180, "Determining the Effectiveness, Limitations, and Operator Response for Very Early Warning Fire Detection Systems in Nuclear Facilities, (DELORES-VEWFIRE)," of which the final (pre-publication) version is available at ADAMS Accession Nos. ML16286A000 and ML16286A002. The methodology in NUREG-2180 is acceptable to the NRC because it is currently the best

available guidance. By letter dated July 1, 2016 (ADAMS Accession No. ML16167A444), the guidance provided in Frequently Asked Question 08-0046, "Closure of National Fire Protection Association 805 Frequently Asked Question 08-0046, 'Incipient Fire Detection Systems'," dated November 23, 2009 (ADAMS Accession No. ML093220426), has been retired, and alternative approaches for staff evaluation are necessary.

Explain how credit (e.g., approach, methods, data, and assumptions) taken in the fire PRA (FPRA) for the proposed VEWFDS is consistent with the guidance in NUREG-2180 or bounds the risk results (i.e., CDF, LERF, change in CDF, and change in LERF) that would be obtained, had the guidance in NUREG-2180 been applied. If credit taken for VEWFDS in the FPRA is not consistent with or bounded by NUREG-2180, provide:

a. The risk results (i.e., CDF, LERF, change in CDF, and change in LERF): (1) without credit for VEWFDS that would be obtained had the guidance in NUREG-2180 been applied or (2) that would be obtained had an alternative method been used, along with a description and justification for the alternative method. Development and use of an alternative proposal may extend the time required to complete the review. The new risk results can be generated from a sensitivity study type evaluation insofar as formal incorporation of the new method into the PRA model of record is not required.

b. Explain how the total risk and increase in risk are consistent with the guidelines in RG 1.174.

If you have any questions, or if circumstances result in the need to revise the agreed upon response date, please contact me at (301) 415-2871 or by e-mail at Michael.Marshall@nrc.gov.

Sincerely,

*/RA/*

Michael L. Marshall, Jr., Senior Project Manager
Plant Licensing Branch 1-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-334 and 50-412

Enclosure:
Request for Additional Information

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|---|---|---|---|---|---|
| NAME | MMarshall | JPoole | LRonewicz | SKoenick | MMarshall |
| DATE | 12/01/2016 | 12/02/2016 | 11/28/2016 | 12/02/2016 | 12/02/2016 |

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