



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

February 27, 2018

Vice President, Operations  
Entergy Nuclear Operations, Inc.  
Palisades Nuclear Plant  
27780 Blue Star Memorial Highway  
Covert, MI 49043-9530

SUBJECT: PALISADES NUCLEAR PLANT - ISSUANCE OF AMENDMENT RE: LICENSE  
AMENDMENT REQUEST TO CHANGE THE FULL COMPLIANCE  
IMPLEMENTATION DATE FOR THE FIRE PROTECTION PROGRAM  
TRANSITION LICENSE CONDITION FOR REQUIRED MODIFICATIONS  
(EPID L-2017-LLA-0369)

Dear Sir or Madam:

The U.S. Nuclear Regulatory Commission (Commission) has issued the enclosed Amendment No. 265 to Renewed Facility Operating License No. DPR-20 for the Palisades Nuclear Plant (PNP). The amendment changes the full implementation date for the fire protection program transition license condition in response to your application dated November 1, 2017, as supplemented by letter dated January 24, 2018.

The amendment revises the fire protection program transition license condition, 2.C.(3)(c)2., by extending the full implementation date one fuel cycle from the fall 2018 refueling outage to the summer 2020 refueling outage. The amendment also revises Paragraph 2.C.(3) of the Renewed Facility Operating License No. DPR-20 for PNP to incorporate the revised fire protection documentation and approvals.

A copy of the related safety evaluation is also enclosed. The Notice of Issuance will be included in the Commission's biweekly *Federal Register* notice.

Sincerely,

A handwritten signature in black ink, appearing to read "Jennivine K. Rankin".

Jennivine K. Rankin, Project Manager  
Plant Licensing Branch III  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket No. 50-255

Enclosures:

1. Amendment No. 265 to DPR-20
2. Safety Evaluation

cc w/encls: ListServ



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

ENERGY NUCLEAR OPERATIONS, INC.

DOCKET NO. 50-255

PALISADES NUCLEAR PLANT

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 265  
Renewed Facility Operating License No. DPR-20

1. The U.S. Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by Entergy Nuclear Operations, Inc. (ENO, the licensee), dated November 1, 2017, as supplemented by letter dated January 24, 2018, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;
  - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
  - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public; and (ii) that such activities will be conducted in compliance with the Commission's regulations;
  - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public;
  - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.
2. Accordingly, the license is amended by changes as indicated in the attachment to this license amendment, and Paragraph 2.C.(3) and 2.C.(3)(c)2. of Renewed Facility Operating License No. DPR-20 is hereby amended to read, in part, as follows:

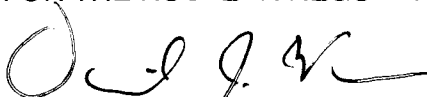
2.C.(3) Fire Protection

ENO shall implement and maintain in effect all provisions of the approved fire protection program that comply with 10 CFR 50.48(a) and 10 CFR 50.48(c), as specified in the license amendment requests dated December 12, 2012 and November 1, 2017, as supplemented by letters dated February 21, 2013, September 30, 2013, October 24, 2013, December 2, 2013, April 2, 2014, May 7, 2014, June 17, 2014, August 14, 2014, November 4, 2014, and December 18, 2014, and January 24, 2018, as approved in the safety evaluations dated February 27, 2015 and February 27, 2018. Except where NRC approval for changes or deviations is required by 10 CFR 50.48(c), and provided no other regulation, technical specification, license condition or requirement would require prior NRC approval, the licensee may make changes to the fire protection program without prior approval of the Commission if those changes satisfy the provisions set forth in 10 CFR 50.48(a) and 10 CFR 50.48(c), the change does not require a change to a technical specification or a license condition, and the criteria listed below are satisfied.

2.C.(3)(c) Transition License Condition

2. The licensee shall implement the modifications to its facility, as described in Table S-2, "Plant Modifications Committed," of ENO letter PNP 2014-080 dated August 14, 2014, to complete the transition to full compliance with 10 CFR 50.48(c) before the end of the refueling outage following the third full operating cycle after NRC approval. The licensee shall maintain appropriate compensatory measures in place until completion of these modifications.
3. This license amendment is effective as of the date of issuance and shall be implemented within 60 days from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



David J. Wrona, Chief  
Plant Licensing Branch III  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Attachment:  
Changes to the Renewed Facility  
Operating License No. DPR-20

Date of Issuance: February 27, 2018

ATTACHMENT TO LICENSE AMENDMENT NO. 265

PALISADES NUCLEAR PLANT

RENEWED FACILITY OPERATING LICENSE NO. DPR-20

DOCKET NO. 50-255

Replace the following pages of the Renewed Facility Operating License No. DPR-20 with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

REMOVE

Page 3  
Page 4  
Page 5  
Page 5a

INSERT

Page 3  
Page 4  
Page 5  
Page 5a

- (1) Pursuant to Section 104b of the Act, as amended, and 10 CFR Part 50, "Licensing of Production and Utilization Facilities," (a) ENP to possess and use, and (b) ENO to possess, use and operate, the facility as a utilization facility at the designated location in Van Buren County, Michigan, in accordance with the procedures and limitation set forth in this license;
  - (2) ENO, pursuant to the Act and 10 CFR Parts 40 and 70, to receive, possess, and use source and special nuclear material as reactor fuel, in accordance with the limitations for storage and amounts required for reactor operation, as described in the Updated Final Safety Analysis Report, as supplemented and amended;
  - (3) ENO, pursuant to the Act and 10 CFR Parts 30, 40, and 70, to receive, possess, and use byproduct, source, and special nuclear material as sealed sources for reactor startup, reactor instrumentation, radiation monitoring equipment calibration, and fission detectors in amounts as required;
  - (4) ENO, pursuant to the Act and 10 CFR Parts 30, 40, and 70, to receive, possess, and use in amounts as required any byproduct, source, or special nuclear material for sample analysis or instrument calibration, or associated with radioactive apparatus or components; and
  - (5) ENO, pursuant to the Act and 10 CFR Parts 30, 40, and 70, to possess, but not separate, such byproduct and special nuclear materials as may be produced by the operations of the facility.
- C. This renewed operating license shall be deemed to contain and is subject to the conditions specified in the Commission's regulations in 10 CFR Chapter I and is subject to all applicable provisions of the Act; to the rules, regulations, and orders of the Commission now or hereafter in effect; and is subject to the additional conditions specified or incorporated below:
- (1) ENO is authorized to operate the facility at steady-state reactor core power levels not in excess of 2565.4 Megawatts thermal (100 percent rated power) in accordance with the conditions specified herein.
  - (2) The Technical Specifications contained in Appendix A, as revised through Amendment No. 263, and the Environmental Protection Plan contained in Appendix B are hereby incorporated in the license. ENO shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.
  - (3) Fire Protection

ENO shall implement and maintain in effect all provisions of the approved fire protection program that comply with 10 CFR 50.48(a) and 10 CFR 50.48(c), as specified in the license amendment requests dated December 12, 2012 and November 1, 2017, as supplemented by letters dated February 21, 2013, September 30, 2013, October 24, 2013, December 2, 2013, April 2, 2014, May 7,

2014, June 17, 2014, August 14, 2014, November 4, 2014, and December 18, 2014, and January 24, 2018, as approved in the safety evaluations dated February 27, 2015 and February 27, 2018. Except where NRC approval for changes or deviations is required by 10 CFR 50.48(c), and provided no other regulation, technical specification, license condition or requirement would require prior NRC approval, the licensee may make changes to the fire protection program without prior approval of the Commission if those changes satisfy the provisions set forth in 10 CFR 50.48(a) and 10 CFR 50.48(c), the change does not require a change to a technical specification or a license condition, and the criteria listed below are satisfied.

(a) Risk-Informed Changes that May Be Made Without Prior NRC Approval

A risk assessment of the change must demonstrate that the acceptance criteria below are met. The risk assessment approach, methods, and data shall be acceptable to the NRC and shall be appropriate for the nature and scope of the change being evaluated; be based on the as-built, as operated, and maintained plant; and reflect the operating experience at the plant. Acceptable methods to assess the risk of the change may include methods that have been used in the peer-reviewed fire PRA model, methods that have been approved by NRC through a plant-specific license amendment or NRC approval of generic methods specifically for use in NFPA 805 risk assessments, or methods that have been demonstrated to bound the risk impact.

1. Prior NRC review and approval is not required for changes that clearly result in a decrease in risk. The proposed change must also be consistent with the defense-in-depth philosophy and must maintain sufficient safety margins. The change may be implemented following completion of the plant change evaluation.
2. Prior NRC review and approval is not required for individual changes that result in a risk increase less than  $1 \times 10^{-7}$ /year (yr) for CDF and less than  $1 \times 10^{-8}$ /yr for LERF. The proposed change must also be consistent with the defense-in-depth philosophy and must maintain sufficient safety margins. The change may be implemented following completion of the plant change evaluation.

(b) Other Changes that May Be Made Without Prior NRC Approval

1. Changes to NFPA 805, Chapter 3, Fundamental Fire Protection Program

Prior NRC review and approval are not required for changes to the NFPA 805, Chapter 3, fundamental fire protection program elements and design requirements for which an engineering evaluation demonstrates that the alternative to the Chapter 3

element is functionally equivalent or adequate for the hazard. The licensee may use an engineering evaluation to demonstrate that a change to an NFPA 805, Chapter 3, element is functionally equivalent to the corresponding technical requirement. A qualified fire protection engineer shall perform the engineering evaluation and conclude that the change has not affected the functionality of the component, system, procedure, or physical arrangement, using a relevant technical requirement or standard.

The licensee may use an engineering evaluation to demonstrate that changes to certain NFPA 805, Chapter 3, elements are acceptable because the alternative is "adequate for the hazard." Prior NRC review and approval would not be required for alternatives to four specific sections of NFPA 805, Chapter 3, for which an engineering evaluation demonstrates that the alternative to the Chapter 3 element is adequate for the hazard. A qualified fire protection engineer shall perform the engineering evaluation and conclude that the change has not affected the functionality of the component, system, procedure, or physical arrangement, using a relevant technical requirement or standard. The four specific sections of NFPA 805, Chapter 3, are as follows:

- "Fire Alarm and Detection Systems" (Section 3.8);
- "Automatic and Manual Water-Based Fire Suppression Systems" (Section 3.9);
- "Gaseous Fire Suppression Systems" (Section 3.10); and
- "Passive Fire Protection Features" (Section 3.11).

This License Condition does not apply to any demonstration of equivalency under Section 1.7 of NFPA 805.

2. Fire Protection Program Changes that Have No More than Minimal Risk Impact

Prior NRC review and approval are not required for changes to the licensee's fire protection program that have been demonstrated to have no more than a minimal risk impact. The licensee may use its screening process as approved in the NRC safety evaluation dated February 27, 2015, to determine that certain fire protection program changes meet the minimal criterion. The licensee shall ensure that fire protection defense-in-depth and safety

margins are maintained when changes are made to the fire protection program.

(c) Transition License Conditions

1. Before achieving full compliance with 10 CFR 50.48(c), as specified by 2, below, risk-informed changes to the licensee's fire protection program may not be made without prior NRC review and approval unless the change has been demonstrated to have no more than a minimal risk impact, as described in 2. above.
  2. The licensee shall implement the modifications to its facility, as described in Table S-2, "Plant Modifications Committed," of ENO letter PNP 2014-080 dated August 14, 2014, to complete the transition to full compliance with 10 CFR 50.48(c) before the end of the refueling outage following the third full operating cycle after NRC approval. The licensee shall maintain appropriate compensatory measures in place until completion of these modifications.
  3. The licensee shall implement the items listed in Table S-3, "Implementation Items," of ENO letter PNP 2014-097 dated November 4, 2014, within six months after NRC approval, or six months after a refueling outage if in progress at the time of approval with the exception of Implementation Items 3 and 8 which will be completed once the related modifications are installed and validated in the PRA model.
- (4) The following requirements shall apply to control rod drive CRD-13 during cycle 25:
- (a) Performance of Technical Specifications Surveillance Requirement SR 3.1.4.3 is not required for CRD-13 until the next entry into Mode 3.
  - (b) Seal leakage on CRD-13 shall be repaired prior to entering Mode 2, following the next Mode 3 entry.
  - (c) The reactor shall be shut down if CRD-13 seal leakage exceeds two gallons per minute.
- (5) [deleted]





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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 265 TO

RENEWED FACILITY OPERATING LICENSE NO. DPR-20

ENTERGY NUCLEAR OPERATIONS, INC.

PALISADES NUCLEAR PLANT

DOCKET NO. 50-255

1.0 INTRODUCTION

On December 12, 2012 (Reference 1), Entergy Nuclear Operations, Inc. (ENO, the licensee), requested to revise the Palisades Nuclear Plant (PNP) fire protection program (FPP) in accordance with Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.48(c). On February 27, 2015 (Reference 2), the U.S. Nuclear Regulatory Commission (NRC, the Commission) issued Amendment No. 254 to Renewed Facility Operating License (RFOL) No. DPR-20 for the PNP (NFPA 805 SE). The amendment consisted of changes to the RFOL to transition the PNP FPP to a risk-informed, performance-based (RI/PB) program based on National Fire Protection Association Standard 805, "Performance-Based Standard for Fire Protection for Light Water Reactor Electric Generating Plants," 2001 Edition (NFPA 805), (Reference 3), in accordance with 10 CFR 50.48(c). NFPA 805 allows the use of PB methods such as fire modeling (FM) and RI methods such as fire probabilistic risk assessment (PRA) to demonstrate compliance with the nuclear safety performance criteria.

By letter dated November 1, 2017 (Reference 4), as supplemented by letter dated January 24, 2018 (Reference 5), the licensee submitted a license amendment request (LAR) to change the full compliance implementation date for FPP transition license condition, 2.C.(3)(c)2., to allow additional time for completion of the required modifications necessary to achieve full compliance with 10 CFR 50.48(c). To support this change, the licensee has submitted revised versions of its fire protection license condition.

The supplemental letter dated January 24, 2018, provided additional information that clarified the application, did not expand the scope of the application as originally noticed, and did not change the NRC staff's original proposed no significant hazards consideration determination as published in the *Federal Register* (FR) on December 5, 2017 (82 FR 57472).

2.0 REGULATORY EVALUATION

Section 50.48, "Fire protection," of 10 CFR, provides the NRC requirements for nuclear power plant fire protection. The NRC regulations include specific requirements for requesting approval for an RI/PB FPP based on the provisions of NFPA 805. Paragraph 50.48(c)(3)(i) of 10 CFR

states, in part, that:

A licensee may maintain a fire protection program that complies with NFPA 805 as an alternative to complying with [10 CFR 50.48(b)] for plants licensed to operate before January 1, 1979, or the fire protection license conditions for plants licensed to operate after January 1, 1979. The licensee shall submit a request to comply with NFPA 805 in the form of an application for license amendment under [10 CFR] 50.90. The application must identify any orders and license conditions that must be revised or superseded, and contain any necessary revisions to the plant's technical specifications and the bases thereof.

Pursuant to 10 CFR 50.90, whenever a holder of a license desires to amend the license, application for an amendment must be filed with the Commission fully describing the changes desired, and following, as far as applicable, the form prescribed for original applications. Accordingly, a licensee who seeks to amend its NFPA 805 authorizations must file an amendment stating, as applicable, the desired changes to orders, license conditions, and technical specifications.

In addition, 10 CFR 50.48(c)(3)(i) states, in part, that:

The Director of the Office of Nuclear Reactor Regulation, or a designee of the Director, may approve the application if the Director or designee determines that the licensee has identified orders, license conditions, and the technical specifications that must be revised or superseded, and that any necessary revisions are adequate. Any approval by the Director or the designee must be in the form of a license amendment approving the use of NFPA 805 together with any necessary revisions to the technical specifications.

In addition, 10 CFR 50.48(c)(3)(ii) states that:

The licensee shall complete its implementation of the methodology in Chapter 2 of NFPA 805 (including all required evaluations and analyses) and, upon completion, modify the fire protection plan required by paragraph (a) of this section to reflect the licensee's decision to comply with NFPA 805, before changing its fire protection program or nuclear power plant as permitted by NFPA 805.

The intent of 10 CFR 50.48(c)(3)(ii) is discussed in the statement of considerations for the Final Rule, "Voluntary Fire Protection Requirements for Light Water Reactors; Adoption of NFPA 805 as a Risk-Informed, Performance-Based Alternative" (69 FR 33536 through 69 FR 33548; June 16, 2004), which states, in part, that:

This paragraph requires licensees to complete all of the Chapter 2 methodology (including evaluations and analyses) and to modify their fire protection plan before making changes to the fire protection program or to the plant configuration. This process ensures that the transition to an NFPA 805 configuration is conducted in a complete, controlled, integrated, and organized manner. This requirement also precludes licensees from implementing NFPA 805 on a partial or selective basis (e.g., in some fire areas and not others, or truncating the methodology within a given fire area).

Pursuant to 10 CFR 50.92(a), in determining whether an amendment to a license will be issued to the applicant, the Commission will be guided by the considerations which govern the issuance of initial licenses to the extent applicable and appropriate. Under 10 CFR 50.40, common standards for issuance of licenses include considerations of safety and satisfaction of the requirements of the National Environmental Policy Act of 1969 as implemented in 10 CFR Part 51. Under 10 CFR 50.57(a), to issue an operating license, the Commission must find, among other things, that: (1) there is reasonable assurance that the activities authorized by the operating license can be conducted without endangering the health and safety of the public; (2) there is reasonable assurance that such activities will be conducted in compliance with the regulations in this chapter; and (3) the issuance of the license will not be inimical to the common defense and security or to the health and safety of the public.

The regulations also allow for flexibility that was not included in the NFPA 805 standard. Licensees who choose to adopt 10 CFR 50.48(c) but wish to use the PB methods permitted elsewhere in the standard to meet the fire protection requirements of NFPA 805, Chapter 3, "Fundamental Fire Protection Program and Design Elements," may do so by submitting an LAR in accordance with 10 CFR 50.48(c)(2)(vii). This regulation further provides that:

The Director of the Office of Nuclear Reactor Regulation, or a designee of the Director, may approve the application if the Director or designee determines that the performance-based approach;

- (A) Satisfies the performance goals, performance objectives, and performance criteria specified in NFPA 805 related to nuclear safety and radiological release;
- (B) Maintains safety margins; and
- (C) Maintains fire protection defense-in-depth (fire prevention, fire detection, fire suppression, mitigation, and post-fire safe shutdown capability).

Alternatively, licensees may choose to use RI or PB alternatives to comply with NFPA 805 by submitting an LAR in accordance with 10 CFR 50.48(c)(4), which states, in part, that:

The Director of the Office of Nuclear Reactor Regulation, or designee of the Director, may approve the application if the Director or designee determines that the proposed alternatives:

- (i) Satisfy the performance goals, performance objectives, and performance criteria specified in NFPA 805 related to nuclear safety and radiological release;
- (ii) Maintain safety margins; and
- (iii) Maintain fire protection defense-in-depth (fire prevention, fire detection, fire suppression, mitigation, and post-fire safe shutdown capability).

In addition to the conditions outlined by the rule that requires licensees to submit an LAR for NRC review and approval in order to adopt a RI/PB FPP, a licensee may submit additional elements of its FPP for which it wishes to receive specific NRC review and approval, as set forth in Regulatory Position C.2.2.1 of Regulatory Guide (RG) 1.205 (Reference 6). Inclusion of

these elements in the NFPA 805 LAR is meant to alleviate uncertainty in portions of the current FPP licensing bases as a result of the lack of specific NRC approval of these elements. Regulatory guides are not substitutes for regulations, and compliance with them is not required. Methods and solutions that differ from those set forth in RGs will be deemed acceptable if they provide a basis for the findings required for the issuance or continuance of a permit or license by the Commission. Accordingly, any submittal addressing these additional FPP elements needs to include sufficient detail to allow the NRC staff to assess whether the licensee's treatment of these elements meets the 10 CFR 50.48(c) requirements.

The purpose of the FPP established by NFPA 805 is to provide assurance, through a defense-in-depth (DID) philosophy, that the NRC's fire protection objectives are satisfied. NFPA 805 Section 1.2, "Defense-in-Depth," states that:

Protecting the safety of the public, the environment, and plant personnel from a plant fire and its potential effect on safe reactor operations is paramount to this standard. The fire protection standard shall be based on the concept of defense-in-depth. Defense-in-depth shall be achieved when an adequate balance of each of the following elements is provided:

- (1) Preventing fires from starting;
- (2) Rapidly detecting fires and controlling and extinguishing promptly those fires that do occur, thereby limiting fire damage; and
- (3) Providing an adequate level of fire protection for structures, systems, and components important to safety, so that a fire that is not promptly extinguished will not prevent essential plant safety functions from being performed.

In addition, in accordance with Appendix A, "General Design Criteria for Nuclear Power Plants," to 10 CFR Part 50, General Design Criterion (GDC) 3, "Fire protection," fire detection and fighting systems must be designed such that their rupture or inadvertent operation does not significantly impair the ability of the structures, systems, and components important to safety to perform their intended safety functions.

The NRC staff review relied on the following regulations:

- GDC 3, "Fire Protection," which states that:

Structures, systems, and components important to safety shall be designed and located to minimize, consistent with other safety requirements, the probability and effect of fires and explosions. Noncombustible and heat resistant materials shall be used wherever practical throughout the unit, particularly in locations such as the containment and control room. Fire detection and fighting systems of appropriate capacity and capability shall be provided and designed to minimize the adverse effects of fires on structures, systems, and components important to safety. Firefighting systems shall be designed to assure that their rupture or inadvertent operation does not significantly impair the safety capability of these structures, systems, and components.

- Regulations in 10 CFR 50.48(a)(1), which require that each holder of an operating license have a fire protection plan that satisfies GDC 3.
- Regulations in 10 CFR 50.48(c), which incorporate NFPA 805 (2001 Edition) by reference, with certain exceptions, modifications, and supplementation. This regulation establishes the requirements for using an RI/PB FPP in conformance with NFPA 805 as an alternative to the requirements associated with 10 CFR 50.48(b) and Appendix R, "Fire Protection Program for Nuclear Power Facilities Operating Prior to January 1, 1979," to 10 CFR Part 50, or the specific plant fire protection license condition.

The NRC staff review also relied on the following additional codes, RGs, and standards:

- RG 1.205, Revision 1, "Risk-Informed, Performance-Based Fire Protection for Existing Light-Water Nuclear Power Plants," issued December 2009 (Reference 6), provides guidance for use in complying with the requirements that the NRC has promulgated for RI/PB FPPs that comply with 10 CFR 50.48 and the referenced 2001 Edition of the NFPA standard. RG 1.205 sets forth regulatory positions, emphasizes certain issues, clarifies the requirements of 10 CFR 50.48(c) and NFPA 805, clarifies the guidance in Nuclear Energy Institute (NEI) 04-02 (Reference 7), and provides exceptions to the NEI-04-02 guidance where required. Should a conflict occur between NEI 04-02 and this RG, the regulatory positions in RG 1.205 govern.
- RG 1.174, Revision 2, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis," issued May 2011 (Reference 8), provides the NRC staff's recommendations for using risk information in support of licensee-initiated licensing basis changes to a nuclear power plant that require review and approval.
- NUREG/CR-6850, "EPRI/NRC-RES Fire PRA Methodology for Nuclear Power Facilities," Volumes 1 and 2 and Supplement 1, September 2005 and September 2010, respectively (Reference 9), (Reference 10), and (Reference 11), presents a compendium of methods, data, and tools to perform a fire PRA and develop associated insights.

### 3.0 TECHNICAL EVALUATION

#### 3.1 Licensee's Requested Changes

Amendment No. 254 to RFOL No. DPR-20 (Reference 2) implemented the licensee's transition to an RI/PB FPP based on NFPA 805, in accordance with 10 CFR 50.48(c). The issued amendment contained a transition license condition that requires that the modifications related to NFPA 805 be completed before the end of the second full operating cycle after NRC approval, which would be before the end of the licensee's fall 2018 refueling outage. In its LAR dated November 1, 2017, (Reference 4), as supplemented by letter dated January 24, 2018 (Reference 5), the licensee requested an extension of one operating cycle for the completion of the NFPA 805 modifications at PNP.

Specifically, the licensee is proposing a revision to its FPP transition license condition 2.C.(3)(c)2. which currently states:

2. The licensee shall implement the modifications to its facility, as described in Table S-2, "Plant Modifications Committed," of ENO letter PNP 2014-080 dated August 14, 2014, to complete the transition to full compliance with 10 CFR 50.48(c) before the end of the second full operating cycle after NRC approval. The licensee shall maintain appropriate compensatory measures in place until completion of these modifications.

The current FPP transition license condition wording requires the licensee to complete the NFPA 805 modifications before the end of the fall 2018 refueling outage. The licensee is requesting to revise FPP transition license condition 2.C.(3)(c)2. to state:

2. The licensee shall implement the modifications to its facility, as described in Table S-2; "Plant Modifications Committed," of ENO letter PNP 2014-080 dated August 14, 2014, to complete the transition to full compliance with 10 CFR 50.48(c) before the end of the refueling outage following the third full operating cycle after NRC approval. The licensee shall maintain appropriate compensatory measures in place until completion of these modifications.

The licensee indicated that the proposed wording for FPP transition license condition 2.C.(3)(c)2. would require the NFPA 805 modifications to be completed before the end of (startup from) the summer 2020 refueling outage. The licensee stated that this license condition language is being revised to include "refueling outage" for clarity purposes to avoid confusion regarding what constitutes the end of an operating cycle. The licensee also stated for clarity purposes that the language "before the end of" equates to "prior to startup."

In addition, as documented in the licensee's January 24, 2018, submittal, license condition 2.C.(3) was also proposed to be modified to add the references for this LAR (including the request, the supplement, and the amendment).

### 3.2 Licensee's Basis for the Requested Changes

The licensee provided the following information regarding the background for the proposed changes:

[On January 4, 2017 (Reference 12)], ENO notified the NRC that PNP would permanently cease power operations on October 1, 2018. Due to this notification, the ENO suspended work on the NFPA 805 modifications because they would no longer be required due to the timing of the permanent cessation of operation at PNP. In addition, ENO planned to change the fire protection program to a 10 CFR 50.48(f) program applicable to a decommissioned facility prior to the end of 2018. As a result, the NFPA 805 modifications scheduled for completion during the spring 2017 refueling outage were removed from the outage schedule.

Recently, ENO notified the NRC it had changed the date that PNP will permanently cease power operation from October 1, 2018 to no later than May 31, 2022 [by letters dated September 28, 2017 (Reference 13) and October 19, 2017 (Reference 14)]. Due to this change in date for permanent

cessation of power operations, ENO now plans to complete PNP's transition to 10 CFR 50.48(c).

...This extension is requested because with continued operation to no later than May 31, 2022, ENO recently began planning and preparing for a 2018 refueling outage versus a 2018 defuel outage. This change in outage scope has shortened the period available for outage planning which challenges the completion of the NFPA 805 modifications during the 2018 refueling outage. Certain outage milestones, that are established to ensure successful modification implementation, have already been missed. Therefore, ENO is requesting a change to the full compliance implementation date for the fire protection program transition license condition [2.C.(3)(c)2.] to allow additional time for completion of the required modifications necessary to achieve full compliance with 10 CFR 50.48(c).

...

A one cycle extension from the fall 2018 refueling outage to the summer 2020 refueling outage to implement NFPA 805 modifications is acceptable because the fire protection transition license conditions will remain in effect during this period, including maintaining compensatory measures, until the NFPA 805 modifications are fully implemented. Additionally, the license condition for [RI] changes that may be made without prior NRC approval is not effective until PNP has completed the NFPA 805 modifications and is in full compliance with 10 CFR 50.48(c).

### 3.2 NFPA 805, Section 4.2.4.2

NFPA 805, Section 4.2.4.2, requires that the "use of fire risk evaluation for the [PB] approach shall consist of an integrated assessment of the acceptability of risk, [DID], and safety margins."

#### Risk

Regarding risk, in its LAR dated November 1, 2017, the licensee stated, in part, that:

The proposed change to the PNP RFOL to change the full compliance implementation date for the fire protection program transition license condition to allow additional time for completion of the required modifications necessary to achieve full compliance with 10 CFR 50.48(c) is administrative in nature. This change does not alter accident analysis assumptions, add any initiators, or affect the function of plant systems or the manner in which systems are operated, maintained, modified, tested, or inspected. The proposed change does not require any plant modifications which affect the performance capability of the structures, systems, and components relied upon to mitigate the consequences of postulated accidents, and has no impact on the probability or consequences of an accident previously evaluated.

Therefore, the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

### Defense-in-Depth

As a supplement to the definition of DID provided in NFPA 805, Section 1.2, the NRC-endorsed guidance in NEI 04-02, Section 5.3.5.2, states:

In general, the defense-in-depth requirement is satisfied if the proposed change does not result in a substantial imbalance in:

- Preventing fires from starting
- Detecting fires quickly and extinguishing those that do occur, thereby limiting damage
- Providing adequate level of fire protection for structures, systems and components important to safety so that a fire that is not promptly extinguished will not prevent essential plant safety functions [from] being performed.

### Safety Margins

Regarding safety margins, in its LAR dated November 1, 2017, the licensee stated, in part, that:

The proposed change to the PNP RFOL to change the full compliance implementation date for the fire protection program transition license condition to allow additional time for completion of the required modifications necessary to achieve full compliance with 10 CFR 50.48(c) is administrative in nature. Plant safety margins are established through limiting conditions for operation, limiting safety system settings, and safety limits specified in the technical specifications. Because there is no change to established safety margins as a result of this change, the proposed change does not involve a significant reduction in a margin of safety.

Although not a part of the requirements of NFPA 805, and thus not required under 10 CFR 50.48(c), NFPA 805, Appendix A, Section A.2.4.4.3, provides the following background related to the meaning of the term “safety margins”:

An example of maintaining sufficient safety margins occurs when the existing calculated margin between the analysis and the performance criteria compensates for the uncertainties associated with the analysis and data. Another way that safety margins are maintained is through the application of codes and standards. Consensus codes and standards are typically designed to ensure such margins exist.

NEI 04-02, Section 5.3.5.3, “Safety Margins,” lists two specific criteria that should be addressed when considering the impact of plant changes on safety margins:

- Codes and standards or their alternatives accepted for use by the NRC are met, and



- Safety analysis acceptance criteria in the licensing basis (e.g., FSAR [Final Safety Analysis Report], supporting analyses) are met, or provides sufficient margin to account for analysis and data uncertainty.

### 3.3 NRC Staff Evaluation

In accordance with 10 CFR 50.48(c)(3)(i), the licensee submitted an LAR to revise its NFPA 805 license condition 2.C.(3)(c)2. Based on its review of the information provided in the LAR, the NRC staff confirmed that the proposed change does not challenge the RG 1.174 acceptance guidelines because the proposed change is an administrative change that has no impact on total plant risk. The NRC staff also confirmed that the acceptance guidelines in RG 1.205 continue to be satisfied because the results for total plant risk and change in risk are not changed when compared to the values reported in the NFPA 805 SE (Reference 2).

In regard to DID, the NRC staff confirmed that the proposed change has no impact on any of the DID echelons because changing the full compliance implementation date for FPP transition license condition 2.C.(3)(c)2. is not considered a change in methods. The proposed schedule change does not impact the level of fire protection provided so that a fire will not prevent essential safety functions from being performed.

In regard to safety margins, the NRC staff confirmed that the proposed change continues to maintain adequate safety margins, in part, because the change does not impact any codes and standards, or their alternatives accepted for use by the NRC, and because the change does not impact any safety analysis acceptance criteria in the licensing basis.

The NRC staff confirmed that a one cycle extension from the fall 2018 refueling outage to the summer 2020 refueling outage to complete the NFPA 805 modifications is acceptable because the fire protection transition license conditions will remain in effect during this period, including maintaining compensatory measures until the NFPA 805 modifications are completed. Additionally, the license condition for RI changes that may be made without prior NRC approval is not effective until PNP has completed the NFPA 805 modifications and is in full compliance with 10 CFR 50.48(c).

In addition, the NRC staff concludes that the changes to license condition 2.C.(3) to add the associated references for this LAR are administrative in nature and clarify the history of the PNP FPP. Therefore, the NRC staff finds these changes to be acceptable.

### 3.4 NRC Staff Conclusion

The NRC staff reviewed the licensee's application to change the full compliance implementation date for FPP transition license condition 2.C.(3)(c)2. The licensee's application identified revisions to the license condition in accordance with 10 CFR 50.48(c)(3)(i). Based on its review of the information provided in the LAR, the NRC staff concludes that the licensee's application provided the appropriate license conditions that must be revised as a result of the proposed change, and that the revisions meet the requirements of 10 CFR 50.48(c)(3)(i).

The NRC staff concludes that the LAR is acceptable because the proposed changes are administrative in nature and have no impact on total plant risk, DID, or safety margins and have no impact on the conclusions discussed in the NFPA 805 SE.

Implementation of the RI/PB FPP under 10 CFR 50.48(c) must be in accordance with the fire protection license condition, which identifies the list of modifications and implementation items that must be completed in order to support the NRC staff's conclusion and establishes a date by which full compliance with 10 CFR 50.48(c) must be achieved. Before the licensee is able to fully implement the transition to an FPP based on NFPA 805 and apply the new fire protection license condition to its full extent, the modifications and implementation items must be completed within the timeframe specified. The NRC staff concludes that a one cycle extension from the fall 2018 refueling outage to the summer 2020 refueling outage to complete the NFPA 805 modifications is acceptable because the fire protection transition license conditions will remain in effect during this period, including maintaining compensatory measures until the NFPA 805 modifications are completed.

### 3.5 Revision to License Condition

On February 27, 2015, the NRC issued Amendment No. 254 to RFOL License No. DPR-20 for PNP (Reference 2), which revised the existing fire protection license condition to one that addresses the transition to a RI/PB FPP under NFPA 805 in accordance with 10 CFR 50.48(c)(3)(i). The new license condition adopted the guidelines of the standard fire protection license condition promulgated in RG 1.205, Revision 1, Regulatory Position C.3.1, as issued on December 18, 2009 (74 FR 67253). Plant-specific changes were made to the sample license condition; however, the plant-specific FPP license condition is consistent with the standard fire protection license condition and incorporated all of the relevant features of the transition to NFPA 805 at PNP.

In its LAR dated November 1, 2017, as supplemented by letter dated January 24, 2018, the licensee proposed the following revised license condition for PNP, to replace RFOL No. DPR-20, Condition 2.C.(3):

#### (3) Fire Protection

ENO shall implement and maintain in effect all provisions of the approved fire protection program that comply with 10 CFR 50.48(a) and 10 CFR 50.48(c), as specified in the license amendment requests dated December 12, 2012 and November 1, 2017, as supplemented by letters dated February 21, 2013, September 30, 2013, October 24, 2013, December 2, 2013, April 2, 2014, May 7, 2014, June 17, 2014, August 14, 2014, November 4, 2014, and December 18, 2014, and January 24, 2018, as approved in the safety evaluations dated February 27, 2015 and February 27, 2018. Except where NRC approval for changes or deviations is required by 10 CFR 50.48(c), and provided no other regulation, technical specification, license condition or requirement would require prior NRC approval, the licensee may make changes to the fire protection program without prior approval of the Commission if those changes satisfy the provisions set forth in 10 CFR 50.48(a) and 10 CFR 50.48(c), the change does not require a change to a technical specification or a license condition, and the criteria listed below are satisfied.

In addition, the licensee proposed the following revision to the transition license condition 2.C.(3)(c):

(c) Transition License Conditions

...

2. The licensee shall implement the modifications to its facility, as described in Table S-2, "Plant Modifications Committed," of ENO letter PNP 2014-080 dated August 14, 2014, to complete the transition to full compliance with 10 CFR 50.48(c) before the end of the refueling outage following the third full operating cycle after NRC approval. The licensee shall maintain appropriate compensatory measures in place until completion of these modifications.

...

5.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Michigan State official was notified of the proposed issuance of the amendment on February 6, 2018. The Michigan State official had no comments.

6.0 ENVIRONMENTAL CONSIDERATION

The amendment changes requirements with respect to the installation or use of facility components located within the restricted area as defined in 10 CFR Part 20. The NRC staff has determined that the amendment involves no significant increase in the amounts and no significant change in the types of any effluents that may be released offsite and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendment involves no significant hazards consideration, and there has been no public comment on such finding published in the *Federal Register* on December 5, 2017 (82 FR 57472). Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment needs to be prepared in connection with the issuance of the amendment.

7.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) there is reasonable assurance that such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

8.0 REFERENCES

1. Vitale, Anthony J., Entergy Nuclear Operations, Inc., letter to U.S. Nuclear Regulatory Commission, "License Amendment Request to Adopt NFPA 805 Performance-Based Standard for Fire Protection for Light Water Reactors, Palisades Nuclear Plant, Docket 50-255, License No. DPR-20," December 12, 2012 (ADAMS Accession No. ML12348A455).

2. Rankin, Jennivine K., U.S. Nuclear Regulatory Commission, letter to Entergy Nuclear Operations, Inc., "Palisades Nuclear Plant - Issuance of Amendment Regarding Transition to a Risk-Informed, Performance-Based Fire Protection Program in Accordance with 10 CFR 50.48(c) (TAC No. MF0382)," February 27, 2015 (ADAMS Accession No. ML15007A191).
3. National Fire Protection Association, "Performance-Based Standard for Fire Protection for Light Water Reactor Electric Generating Plants," Standard 805 (NFPA 805), 2001 Edition, Quincy, Massachusetts.
4. Arnone, Charles F., Entergy Nuclear Operations, Inc., letter to U.S. Nuclear Regulatory Commission, "License Amendment Request to Change the Full Compliance Implementation Date for the Fire Protection Program Transition License Condition for Required Modifications," November 1, 2017 (ADAMS Accession No. ML17306A086).
5. Arnone, Charles F., Entergy Nuclear Operations, Inc., letter to U.S. Nuclear Regulatory Commission, "Supplement to License Amendment Request to Change the Full Compliance Implementation Date for the Fire Protection Program Transition License Condition for Required Modifications," January 24, 2018 (ADAMS Accession No. ML18025A060).
6. U.S. Nuclear Regulatory Commission, "Risk-Informed, Performance-Based Fire Protection for Existing Light-Water Nuclear Power Plants," Regulatory Guide 1.205, Revision 1, December 2009 (ADAMS Accession No. ML092730314).
7. Nuclear Energy Institute, "Guidance for Implementing a Risk-Informed, Performance-Based Fire Protection Program Under 10 CFR 50.48(c)," Washington, DC, NEI 04-02, Revision 2, April 2008 (ADAMS Accession No. ML081130188).
8. U.S. Nuclear Regulatory Commission, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis," Regulatory Guide 1.174, Revision 2, May 2011 (ADAMS Accession No. ML100910006).
9. U.S. Nuclear Regulatory Commission, "EPRI/NRC-RES Fire PRA Methodology for Nuclear Power Facilities, Volume 1: Summary and Overview," NUREG/CR-6850, September 2005 (ADAMS Accession No. ML052580075).
10. U.S. Nuclear Regulatory Commission, "EPRI/NRC-RES Fire PRA Methodology for Nuclear Power Facilities, Volume 2: Detailed Methodology," NUREG/CR-6850, September 2005 (ADAMS Accession No. ML052580118).
11. U.S. Nuclear Regulatory Commission, "Fire Probabilistic Risk Assessment Methods Enhancements," NUREG/CR-6850, Supplement 1, September 2010 (ADAMS Accession No. ML103090242).
12. Arnone, Charles F., Entergy Nuclear Operations, Inc., letter to the U.S. Nuclear Regulatory Commission, "Certification of Permanent Cessation of Power Operations," January 4, 2017 (ADAMS Accession No. ML17004A062).
13. Arnone, Charles F., Entergy Nuclear Operations, Inc., letter to the U.S. Nuclear Regulatory Commission, "Certification of Permanent Cessation of Power Operations,"

September 28, 2017 (ADAMS Accession No. ML17271A233).

14. Arnone, Charles F., Entergy Nuclear Operations, Inc., letter to the U.S. Nuclear Regulatory Commission, "Supplement to Certification of Permanent Cessation of Power Operations," October 19, 2017 (ADAMS Accession No. ML17292A032).

Principal Contributor: A. Wu, NRR/DRA  
J. Robinson, NRR/DRA

Date of issuance: February 27, 2018

SUBJECT: PALISADES NUCLEAR PLANT - ISSUANCE OF AMENDMENT RE: LICENSE AMENDMENT REQUEST TO CHANGE THE FULL COMPLIANCE IMPLEMENTATION DATE FOR THE FIRE PROTECTION PROGRAM TRANSITION LICENSE CONDITION FOR REQUIRED MODIFICATIONS (EPID L-2017-LLA-0369) DATED FEBRUARY 27, 2018

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 JRobinson, NRR/DRA

**ADAMS Accession No. ML18039A244**

**\*via email**

OFFICE	NRR/DORL/LPL3/PM	NRR/DORL/LPL3/LA	NRR/DRA/APLB/BC(A)*
NAME	JRankin	SRohrer	JRobinson
DATE	02/08/2018	02/08/2018	02/02/2018
OFFICE	OGC – NLO	NRR/DORL/LPL3/BC	NRR/DORL/LPL3/PM
NAME	JWachutka	DWrona	JRankin
DATE	02/13/2018	02/27/2018	02/27/2018

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