



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

August 20, 2019

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 NO. 269  
REGARDING CHANGES TO NFPA 805 MODIFICATIONS AND CHANGE TO  
FULL COMPLIANCE IMPLEMENTATION DATE FOR THE FIRE PROTECTION  
PROGRAM (EPIDS L-2018-LLA-0296 AND L-2019-LLA-0049)

Dear Sir or Madam:

The U.S. Nuclear Regulatory Commission has issued the enclosed Amendment No. 269 to Renewed Facility Operating License No. DPR-20 for the Palisades Nuclear Plant. The amendment consists of changes to the license in response to your applications dated November 1, 2018, and March 8, 2019, as supplemented by letter dated May 28, 2019.

The amendment cancels 6 modifications and clarifies 10 modifications as described Table S-2, "Plant Modifications Committed," which is referenced in the fire protection program transition License Condition 2.C.(3)(c)2. The amendment also extends the full compliance date for the fire protection program transition license condition.

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

Sincerely,

*/RA/*

Kimberly J. Green, Senior Project Manager  
Plant Licensing Branch III  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket No. 50-255

Enclosures:

1. Amendment No. 269 to DPR-20
2. Safety Evaluation

cc: Listserv



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

ENTERGY NUCLEAR OPERATIONS, INC.

DOCKET NO. 50-255

PALISADES NUCLEAR PLANT

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 269  
License No. DPR-20

1. The U.S. Nuclear Regulatory Commission (the Commission) has found that:
  - A. The applications for amendment by Entergy Nuclear Operations, Inc. (ENO, the licensee), dated November 1, 2018, and March 8, 2019, as supplemented by letter dated May 28, 2019, comply 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; and
  - 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 the license amendment, and Paragraphs 2.C.(3) and 2.C.(3)(c)2 of Renewed Facility Operating License No. DPR-20 are hereby amended to read 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, November 1, 2017, November 1, 2018, and March 8, 2019, 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, December 18, 2014, January 24, 2018, and May 28, 2019, as approved in the safety evaluations dated February 27, 2015, February 27, 2018, and August 20, 2019. 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 2019-028 dated May 28, 2019, to complete the transition to full compliance with 10 CFR 50.48(c) before the end of the refueling outage following the fourth 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 of the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

*/RA/*

Lisa M. Regner, Acting Branch 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: August 20, 2019

ATTACHMENT TO LICENSE AMENDMENT NO. 269

PALISADES NUCLEAR PLANT

RENEWED FACILITY OPERATING LICENSE NO. DPR-20

DOCKET NO. 50-255

Renewed Facility Operating License No. DPR-20

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 areas of change.

REMOVE

3  
4  
5a

INSERT

3  
4  
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. 268, 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, November 1, 2017, November 1, 2018, and March 8, 2019, 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, December 18, 2014, January 24, 2018, and May 28, 2019, as approved in the safety evaluations dated February 27, 2015, February 27, 2018, and August 20, 2019. 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

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 2019-028 dated May 28, 2019, to complete the transition to full compliance with 10 CFR 50.48(c) before the end of the refueling outage following the fourth 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. 269 TO

RENEWED FACILITY OPERATING LICENSE NO. DPR-20

ENTERGY NUCLEAR OPERATIONS, INC.

PALISADES NUCLEAR PLANT

DOCKET NO. 50-255

1.0 INTRODUCTION

By letter dated November 1, 2018 (Reference 1) to the U.S. Nuclear Regulatory Commission (NRC or the Commission), as supplemented by letter dated May 28, 2019 (Reference 2), Entergy Nuclear Operations, Inc., (ENO, the licensee) submitted a license amendment request (LAR) for the Palisades Nuclear Plant (PNP), requesting a change to the PNP approved fire protection program (FPP). Specifically, the licensee requested to cancel 6 modifications and clarify 10 modifications as described in LAR Attachment S, Table S-2, "Plant Modifications Committed," which is referenced in the FPP transition License Condition 2.C.(3)(c)2.

By letter dated March 8, 2019 (Reference 3), the licensee submitted another LAR requesting another change to the PNP approved FPP. Specifically, the licensee requested to extend the full compliance date for the FPP transition License Condition 2.C.(3)(c)2 to allow for the implementation of the remaining plant modifications required to achieve full compliance with Title 10 of the *Code of Federal Regulations* (10 CFR), Section 50.48(c).

The supplemental letter dated May 28, 2019, provided additional information that clarified the applications, did not expand the scope of the applications as originally noticed, and did not change the NRC staff's original proposed no significant hazards consideration determinations as published in the *Federal Register* (FR) on February 5, 2019 (84 FR 1804), and May 7, 2019 (84 FR 19969).

2.0 REGULATORY EVALUATION

2.1 Program Description

In the 1990s, the NRC worked with the National Fire Protection Association (NFPA) and industry to develop a risk-informed/performance-based (RI/PB) consensus standard for fire protection. In 2001, the NFPA Standards Council issued NFPA 805, "Performance-Based Standard for Fire Protection for Light Water Reactor [LWR] Electric Generating Plants," which describes a methodology for establishing fundamental FPP design requirements and elements, determining required fire protection systems and features, applying PB requirements, and

administering fire protection for existing LWRs during operation, decommissioning, and permanent shutdown. It provides for the establishment of a minimum set of fire protection requirements but allows PB or deterministic approaches to be used to meet performance criteria. By letter dated February 27, 2015, the NRC staff approved the adoption of NFPA 805 for PNP.

## 2.2 Licensee's Proposed Changes

In its LAR dated November 1, 2018, the licensee proposed to cancel 6 modifications and clarify 10 modifications as described in LAR Attachment S, Table S-2, "Plant Modifications Committed," as referenced in NFPA 805 transition License Condition 2.C.(3)(c)2.

The licensee proposed to cancel the following 6 modifications:

1. S2-6 - Bypass for Auxiliary Feedwater (AFW) Pumps Low Suction Pressure Trips
2. S2-7 - Manual Control of Component Cooling Water (CCW) and Service Water (SW) for Engineered Safeguards System (ESS) Pump Cooling
3. S2-8 - Insulate Emergency Diesel Generator (EDG) Exhaust Pipe
4. S2-14 - Prevent Spurious Energization of CCW Solenoid Valves
5. S2-26 - Provide Same Train Power to Battery Chargers
6. S2-39 - Turbine Building Fresh Air Fan V-21D Fire Rating

The licensee proposed to clarify the following 10 modifications:

1. S2-15 - Spurious Operation of Reactor Head/Pressurizer Vent Valves
2. S2-18 - Fire Detection System Replacement/Upgrade
3. S2-21 - Motor Operated Valve [MOV] (MO-2160) Manual Operation Capability
4. S2-24 - Seismic Gap Fire Rating
5. S2-25 - Diesel Generator Room Ventilation Recirculation Damper (D-25)
6. S2-29 - Separation of Electrical Ignition Sources from Hydrogen Vent
7. S2-30 - Exterior Door Replacement for Hydrogen Storage Area
8. S2-31 - Replacement of Doors for NFPA 80 Compliance
9. S2-37 - Turbine Building East Wall - Transformer Fire Wall South End
10. S2-38 - Upper CCW Room Exterior Wall

### 2.2.1 Cancellation of Modifications

#### Modification S2-6 - Bypass for AFW Pumps Low Suction Pressure Trips

The licensee stated that the proposed modification would have provided the ability to block spurious low suction pressure trips of operating AFW pumps from the control room.

#### Modification S2-7 - Manual Control of CCW and SW for ESS Pumps

The licensee stated that the proposed modification would have supported a control room action to align SW cooling to ESS pumps using a nitrogen supply installed by the modification.

#### Modification S2-8 - Insulate EDG Exhaust Pipe

The licensee stated that the proposed modification would have added insulation to a portion of the exhaust piping for each EDG to reduce the rate at which the two EDG rooms heat up on

loss of ventilation and that this would have increased the available time for operator action to implement alternate diesel room cooling strategies.

Modification S2-14 - Prevent Spurious Energization of CCW Solenoid Valves

The licensee stated that the proposed modification would have replaced existing control cables for the air operated valves (CV-0910, CV-0911 and CV-0940) controlling CCW flow to containment and that the intent of the modification was to prevent spurious closure of these valves due to fire induced faults on control circuit cables.

Modification S2-26 - Provide Same Train Power to Battery Chargers

The licensee stated that the proposed modification would have provided a second power source to the cross-train battery chargers and that the second power source would have provided the ability to power these battery chargers from the appropriate power division in addition to the current cross-train source.

Modification S2-39 - Turbine Building Fresh Air Fan V-21D Fire Rating

The licensee stated that the proposed modification was intended to restore the fire rating of the exterior wall associated with fan (V-21D).

2.2.2 Clarification of Modifications

Modification S2-15 - Spurious Operation of Reactor Head/Pressurizer Vent Valves

The licensee proposed to change the wording for Modification S2-15 from:

This is a modification to replace the existing cabling to the reactor head vent valves and pressurizer vent valves with fire-rated cables.

to:

This modification will modify the control circuit and replace existing cabling to the reactor head vent and pressurizer vent isolation valves.

Modification S2-18 - Fire Detection System Replacement/Upgrade

The licensee proposed to change the wording for Modification S2-18 from:

Additionally, Fire Panel C49 and C49A will be replaced with a NFPA 72 compliant fire alarm control panel.

to:

Additionally, Fire Panel C-47A and C-47B will be replaced with a NFPA 72 compliant fire alarm control panel.

Modification S2-21 – Motor-Operated Valve (MO-2160) Manual Operation Capability

The licensee proposed to change the wording for Modification S2-21 from:

Modify the MOV circuitry such that the torque switch is not disabled due to a fire that could also cause the MOV to spuriously operate.

to:

Modify the MOV actuator such that actuator and valve internals are not damaged due to a fire that could cause the MOV to spuriously stroke open or closed simultaneous with loss of the MOV limit and torque switch protections.

Modification S2-24 - Seismic Gap Fire Rating

The licensee proposed to change the wording for Modification S2-24 from:

Fill and/or cover the seismic gaps with a rated material. The proposed modification will remove the Flexcell Bond material from the seismic gaps in several Fire Areas and replace it with a fire-rated configuration.

to:

Evaluate the seismic gaps that serve as fire barriers to determine if they are adequate for the hazard. Those determined not adequate for the hazard in the current configuration will be modified such that the final configuration is adequate for the hazard.

Modification S2-25 - Diesel Generator Room Ventilation Recirculation Damper (D-25)

The licensee proposed to change the wording for Modification S2-25 from:

D-25, EDG 1-1 Room Ventilation Recirculation damper was permanently disabled. Damper D-25 will be removed and replaced with a fire-rated barrier.

to:

Existing D-25 damper will be enclosed by a steel plate with fire sealant applied at the edges of the plate.

Modification S2-29 - Separation of Electrical Ignition Sources from Hydrogen Vent

The licensee proposed to change the wording for Modification S2-29 from:

Modify the current configuration of the electrical switches and cabling to remove the ignition source as a hazard to the hydrogen system.

A modification will be performed to move the hydrogen vent discharge line 15 feet from electrical equipment, extending upward while being appropriately protected against weather intrusion.

to:

Move the identified electrical components and cabling to a distance greater than 25 feet from the hydrogen system.

The hydrogen bottle backup storage vent line was moved to meet the code requirement.

Modification S2-30 - Exterior Door Replacement for Hydrogen Storage Area

The licensee proposed to change the wording for Modification S2-30 from:

The exterior doors into Room 139 will be replaced with "lightly fastened" doors that meet the requirement of this code section.

to:

The exterior doors into Room 139 were replaced with lightly fastened, 1.5-hour fire-rated doors that were determined to be adequate for the hazard.

Modification S2-31 - Replacement of Doors for NFPA 80 Compliance

The licensee proposed to change the wording for Modification S2-31 from:

Repair or replace fire doors to ensure compliance with NFPA 80.

to:

Repair or replace fire doors to ensure compliance with NFPA 80 or justify as adequate for the hazard.

Modification S2-37 - Turbine Building East Wall - Transformer Fire Wall South End

The licensee proposed to change the wording for Modification S2-37 from:

Three-hour fire rated dampers on the Turbine Building Fresh Air Fan (V-21P, V-21Q, V-21U, V-21V, V-21W) will be installed.

to:

The fan starting circuits will be modified to trip the fans and close the dampers on detection of a fire.

Modification S2-38 - Upper CCW Room Exterior Wall

The licensee proposed to change the wording for Modification S2-38 from:

A fire door and barrier will be installed above the door at the north end of the missile shield/valve gallery area.

A fire rated barrier will be installed around the ventilation duct from fan V-78.

to:

The CCW room west exterior wall fire barrier was repaired and justified as adequate for the hazard.

### 2.2.3 Revision to Transition License Condition 2.C.(3)(c)2

In its LAR dated March 8, 2019, the licensee proposed to modify its FPP by changing the due date to complete the plant modifications required to be completed per FPP transition License Condition 2.C.(3)(c)2.

The licensee proposed a revision to its FPP transition License Condition 2.C.(3)(c)2, which currently states:

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 current FPP transition license condition wording requires the licensee to complete the NFPA 805 modifications before the end of the refueling outage following the third full operating cycle after NRC approval. The licensee is requesting to revise FPP transition License Condition 2.C.(3)(c)2 to state (changes shown in **bold**):

The licensee shall implement the modifications to its facility, as described in Table S-2, "Plant Modifications Committed," of ENO letter PNP **2019-028** dated **May 28, 2019**, to complete the transition to full compliance with 10 CFR 50.48(c) before the end of the refueling outage following the **fourth** full operating cycle after NRC approval. The licensee shall maintain appropriate compensatory measures in place until completion of these modifications.

The change to the transition License Condition 2.C.(3)(c)2 necessitates further changes in License Condition 2.C.(3), "Fire Protection." The current License Condition 2.C.(3) for PNP states:

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 request 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 [SEs] 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.

The LARs propose revising License Condition 2.C.(3), "Fire Protection," to state (changes shown in bold):

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 request dated December 12, 2012, ~~and~~ November 1, 2017, **November 1, 2018, and March 8, 2019**, 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, ~~and~~ **May 28, 2019**, as approved in the safety evaluations dated February 27, 2015, ~~and~~ February 27, 2018, ~~and~~ **Month XX, 2019**. 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.

### 2.3 Regulatory Requirements

The following regulations address fire protection:

- 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.
- Section 50.48(a)(1) of 10 CFR requires that each holder of an operating license have an FPP that satisfies General Design Criterion (GDC) 3, "Fire Protection," of Appendix A to 10 CFR Part 50, "General Design Criteria for Nuclear Power Plants."
- Section 50.48(c) of 10 CFR incorporates 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 regulation also includes 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, 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 §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. 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.

- Appendix A to 10 CFR Part 50, GDC 3, states, in part, that:

Structures, systems, and components [SSCs] 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.

Pursuant to 10 CFR 50.90, whenever a holder of a license desires to amend the license or permit, an application for an amendment must be filed with the Commission 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.

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, "Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions."

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. Additional findings required to issue amendments related to fire protection are provided in 10 CFR 50.48.

Regulation 10 CFR 50.32, "Elimination of repetition," states, in part, that "the applicant may incorporate by reference information contained in previous applications, statements or reports filed with the Commission: *Provided*, That such references are clear and specific."

## 2.4 Applicable Codes, Standards, and Regulatory Guides (RGs)

The 2001 edition of NFPA 805 (Reference 4), which specifies the minimum fire protection requirements for existing light-water nuclear power plants during all phases of plant operations, including shutdown, degraded conditions, and decommissioning. NFPA 805 was developed to provide a comprehensive RI/PB standard for fire protection. The NFPA 805 Technical Committee on Nuclear Facilities is composed of nuclear plant licensees, the NRC, insurers, equipment manufacturers, and subject matter experts. The standard was developed in accordance with NFPA processes and consisted of technical meetings and reviews of draft documents by committee and industry representatives. The scope of NFPA 805 includes goals related to nuclear safety, radioactive release, life safety, and plant damage/business interruption. The standard addresses fire protection requirements for nuclear plants during all plant operating modes and conditions, including shutdown and decommissioning, which had not been explicitly addressed by previous requirements and guidelines. NFPA 805 became effective on February 9, 2001.

The Nuclear Energy Institute (NEI) 04-02 (Reference 5), provides guidance for implementing the requirements of 10 CFR 50.48(c), and represents methods for implementing in whole or in part a RI/PB FPP. This implementing guidance for NFPA 805 has two primary purposes: (1) provide direction and clarification for adopting NFPA 805 as an acceptable approach to fire protection, consistent with 10 CFR 50.48(c); and (2) provide additional supplemental technical guidance and methods for using NFPA 805 and its appendices to demonstrate compliance with fire protection requirements. Although there is a significant amount of detail in NFPA 805 and its appendices, clarification and additional guidance for select issues help ensure consistency and effective utilization of the standard. The NEI 04-02 guidance focuses attention on the RI/PB FPP fire protection goals, objectives, and performance criteria contained in NFPA 805 and the RI/PB tools considered acceptable for demonstrating compliance. Revision 2 of NEI 04-02 incorporates guidance from Regulatory Guide (RG) 1.205 and approved Frequently Asked Questions (FAQs).

Section 4.2.4.2 of NFPA 805 requires that the “[u]se of fire risk evaluation for the performance-based approach shall consist of an integrated assessment of the acceptability of risk, defense-in-depth, and safety margins.”

As a supplement to the definition of defense-in-depth (DID) provided in NFPA 805, Section 1.2, the NRC-endorsed guidance in NEI 04-02, Revision 2, “Guidance for Implementing a Risk-Informed, Performance-Based Fire Protection Program Under 10 CFR 50.48(c),” April 2008 (Reference 5), Section 5.3.5.2, states, in part, that:

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 fire 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.

Although not a part of the requirements of NFPA 805, and thus not required, 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.

Section 5.3.5.3, “Safety Margins,” of NEI 04-02, Revision 2, 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.

Revision 1 of RG 1.205, “Risk-Informed, Performance-Based Fire Protection for Existing Light Water Nuclear Power Plants,” 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. Revision 1 of RG 1.205 sets forth regulatory positions, clarifies the requirements of 10 CFR 50.48(c) and NFPA 805, clarifies the guidance in NEI 04-02, Revision 2, and provides exceptions to the NEI 04-02 guidance where required. Should a conflict occur between NEI 04-02 and RG 1.205, the regulatory positions in RG 1.205 govern.

Revision 3 of RG 1.174, “An Approach for Using Probabilistic Risk Assessment [PRA] in Risk Informed Decisions on Plant-Specific Changes to the Licensing Basis,” January 2018 (Reference 7), provides an acceptable approach for using risk information in support of licensee-initiated licensing basis changes to an NPP that require such 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 (Reference 8), (Reference 9), (Reference 10), respectively, present a compendium of methods, data, and tools to perform a fire PRA (FPRA) and develop associated insights.

### 3.0 TECHNICAL EVALUATION

In accordance with 10 CFR 50.48(c)(3)(i), the licensee submitted an LAR to revise the PNP fire protection License Condition 2.C.(3)(c)2. The NRC staff reviewed the information provided in the LAR including discussions of the impact of the proposed changes on risk, DID, and safety margins, which are required by NFPA 805, Section 4.2.4.2.

In its LARs dated November 1, 2018, and March 8, 2019, as supplemented by letter dated May 28, 2019, ENO proposed to modify its NFPA 805 FPP by cancelling 6 modifications,

clarifying 10 modifications, revising its FPP transition license condition to extend the full compliance date for implementation of the remaining modifications, and revising its FPP license condition to reflect the dates of the LARs and supplement noted above.

The licensee stated that the PRA model of record discussed in its letter dated November 4, 2014 (Reference 11), is the same PRA model used to evaluate the cancellation of the six modifications proposed in this request and that this PRA model of record uses the accepted FPRA methods and approaches as summarized in the NRC NFPA 805 SE (Reference 12) (PNP Amendment No. 254).

The licensee stated that the PRA model was revised to remove logic associated with modifications that were identified as no longer required for risk reduction or compliance and that the updated risk values are consistent with the values discussed in its November 4, 2014, letter. The licensee further stated that the removal of the six modifications from the PRA model reflected no change in the fire core damage frequency (CDF)/large early release frequency (LERF) reported in its November 4, 2014, letter.

The licensee stated that in its updated Attachment W, Table W-1, "Fire Initiating Events Contributing >1% to the Calculated Fire Risk," the identified scenarios remain the same with the same order of importance and that there are minor reductions in percent contribution to the calculated fire risk.

As permitted by 10 CFR 50.32, the LAR references methods and approaches used in support of PNP Amendment No. 254 (Reference 12), or other methods and approaches that the NRC staff considers acceptable. Because the NRC staff has found these methods and approaches acceptable for evaluating changes to the FPP as described in the NFPA 805 SE or in NRC guidance documents, the NRC staff's review in support of this proposed license amendment need not reevaluate the acceptable methods and approaches.

In its response to PRA request for additional information 02 (Reference 2), the licensee stated that DID approach for NFPA 805 implementation remains applicable. The licensee further stated that the elements of DID are: (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 SSCs important to safety, so that a fire that is not promptly extinguished will not prevent essential plant safety functions from being performed. The licensee further stated that DID is achieved when an adequate balance between each of the elements is provided.

The licensee stated that an adequate balance is provided for each fire scenario if there is not an over-reliance on either preventing fires from starting, or from detecting and suppressing fires, in order to ensure that high consequence scenarios (high conditional core damage probability (CCDP)) have acceptably low risk. The licensee indicated that if the scenario CDF is not made acceptably small by undue reliance on a combination of fire ignition frequency (FIF), severity factor and the non-suppression probability, balance is considered achieved and adequate DID is maintained.

### 3.1 Cancel Modification S2-6 - Bypass for AFW Pumps Low Suction Pressure Trips

In the LAR dated December 12, 2012 (Reference 13), to adopt NFPA 805, ENO included Modification S2-6 to provide the ability to block spurious low suction pressure trips of operating AFW pumps from the control room.

In the LAR dated November 1, 2018, ENO proposed to cancel Modification S2-6 because the risk ranking of this modification was low given other failures of the AFW pumps in fire scenarios which impacted the cables associated with low suction pressure trip.

#### 3.1.1 Risk Evaluation

The licensee stated that Modification S2-6 would have modified AFW pump control circuits to allow bypass of a low suction pressure trip from the control room for trips determined to be spurious because of fire induced cable faults. The licensee also stated that the PRA model logic for the modification established credit for the control room action and that the logic associated with credit for the control room circuit modification has been removed. The licensee further stated that the original local action to clear a low suction pressure trip remains in the model and that the human error probability (HEP) associated with this local event is set to 1.0 for fire conditions, and consequently, credit for the benefit of the modification has been removed.

The licensee stated that the risk ranking of this modification was low given other failures of the AFW pumps in fire scenarios which impacted the cables associated with low suction pressure trip. The licensee also stated that the benefit of Modification S2-1 (diesel-driven AFW pump) offsets the benefit of this modification and that the impact of cancelling this modification was considered in aggregate with the other modifications being cancelled. The licensee further stated that the impact of this change demonstrates no change in aggregate CDF and LERF.

#### 3.1.2 Defense-In-Depth/Safety Margins

The licensee stated that eliminating the modification to bypass AFW pump low suction pressure trips for the existing AFW pumps does not affect ignition sources or involve transient combustibles or their controls; therefore, the change does not impact element (1) for preventing fires from starting. The licensee also stated that eliminating this modification does not alter or impact any fire protection systems or features, any detection or suppression systems, any fire barriers, or any elements for fire brigade performance; therefore, the change does not impact element (2) for rapidly detecting fires and controlling and extinguishing promptly those fires that do occur. The licensee further stated that eliminating this modification does not impact the level of fire protection for structures, systems, and components important to safety; therefore, the change does not impact element (3) for providing an adequate level of fire protection for SSCs important to safety, so that a fire that is not promptly extinguished will not prevent essential plant safety functions from being performed.

The licensee stated that the intent of the modification was to support decay heat removal; additional DID for this function is now provided by installation of the diesel-driven AFW pump (Modification S2-1) which does not have automatic trip circuitry that could be impacted by fire.

The licensee concluded that there is an adequate balance between the elements and DID is maintained for this proposed change.

The licensee stated that adequate safety margins are maintained because elimination of this modification does not impact compliance with any codes and standards, or their alternatives accepted for use by the NRC, and this change does not impact any safety analysis acceptance criteria used in the licensing basis.

The licensee stated that a review of the prior determinations for DID and safety margins, accounting for the modifications being eliminated, established that the DID and safety margins continue to meet the acceptance criteria of NFPA 805, Section 4.2.4, with no change to the required modifications or DID actions. The licensee further stated that recovery actions (RAs) identified as required previously are not impacted by the modification elimination and remain capable of being performed, and that consequently, it was determined that no changes to the existing evaluations are required.

### 3.1.3 NRC Staff Evaluation

In accordance with 10 CFR 50.48(c)(3)(i), ENO submitted an LAR to revise its fire protection License Condition 2.C.(3)(c)2. The NRC staff reviewed the information provided by the licensee in the LAR, including discussions of the impact of the proposed changes on risk, DID, and safety margins as required by NFPA 805, Section 4.2.4.2.

Regarding risk, the licensee stated that it used methods already accepted in its NFPA 805 SE. To remove the credit for this modification from the PRA, the licensee indicated it removed the logic for the control room action and circuit modification, setting HEP for local action to clear a low suction pressure trip to 1.0 to represent no PRA credit. Because the licensee used accepted methods and the PRA changes removed credit for the plant modification using state-of-practice PRA approaches, the NRC staff finds the methods used to evaluate the impact of removing this plant modification acceptable for use in the integrated PRA study.

Regarding DID, the NRC staff confirmed the proposed change has no impact on any of the DID elements because not completing the modification has no impact on preventing fires from starting, or detecting or extinguishing fires, and because an adequate level of fire protection will continue to be provided by installation of the diesel-driven AFW pump so that a fire will not prevent essential safety functions from being performed. Because the DID elements are unaffected, the NRC staff finds that the balance between DID elements is maintained.

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

### 3.2 Cancel Modification S2-7 - Manual Control of CCW and SW for ESS Pumps

In the LAR dated December 12, 2012, to adopt NFPA 805, ENO included Modification S2-7 to provide the means of aligning alternate cooling from the SW system to ESS pump cooling when CCW is unavailable to provide cooling due to a fire.

In the LAR dated November 1, 2018, ENO proposed to cancel Modification S2-7 because the risk ranking of this modification was low given other failures of the ESS pumps in fire scenarios which impacted the CCW source to the pumps.

### 3.2.1 Risk Evaluation

The licensee stated that Modification S2-7 would have provided the means of aligning alternate cooling from the SW system to ESS pump cooling when CCW is unavailable to provide cooling due to a fire. The licensee also stated that the PRA model credited the action to complete this alignment as feasible in fire conditions and that the control logic in the PRA model for this modification was removed. The licensee further stated that the local operator to complete this action is retained but considered not feasible and that the HEP associated with this local event is set to 1.0 for fire and that the credit for the benefit of the modification has been removed.

The licensee stated that the risk ranking of this modification was low given other failures of the ESS pumps in fire scenarios which impacted the CCW source to the pumps. The licensee also stated that restoration of pump cooling as an independent strategy did not provide a significant benefit in the recovery of ESS pumps due to other fire induced faults causing pump failure and that the impact of cancelling this modification was considered in aggregate with the other modifications being cancelled. The licensee further stated that the impact of this change demonstrates no change in aggregate CDF and LERF.

### 3.2.2 Defense-in-Depth/Safety Margins

The licensee stated that eliminating the modification to provide a control room action to align SWS cooling to ESS pumps using a nitrogen supply installed by the modification does not affect ignition sources or involve transient combustibles or their controls; therefore, the change does not impact element (1) for preventing fires from starting. The licensee also stated that eliminating this modification does not alter or impact any fire protection systems or features, any detection or suppression systems, any fire barriers, or any elements for fire brigade performance; therefore, the change does not impact element (2) for rapidly detecting fires and controlling and extinguishing promptly those fires that do occur. The licensee further stated that eliminating this modification does not impact the level of fire protection for SSCs important to safety; therefore, the change does not impact element (3) for providing an adequate level of fire protection for SSCs important to safety, so that a fire that is not promptly extinguished will not prevent essential plant safety functions from being performed.

The licensee indicated that the intent of the modification was to support inventory control by improving the ability to perform an action to provide backup cooling to the high pressure safety injection pumps and that additional DID for this function is now provided by reducing the contribution from risk significant scenarios causing loss of primary coolant system (PCS) inventory with alternate trip circuitry for the primary coolant pumps (PCPs), charging pumps, and alternate control of letdown isolation valves (Modifications S2-5, S2-11, and S2-4).

The licensee concluded that there is an adequate balance between the elements and DID is maintained for this proposed change.

The licensee stated that adequate safety margins are maintained because elimination of this modification does not impact compliance with any codes and standards, or their alternatives accepted for use by the NRC, and this change does not impact any safety analysis acceptance criteria used in the licensing basis.

The licensee stated that a review of the prior determinations for DID and safety margins, accounting for the modifications being eliminated, established that the DID and safety margins continue to meet the acceptance criteria of NFPA 805, Section 4.2.4, with no change to the

required modifications or DID actions. The licensee stated that RAs identified as required previously are not impacted by the modification elimination and remain capable of being performed, and that consequently, it was determined that no changes to the existing evaluations are required.

### 3.2.3 NRC Staff Evaluation

In accordance with 10 CFR 50.48(c)(3)(i), ENO submitted an LAR to revise its fire protection License Condition 2.C.(3)(c)2. The NRC staff reviewed the information provided by the licensee in the LAR, including discussions of the impact of the proposed changes on risk, DID, and safety margins as required by NFPA 805, Section 4.2.4.2.

Regarding risk, the licensee stated that it used methods already accepted in its original NFPA 805 SE. To remove the credit for this modification from the PRA, the licensee indicated it removed the control logic for the action to align alternate cooling water from the SW to ESS pumps when CCW is unavailable due to a fire. Also, the HEP for the action is set to 1.0, which gives no PRA credit for the action. Because the licensee used accepted methods and the PRA changes removed credit for the plant modification using state-of-practice PRA approaches, the NRC staff finds the methods used to evaluate the risk of removing this plant modification acceptable for use in the integrated PRA study.

Regarding DID, the NRC staff confirmed the proposed change has no impact on any of the DID elements because not completing the modification has no impact on preventing fires from starting, or detecting or extinguishing fires, and because an adequate level of fire protection will continue to be provided by alternate trip circuitry for the PCPs, charging pumps, and alternate control of letdown isolation valves so that a fire will not prevent essential safety functions from being performed. Because the DID elements are unaffected, the NRC staff finds that the balance between DID elements is maintained.

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

### 3.3 Cancel Modification S2-8 - Insulate EDG Exhaust Pipe

In the LAR dated December 12, 2012, to adopt NFPA 805, ENO included Modification S2-8 to add insulation to a portion of the exhaust piping for each EDG to reduce the rate at which the two EDG rooms heat up on loss of ventilation.

In the LAR dated November 1, 2018, ENO proposed to cancel Modification S2-8 because the risk ranking of this modification was low given other failures of the diesels in fire scenarios which impacted the room cooling, and that restoration of cooling as an independent strategy did not provide a significant benefit in the restoration of alternating current (AC) power.

#### 3.3.1 Risk Evaluation

The licensee stated that Modification S2-8 would have added insulation to the exhaust piping of the EDGs to provide a basis for additional time to complete a local operator action to align alternate room cooling to the EDG rooms. The licensee also stated that the benefit of the modification was accomplished via control logic to allow credit for the local action when the

modification was complete and that without the modification the action was considered not feasible. The licensee further stated that the control logic associated with this modification was removed and the HEP associated the local operator action has been set to 1.0, which assumes the local action is not feasible and provides no benefit.

The licensee stated that the risk ranking of this modification was low given other failures of the diesels in fire scenarios which impacted the room cooling and that restoration of cooling as an independent strategy did not provide a significant benefit in the restoration of AC power. The licensee further stated that the impact of cancelling this modification was considered in aggregate with the other modifications being cancelled and that the impact of the change demonstrates no change in aggregate CDF and LERF.

### 3.3.2 Defense-in-Depth/Safety Margins

The licensee stated that eliminating the modification to add insulation to a portion of the exhaust piping for each EDG does not affect ignition sources or involve transient combustibles or their controls; therefore, the change does not impact element (1) for preventing fires from starting. The licensee also stated that eliminating this modification does not alter or impact any fire protection systems or features, any detection or suppression systems, any fire barriers, or any elements for fire brigade performance; therefore, the change does not impact element (2) for rapidly detecting fires and controlling and extinguishing promptly those fires that do occur. The licensee further stated that eliminating this modification does not impact the level of fire protection for SSCs important to safety; therefore, the change does not impact element (3) for providing an adequate level of fire protection for SSCs important to safety, so that a fire that is not promptly extinguished will not prevent essential plant safety functions from being performed.

The licensee indicated that the intent of the modification was to support vital auxiliaries by increasing the time available to operators to take actions supporting emergency 2400 volt AC given a loss of offsite power. The licensee stated that AC power supports operation of the existing motor driven AFW pumps and refill of the condensate storage tank to ensure adequate inventory to meet the system mission time and that additional DID for the motor driven AFW pumps is provided by the turbine driven AFW pump and is now provided by the independently powered diesel-driven AFW pump (Modification S2-1). The licensee further stated that additional DID for condensate inventory is now provided by the cross-tie between the condensate storage tank and demineralized water storage tank, which has no AC power dependency (Modification S2-10).

The licensee concluded that there is an adequate balance between the elements and DID is maintained for this proposed change.

The licensee stated that adequate safety margins are maintained because elimination of this modification does not impact compliance with any codes and standards, or their alternatives accepted for use by the NRC, and this change does not impact any safety analysis acceptance criteria used in the licensing basis.

The licensee stated that a review of the prior determinations for DID and safety margins, accounting for the modifications being eliminated, established that the DID and safety margins continue to meet the acceptance criteria of NFPA 805, Section 4.2.4, with no change to the required modifications or DID actions. The licensee further stated that RAs identified as required previously are not impacted by the modification elimination and remain capable of

being performed, and that consequently, it was determined that no changes to the existing evaluations are required.

### 3.3.3 NRC Staff Evaluation

In accordance with 10 CFR 50.48(c)(3)(i), ENO submitted an LAR to revise its fire protection License Condition 2.C.(3)(c)2. The NRC staff reviewed the information provided by the licensee in the LAR, including discussions of the impact of the proposed changes on risk, DID, and safety margins as required by NFPA 805, Section 4.2.4.2.

Regarding risk, the licensee stated that it used methods already accepted in its original NFPA 805 SE. To remove the credit for this modification from the PRA, the licensee stated that the PRA control logic associated with this modification was removed and the HEP associated the local operator action has been set to 1.0 which assumes the local action is not feasible and provides no benefit. Because the licensee used accepted methods and the PRA changes removed credit for the plant modification using state-of-practice PRA approaches, the NRC staff finds the methods used to evaluate the risk of removing this plant modification acceptable for use in the integrated PRA study.

Regarding DID, the NRC staff confirmed the proposed change has no impact on any of the DID elements because not completing the modification has no impact on preventing fires from starting, or detecting or extinguishing fires, and because an adequate level of fire protection will continue to be provided by the turbine driven AFW pump and the independently powered diesel-driven AFW pump and by the cross-tie between the condensate storage tank and demineralized water storage tank so that a fire will not prevent essential safety functions from being performed. Because the DID elements are unaffected, the NRC staff concludes that the balance between DID elements is maintained.

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

### 3.4 Cancel Modification S2-14 - Prevent Spurious Energization of CCW Solenoid Valves

In the LAR dated December 12, 2012, to adopt NFPA 805, ENO included Modification S2-14 to replace existing control cables for the air operated valves (CV-0910, CV-0911 and CV-0940) controlling CCW flow to containment.

In the LAR dated November 1, 2018, ENO proposed to cancel Modification S2-14 because the application of the NRC accepted methodology lowered the impact of control cable faults to an unimportant risk contribution and that the original high risk ranking of this modification was predicated on the initial assumed failure of these valves due to fire induced cable faults.

#### 3.4.1 Risk Evaluation

The licensee stated that the benefit of the modification was established in the PRA model by controlling where fire induced cable faults on the valve control cables could result in spurious closure of the valves. The licensee further stated that the PRA model was modified by

removing this control logic, and consequently, the removal of this modification results in restoration of all scenarios which can cause spurious closure of anyone of these valves.

The licensee further stated that the risk ranking of this modification was high and that the original benefit of this modification was predicated on the initial assumed failure of these valves due to fire induced cable faults. The licensee further stated that application of the methodology of NUREG/CR-7150, "Joint Assessment of Cable Damage and Quantification of Effects from Fire (JACQUE-FIRE), Volume 2: Expert Elicitation Exercise for Nuclear Power Plant Fire-Induced Electrical Circuit Failure" (Reference 14), lowered the impact of these cable faults to an unimportant risk contribution and that the benefit of Modification S2-5 (alternate PCP trip) offsets the benefit of this modification. The licensee further stated that the impact of cancelling this modification was considered in aggregate with the other modifications being cancelled and that the impact of the change demonstrates no change in aggregate CDF and LERF.

### 3.4.2 Defense-in-Depth/Safety Margins

The licensee stated that eliminating the modification to replace existing control cables for air-operated valves controlling CCW flow to containment (CV-0910, CV-0911, and CV-0940) does not affect ignition sources or involve transient combustibles or their controls; therefore, the change does not impact element (1) for preventing fires from starting. The licensee also stated that eliminating this modification does not alter or impact any fire protection systems or features, any detection or suppression systems, any fire barriers, or any elements for fire brigade performance; therefore, the change does not impact element (2) for rapidly detecting fires and controlling and extinguishing promptly those fires that do occur. The licensee further stated that eliminating this modification does not impact the level of fire protection for SSCs important to safety; therefore, the change does not impact element (3) for providing an adequate level of fire protection for SSCs important to safety, so that a fire that is not promptly extinguished will not prevent essential plant safety functions from being performed.

The licensee stated that the intent of the modification was to support inventory control by reducing the likelihood of loss of PCP seal cooling coupled with loss of the PCP trip Circuitry. The licensee further stated that additional DID for inventory control is now provided by installation of the alternate trip circuitry for the PCPs (Modification S2-5).

The licensee concluded that there is an adequate balance between the elements and DID is maintained for this proposed change.

The licensee stated that adequate safety margins are maintained because elimination of this modification does not impact compliance with any codes and standards, or their alternatives accepted for use by the NRC, and this change does not impact any safety analysis acceptance criteria used in the licensing basis.

The licensee stated that a review of the prior determinations for DID and safety margins, considering the modifications being eliminated, established that the DID and safety margins continue to meet the acceptance criteria of NFPA 805, Section 4.2.4, with no change to the required modifications or DID actions. The licensee stated that RAs identified as required previously are not impacted by the modification elimination and remain capable of being performed, and that consequently, it was determined that no changes to the existing evaluations are required.

### 3.4.3 NRC Staff Evaluation

In accordance with 10 CFR 50.48(c)(3)(i), the licensee submitted an LAR to revise its fire protection License Condition 2.C.(3)(c)2. The NRC staff reviewed the information provided by the licensee in the LAR including discussions of the impact of the proposed changes on risk, DID, and safety margins as required by NFPA 805, Section 4.2.4.2.

Regarding risk, the licensee stated that it used methods already accepted in its original NFPA 805 SE. To remove the credit for this modification from the PRA, the licensee removed the appropriate PRA logic, restoring all scenarios which can cause spurious closure of specific valves. The licensee indicated it also applied NUREG/CR-7150 to evaluate spurious operations with respect to this plant modification.

Because the licensee used accepted methods, including NUREG/CR-7150, and the licensee has treated spurious operations failure modes of SSCs already in its PRA, the NRC staff finds the methods used to evaluate the risk of removing this plant modification acceptable for use in the integrated PRA study.

Regarding DID, the NRC staff confirmed the proposed changes have no impact on any of the DID elements because not completing the modification has no impact on preventing fires from starting, or detecting or extinguishing fires, and because an adequate level of fire protection will continue to be provided for inventory control by installation of the alternate trip circuitry for the PCPs so that a fire will not prevent essential safety functions from being performed. Because the DID elements are unaffected, the NRC staff concludes that the balance between DID elements is maintained.

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

### 3.5 Cancel Modification S2-26 - Provide Same Train Power to Battery Chargers

In the LAR dated December 12, 2012, to adopt NFPA 805, ENO included Modification S2-26 to provide a second power source to the cross-train battery chargers.

In the LAR dated November 1, 2018, ENO proposed to cancel Modification S2-26 because the licensee stated that providing a second power source was not identified as a risk reduction modification.

#### 3.5.1 Risk Evaluation

The licensee stated that Modification S2-26 would have provided a second power source to the cross-train battery chargers and the second power source would have provided the ability to power these battery chargers from the appropriate power division in addition to the current cross-train source. The licensee also stated that this was not a risk reduction modification, however, the PRA model was updated to include the addition of the alternate power sources to the chargers, and the model logic representing the alternate power sources was removed. The licensee further stated that the impact of cancelling this modification was considered in aggregate with the other modifications being cancelled and that the impact of the change demonstrates no change in aggregate CDF and LERF.

### 3.5.2 Defense-in-Depth/Safety Margins

The licensee stated that eliminating the modification to provide a second power source to the cross-train battery chargers to provide the ability to power these battery chargers from the same side power division in addition to the current cross-train source does not affect ignition sources or involve transient combustibles or their controls; therefore, the change does not impact element (1) for preventing fires from starting. The licensee also stated that eliminating this modification does not alter or impact any fire protection systems or features, any detection or suppression systems, any fire barriers, or any elements for fire brigade performance; therefore, the change does not impact element (2) for rapidly detecting fires and controlling and extinguishing promptly those fires that do occur. The licensee further stated that eliminating this modification does not impact the level of fire protection for SSCs important to safety; therefore, the change does not impact element (3) for providing an adequate level of fire protection for SSCs important to safety, so that a fire that is not promptly extinguished will not prevent essential plant safety functions from being performed.

The licensee indicated that the intent of the modification was to support vital auxiliaries by providing the ability to power the battery chargers from cross-train or same-train AC. The licensee also stated that the battery chargers ultimately provide direct current control power that supports operation of the existing motor driven AFW pumps and pumps to refill the condensate storage tank to ensure adequate inventory to meet the system mission time. The licensee further stated that additional DID for AFW pumps is now provided by installation of the independently powered diesel-driven AFW pump (Modification S2-1), and that additional DID for condensate inventory is now provided by the cross-tie between the condensate storage tank and the demineralized water storage tank, which has no AC power dependency (Modification S2-10).

The licensee concluded that there is an adequate balance between the elements and DID is maintained for this proposed change.

The licensee stated that adequate safety margins are maintained because elimination of this modification does not impact compliance with any codes and standards, or their alternatives accepted for use by the NRC, and this change does not impact any safety analysis acceptance criteria used in the licensing basis.

The licensee stated that a review of the prior determinations for DID and safety margins, considering the modifications being eliminated, established that the DID and safety margins continue to meet the acceptance criteria of NFPA 805, Section 4.2.4, with no change to the required modifications or DID actions. The licensee stated that RAs identified as required previously are not impacted by the modification elimination and remain capable of being performed, and that consequently, it was determined that no changes to the existing evaluations are required.

### 3.5.3 NRC Staff Evaluation

In accordance with 10 CFR 50.48(c)(3)(i), the licensee submitted an LAR to revise its fire protection License Condition 2.C.(3)(c)2. The NRC staff reviewed the information provided by the licensee in the LAR including discussions of the impact of the proposed changes on risk, DID, and safety margins as required by NFPA 805, Section 4.2.4.2.

Regarding risk, the licensee stated that it used methods already accepted in its original NFPA 805 SE. Removing credit for a second power source, as was done in this modification, results in the loss of power to the battery chargers after the available power source is failed. Failure of components is a common practice in PRA in general. Because the licensee used accepted methods, and the licensee made state-of-practice FPRA approaches to remove the credit for this modification, the NRC staff finds the methods used to evaluate the risk of removing this plant modification acceptable for use in the integrated PRA study.

Regarding DID, the NRC staff confirmed the proposed change has no impact on any of the DID elements because not completing the modification has no impact on preventing fires from starting, or detecting or extinguishing fires, and because an adequate level of fire protection will continue to be provided by installation of the independently powered diesel-driven AFW pump, by the cross-tie between the condensate storage tank and the demineralized water storage tank so that a fire will not prevent essential safety functions from being performed. Because the DID elements are unaffected, the NRC staff concludes that the balance between DID elements is maintained.

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

### 3.6 Cancel Modification S2-39 - Turbine Building Fresh Air Fan V-21D Fire Rating

In the LAR dated December 12, 2012, to adopt NFPA 805, ENO included Modification S2-39 to restore the fire rating of the exterior wall associated with fan (V-21D).

In the LAR dated November 1, 2018, ENO proposed to cancel Modification S2-39 because the licensee stated that subsequent re-evaluation of the plant exterior walls was completed and determined that the current fan configuration is adequate for the hazard.

#### 3.6.1 Risk Evaluation

The licensee stated that Modification S2-39 was not a risk reduction modification and, therefore, removal of this modification does not impact the PRA model.

#### 3.6.2 Defense-in-Depth/Safety Margins

The licensee stated that eliminating the modification to restore the fire rating of the exterior wall associated with turbine building fan V-21D does not affect ignition sources or involve transient combustibles or their controls; therefore, the change does not impact element (1) for preventing fires from starting. The licensee also stated that eliminating this modification does not alter or impact any fire protection systems or features, any detection or suppression systems, or any elements for fire brigade performance. The licensee further stated that an "adequate for the hazard" evaluation determined that existing program controls for the area were adequate and assure that the existing configuration is adequate for the allowed combustible load in the area of the fan and damper; therefore, the change does not impact any fire barriers or DID element (2) for rapidly detecting fires and controlling and extinguishing promptly those fires that do occur. The licensee further stated that eliminating this modification does not impact the level of fire protection for structures, systems, and components important to safety; therefore, the change does not impact element (3) for 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.

The licensee concluded that there is an adequate balance between the elements and DID is maintained for this proposed change.

The licensee stated that adequate safety margins are maintained because elimination of this modification does not impact compliance with any codes and standards, or their alternatives accepted for use by the NRC, and this change does not impact any safety analysis acceptance criteria used in the licensing basis.

The licensee stated that a review of the prior determinations for DID and safety margins, considering the modifications being eliminated, established that the DID and safety margins continue to meet the acceptance criteria of NFPA 805, Section 4.2.4, with no change to the required modifications or DID actions. The licensee also stated that RAs identified as required previously are not impacted by the modification elimination and remain capable of being performed, and that consequently, it was determined that no changes to the existing evaluations are required.

### 3.6.3 NRC Staff Evaluation

In accordance with 10 CFR 50.48(c)(3)(i), the licensee submitted an LAR to revise its fire protection License Condition 2.C.(3)(c)2. The NRC staff reviewed the information provided by the licensee in the LAR including discussions of the impact of the proposed changes on risk, DID, and safety margins as required by NFPA 805, Section 4.2.4.2.

Regarding risk, because this modification is not modeled in the PRA, its removal from the planned plant modifications in this LAR has no impact on risk.

Regarding DID, the NRC staff confirmed the proposed change has no impact on any of the DID elements because not completing the modification has no impact on preventing fires from starting, or detecting or extinguishing fires as program controls for the area assure that the existing configuration is adequate for the allowed combustible load in the area of the fan and damper, and because an adequate level of fire protection will continue to be provided so that a fire will not prevent essential safety functions from being performed. Because the DID elements are unaffected, the NRC staff concludes that the balance between DID elements is maintained.

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

### 3.7 Clarify Modification S2-15 - Spurious Operation of Reactor Head/Pressurizer Vent Valves

In the LAR dated December 12, 2012, to adopt NFPA 805, ENO included Modification S2-15 to replace the existing cabling to the reactor head vent valves and pressurizer vent valves with fire-rated cables.

In the LAR dated November 1, 2018, the licensee proposed to change the wording for Modification S2-15 from:

This is a modification to replace the existing cabling to the reactor head vent valves and pressurizer vent valves with fire-rated cables.

to:

This modification will modify the control circuit and replace existing cabling to the reactor head vent and pressurizer vent isolation valves.

The licensee stated that the benefit of the original modification was predicated on the initial assumed failure of these valves due to fire induced cable faults and application of the methodology of NUREG/CR-7150 lowered the impact of these cable faults to an unimportant risk contribution, which negates the need for a fire rated cable.

The licensee stated that the revised modification will alter the control circuit for the isolation valve in each of the two vent paths such that the risk of spurious operation of these valves to provide an uncontrolled release path is reduced to an acceptable risk level.

The licensee stated that the modification will alter cables to the isolation valve in each release path such that cables to the solenoids will not include potentially energized conductors and that a second set of contacts will be added to the control switch to make the circuit 'double break.' The licensee further stated that these changes reduce the risk of spurious operation (opening) of a valve in each path that can maintain the vent paths isolated.

The licensee stated that this modification is included in the FPRA and is considered functionally equivalent to the original modification.

### 3.7.1 Defense-in-Depth/Safety Margins

The licensee stated that revising the modification, as indicated above, does not affect ignition sources or involve transient combustibles or their controls; therefore, the change does not impact element (1) for preventing fires from starting. The licensee also stated that revising this modification does not alter or impact any fire protection systems or features, any detection or suppression systems, any fire barriers, or any elements for fire brigade performance; therefore, the change does not impact element (2) for rapidly detecting fires and controlling and extinguishing promptly those fires that do occur. The licensee further stated that as the revised modification is functionally equivalent to the originally proposed modification, revising this modification does not impact the level of fire protection for SSCs important to safety; therefore, the change does not impact element (3) for providing an adequate level of fire protection for SSCs important to safety, so that a fire that is not promptly extinguished will not prevent essential plant safety functions from being performed.

The licensee concluded that there is an adequate balance between the elements and DID is maintained for this proposed change.

The licensee stated that adequate safety margins are maintained because elimination of this modification does not impact compliance with any codes and standards, or their alternatives accepted for use by the NRC, and this change does not impact any safety analysis acceptance criteria used in the licensing basis.

### 3.7.2 NRC Staff Evaluation

In accordance with 10 CFR 50.48(c)(3)(i), the licensee submitted an LAR to revise its fire protection License Condition 2.C.(3)(c)2. The NRC staff reviewed the information provided by the licensee in the LAR including discussions of the impact of the proposed changes on risk, DID, and safety margins as required by NFPA 805, Section 4.2.4.2.

Regarding risk, the licensee stated that it used methods already accepted in its original NFPA 805 SE. The licensee also used refined data for treating spurious operations using NUREG/CR-7150, which is an addition to its original evaluation methodology for NFPA 805. The licensee treated spurious operations as described in its original NFPA 805 LAR prior to applying this refined approach. The removal of fire rated cable from its PRA model necessitates an adjustment to the fire damage criteria for the corresponding plant function. Because the licensee used accepted methods, including NUREG/CR-7150, to refine its treatment of spurious operations, the NRC staff finds the methods used to evaluate the risk of this plant modification acceptable for use in the integrated PRA study.

Regarding DID, the NRC staff confirmed the proposed changes have no impact on any of the DID elements because not completing the modification has no impact on preventing fires from starting, or detecting or extinguishing fires, and because an adequate level of fire protection will continue to be provided by a modification that is functionally equivalent to the original modification so that a fire will not prevent essential safety functions from being performed. Because the DID elements are unaffected, the NRC staff concludes that the balance between DID elements is maintained.

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

### 3.8 Clarify Modification S2-21 – Motor-Operated Valve (MOV) (MO-2160) Manual Operation Capability

In the LAR dated December 12, 2012, to adopt NFPA 805, the licensee included Modification S2-21 to modify the MOV circuitry such that the torque switch is not disabled due to a fire that could also cause the MOV to spuriously operate.

In the LAR dated November 1, 2018, the licensee proposed to change the wording for Modification S2-21 from:

Modify the MOV circuitry such that the torque switch is not disabled due to a fire that could also cause the MOV to spuriously operate.

to:

Modify the MOV actuator such that actuator and valve internals are not damaged due to a fire that could cause the MOV to spuriously stroke open or closed simultaneous with loss of the MOV limit and torque switch protections.

The licensee stated that the modification problem statement identified that the potential of valve failure due to issues identified in Information Notice (IN) 92-18, "Potential for Loss of Remote Shutdown Capability During a Control Room Fire" (Reference 15), can be resolved by modifying the valve via changes to the valve control circuitry and that the intent of the original modification was to provide assurance that credited actions to manually operate MOV MO-2160 in certain fire areas/scenarios is not precluded by failure mechanisms identified in IN 92-18.

The licensee stated that the replacement of the valve actuator such that it remains capable of being manually operated is considered functionally equivalent to the original modification. The licensee stated that credit for this modification is also included in the FPRA.

### 3.8.1 Defense-in-Depth/Safety Margins

The licensee stated that revising the modification, as indicated above, does not affect ignition sources or involve transient combustibles or their controls; therefore, the change does not impact element (1) for preventing fires from starting. The licensee also stated that revising this modification does not alter or impact any fire protection systems or features, any detection or suppression systems, any fire barriers, or any elements for fire brigade performance; therefore, the change does not impact element (2) for rapidly detecting fires and controlling and extinguishing promptly those fires that do occur. The licensee further stated that as the revised modification is functionally equivalent to the originally proposed modification, revising this modification does not impact the level of fire protection for SSCs important to safety; therefore, the change does not impact element (3) for providing an adequate level of fire protection for SSCs important to safety, so that a fire that is not promptly extinguished will not prevent essential plant safety functions from being performed.

The licensee concluded that there is an adequate balance between the elements and DID is maintained for this proposed change.

The licensee stated that adequate safety margins are maintained because elimination of this modification does not impact compliance with any codes and standards, or their alternatives accepted for use by the NRC, and this change does not impact any safety analysis acceptance criteria used in the licensing basis.

### 3.8.2 NRC Staff Evaluation

In accordance with 10 CFR 50.48(c)(3)(i), the licensee submitted an LAR to revise its fire protection License Condition 2.C.(3)(c)2. The NRC staff reviewed the information provided by the licensee in the LAR including discussions of the impact of the proposed changes on risk, DID, and safety margins as required by NFPA 805, Section 4.2.4.2.

Regarding risk, the licensee stated that it used methods already accepted in its original NFPA 805 SE. The licensee's PRA model does not prevent manual operation of the MOV if the MOV is failed. Because the modification ensures that the MOV remains capable of being manually operated, the modeling assumption for the original modification remains valid for the revised modification. Therefore, the NRC staff finds the methods used to clarify this plant modification acceptable for use in the integrated PRA study.

Regarding DID, the NRC staff confirmed the proposed change has no impact on any of the DID elements because not completing the modification has no impact on preventing fires from starting, or detecting or extinguishing fires, and because an adequate level of fire protection will

continue to be provided so that a fire will not prevent essential safety functions from being performed. Because the DID elements are unaffected, the NRC staff concludes that the balance between DID elements is maintained.

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

### 3.9 Clarify 10 Modifications

In the LAR dated December 12, 2012, to adopt NFPA 805, the licensee included the following modifications:

1. S2-15 - Spurious Operation of Reactor Head/Pressurizer Vent Valves (See SE Section 3.7)
2. S2-18 - Fire Detection System Replacement/Upgrade
3. S2-21 - Motor Operated Valve (MO-2160) Manual Operation Capability (See SE Section 3.8)
4. S2-24 - Seismic Gap Fire Rating
5. S2-25 - Diesel Generator Room Ventilation Recirculation Damper (D-25)
6. S2-29 - Separation of Electrical Ignition Sources from Hydrogen Vent
7. S2-30 - Exterior Door Replacement for Hydrogen Storage Area
8. S2-31 - Replacement of Doors for NFPA 80 Compliance
9. S2-37 - Turbine Building East Wall - Transformer Fire Wall South End
10. S2-38 - Upper CCW Room Exterior Wall

In the LAR dated November 1, 2018, ENO proposed to make clarifications to the above listed modifications. This section discusses all clarifications except for the clarifications related to Modifications S2-15 and S2-21. See SE Section 3.7 for Modification S2-15 and SE Section 3.8 for Modification S2-21.

#### 3.9.1 Licensee's Technical Bases for Requested Change

##### Clarify Modification S2-18 - Fire Detection System Replacement/Upgrade

The licensee proposed to change the wording for Modification S2-18 from:

Additionally, Fire Panel C49 and C49A will be replaced with a NFPA 72 compliant fire alarm control panel.

to:

Additionally, Fire Panel C-47A and C-47B will be replaced with a NFPA 72 compliant fire alarm control panel.

The licensee stated that the discussion provided in the original LAR incorrectly identified the control room fire alarm panels as C-49 and C-49A and that the correct equipment identification is C-47A and C-47B.

#### Clarify Modification S2-24 - Seismic Gap Fire Rating

The licensee proposed to change the wording for Modification S2-24 from:

Fill and/or cover the seismic gaps with a rated material. The proposed modification will remove the Flexcell Bond material from the seismic gaps in several Fire Areas and replace it with a fire-rated configuration.

to:

Evaluate the seismic gaps that serve as fire barriers to determine if they are adequate for the hazard. Those determined not adequate for the hazard in the current configuration will be modified such that the final configuration is adequate for the hazard.

The licensee stated that the Flexcell Bond material was determined to contain asbestos and will not be removed and that the identified seismic gaps were re-evaluated to determine whether they were adequate for the hazard. The licensee also stated that those determined not adequate for the hazard will have rated material applied to the existing gap material to provide a configuration determined to be adequate for the hazard.

The licensee stated that this modification is considered to be equivalent to the original modification for the purposes of providing adequate fire barriers between the Containment Building and the Auxiliary Building walls and floors.

#### Clarify Modification S2-25 - Diesel Generator Room Ventilation Recirculation Damper (D-25)

The licensee proposed to change the wording for Modification S2-25 from:

D-25, EDG 1-1 Room Ventilation Recirculation damper was permanently disabled. Damper D-25 will be removed and replaced with a fire-rated barrier.

to:

Existing D-25 damper will be enclosed by a steel plate with fire sealant applied at the edges of the plate.

The licensee stated that the intent of the original modification was to establish an acceptable fire barrier and that this will be accomplished by the installation of a steel cover plate with dimensions that exceed the size of the damper opening. The licensee also stated that the cover plate is bolted to the wall and sealed at the plate edges by an acceptable fire-rated material and that this configuration was justified as adequate for the hazard.

The licensee stated that this configuration is equivalent to the original modification for the purposes of providing an acceptable fire barrier at the boundary of established fire areas.

#### Clarify Modification S2-29 - Separation of Electrical Ignition Sources from Hydrogen Vent

The licensee proposed to change the wording for Modification S2-29 from:

Modify the current configuration of the electrical switches and cabling to remove the ignition source as a hazard to the hydrogen system.

A modification will be performed to move the hydrogen vent discharge line 15 feet from electrical equipment, extending upward while being appropriately protected against weather intrusion.

to:

Move the identified electrical components and cabling to a distance greater than 25 feet from the hydrogen system.

The hydrogen bottle backup storage vent line was moved to meet the code requirement.

The licensee stated that electrical equipment will not be modified to code requirements, but the electrical equipment will be relocated to satisfy the separation requirements of the code. The licensee also stated that moving the electrical equipment to a new location that satisfies the code required separation is considered equivalent to modifying the components to remove the ignition hazard to achieve compliance.

The licensee stated that the hydrogen bottle backup storage vent line was moved to meet the code requirement.

The licensee stated that this modification is considered to be equivalent to the original modification for the purposes of meeting the code requirements.

#### Clarify Modification S2-30 - Exterior Door Replacement for Hydrogen Storage Area

The licensee proposed to change the wording for Modification S2-30 from:

The exterior doors into Room 139 will be replaced with “lightly fastened” doors that meet the requirement of this code section.

to:

The exterior doors into Room 139 were replaced with lightly fastened, 1.5-hour fire-rated doors that were determined to be adequate for the hazard.

The licensee stated that the exterior doors into Room 139 were replaced with a lightly fastened, 1.5-hour fire-rated door that was determined to be adequate for the hazard.

The licensee stated that this modification is considered to be equivalent to the original modification for the purposes of providing explosion venting capability in exterior walls of hydrogen storage areas.

#### Clarify Modification S2-31 - Replacement of Doors for NFPA 80 Compliance

The licensee proposed to change the wording for Modification S2-31 from:

Repair or replace fire doors to ensure compliance with NFPA 80.

to:

Repair or replace fire doors to ensure compliance with NFPA 80 or justify as adequate for the hazard.

The licensee stated that a subset of doors required to be 3-hour rated that will be replaced with 1.5-hour rated doors were determined to be adequate for the hazard.

The licensee stated that this modification is considered to be equivalent to the original modification for the purposes of maintaining acceptable fire rated barriers.

Clarify Modification S2-37 - Turbine Building East Wall - Transformer Fire Wall South End

The licensee proposed to change the wording for Modification S2-37 from:

Three-hour fire rated dampers on the Turbine Building Fresh Air Fan (V-21P, V-21Q, V-21U, V-21V, V-21W) will be installed.

to:

The fan starting circuits will be modified to trip the fans and close the dampers on detection of a fire.

The licensee stated that 3-hour fire dampers are not being installed and that the modification will provide inputs to the fan control circuits to shut off the fans and close the current dampers on activation of the transformer deluge systems. The licensee also stated that the existing dampers were determined to be adequate for the hazard.

The licensee stated that this modification is considered to be equivalent to the original modification for the purposes of maintaining acceptable fire barriers for exterior walls.

Clarify Modification S2-38 - Upper CCW Room Exterior Wall

The licensee proposed to change the wording for Modification S2-38 from:

A fire door and barrier will be installed above the door at the north end of the missile shield/valve gallery area.

A fire rated barrier will be installed around the ventilation duct from fan V-78.

to:

The CCW room west exterior wall fire barrier was repaired and justified as adequate for the hazard.

The licensee stated that the stated fire door and fire barrier at the north end of the missile shield/valve gallery area will not be installed and that a new 3-hour rated fire damper is not installed in the discharge ductwork from V-78 Fan within the missile shield, as the missile shield will not be treated as a fire barrier. The licensee also stated that the fire barrier between FA-32 and FA-16 will remain the CCW West wall.

The licensee stated that the original modification would have replaced a portion of the CCW West wall as an 'exterior' wall with the wall enclosing the missile shield/valve gallery being credited as the exterior wall at this location. The licensee also stated that not completing this modification as stated requires the upper CCW room west wall to continue to be the exterior wall at this location. The licensee further stated that this exterior wall was repaired and justified as adequate for the hazard.

The licensee stated that the modification is considered to be equivalent to the original modification for the purposes of maintaining an appropriate fire rating for plant exterior walls in the power block.

### 3.9.2 NRC Staff Evaluation

In accordance with 10 CFR 50.48(c)(3)(i), the licensee submitted an LAR to revise its fire protection License Condition 2.C.(3)(c)(2). The NRC staff reviewed the information provided in the LAR and 10 CFR 50.48(c) and RG 1.205, to determine if the licensee's proposed change to clarify eight modifications is acceptable.

The NRC staff finds that the plant-specific list of modifications identified by the licensee as necessary to complete the transition to its new fire protection license basis is included in Attachment 2 (Updated Attachment S, Table S-1, "Plant Modifications Completed," and Table S-2 "Plant Modifications Committed") of its letter dated May 28, 2019, which is referenced in License Condition 2.C.(3)(c)(2).

The NRC staff finds that the licensee's proposed change to clarify eight modifications is acceptable because the proposed changes are requested by a license amendment, the proposed changes do not support a fire risk evaluation, and the modifications continue to be included in a plant-specific list which is referenced in the license condition and follows the guidance of RG 1.205.

### 3.10 Change to the Completion Date for the Remaining Plant Modifications

In its LAR dated March 8, 2019, ENO requested an extension to the due date to implement the remaining modifications necessary to achieve full compliance with 10 CFR 50.48(c).

#### 3.10.1 Licensee's Technical Bases for Requested Change

In its LAR dated March 8, 2019, ENO stated that due to the planned permanent cessation of power operations at PNP no later than May 31, 2022, it is proposing a revision of the full compliance date for the FPP transition license condition to allow an extension for the implementation of the remaining modifications necessary to achieve full compliance with 10 CFR 50.48(c).

The licensee stated that its approach to the implementation of NFPA 805 modifications at PNP has been to install the modifications with the largest risk reduction impact as soon as achievable in order to maximize the risk benefit over the remaining life of the plant, and that during (outage) 1R26, it implemented the majority of the planned NFPA 805 modifications characterized as "High" risk rank.

The licensee stated that this extension is acceptable because a majority of the planned modifications characterized as "High" risk have already been installed, and the fire protection

transition license conditions that remain in effect during this period, including the continuation of compensatory measures. The licensee further stated that the proposed change is administrative in nature and has no impact on DID elements or safety margins and that the license condition for making risk-informed changes without prior NRC approval is not effective until it has implemented the NFPA 805 modifications and PNP is in full compliance with 10 CFR 50.48(c).

### 3.10.2 Defense-in-Depth/Safety Margins

The licensee stated that the proposed change has no impact on the DID elements, which are: (1) prevent fires from starting, (2) rapidly detect, control, and extinguish promptly those fires that do occur thereby preventing fire damage, and (3) provide adequate level of fire protection for systems and structures so that a fire will not prevent essential safety functions from being performed, 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 licensee further stated that 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.

That licensee stated that regarding safety margins, the proposed change continues to maintain adequate safety margins 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.

### 3.10.3 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. The NRC staff reviewed the information provided in the LAR and 10 CFR 50.48(c) and RG 1.205, Section 2.1, to determine if the licensee's proposed change to extend the due date to complete the remaining modifications is acceptable.

Section 50.48(c) of 10 CFR does not mandate a specific schedule for implementing a FPP that meets NFPA 805. RG 1.205 provides guidance stating that licensees should include an implementation schedule with their request to adopt an FPP based on NFPA 805.

RG 1.205 states that for changes that involve acceptance of an existing unapproved condition (i.e., a noncompliance), appropriate compensatory measures should be established and should remain in place until either the plant is modified to achieve compliance, or the condition is found acceptable. RG 1.205 includes additional guidance that states that acceptance of the as-found condition may be the result of either the NRC's review and approval, or the self-approval process, according to the licensee's fire protection license condition.

The sample license condition in RG 1.205 states, in part, that the licensee shall maintain appropriate compensatory measures in place until completion of the modifications.

Although the licensee included discussions regarding risk, DID, and safety margins in its LAR, the NRC staff determined that 10 CFR 50.48(c) does not mandate any specific requirements for the schedule that implements a FPP that meets NFPA 805 and, therefore, the requirements of NFPA 805, Section 4.2.4.2, concerning fire risk evaluations that require evaluations of risk, DID, and safety margins is not applicable.

The NRC staff finds that the extension from the end of the refueling outage following the third full operating cycle to the fourth full operating cycle to implement the remaining modifications is acceptable because the license amendment will continue to include a license condition imposing the use of NFPA 805, together with an implementation schedule that follows the guidance of RG 1.205. The fire protection transition license condition will remain in effect during this period, including maintaining compensatory measures until all the NFPA 805 modifications are completed, which follows the guidance of RG 1.205.

### 3.11 NRC Staff Conclusion

The NRC staff reviewed the licensee's LARs to cancel 6 modifications, clarify 10 modifications, and change its modification completion date related to the RI/PB FPP in accordance with the requirements of 10 CFR 50.48(c) and NFPA 805. The licensee's LARs identified revisions to license conditions in accordance 10 CFR 50.48(c)(3)(i). The changes proposed by the licensee included a review of risk, DID, and safety margins (as applicable), as required by NFPA 805, Section 4.2.4.2.

The NRC staff concludes that the licensee's LARs provide the appropriate license conditions that must be revised because of the proposed changes, and that the revisions are adequate, thereby, satisfying the requirements of 10 CFR 50.48(c)(3)(i).

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. Additionally, the license condition for the 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).

Regarding DID, the NRC staff confirmed that DID is maintained for the proposed changes because not completing or clarifying the modifications has no impact on preventing fires from starting, or on detecting or extinguishing fires, and an adequate level of fire protection will continue to be provided so that a fire will not prevent essential safety functions from being performed. Because the DID elements are unaffected, the NRC staff concludes that the balance between DID elements is maintained.

Regarding safety margins, the NRC staff confirmed that the proposed change continues to maintain adequate safety margins 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.

In addition, the NRC staff concludes that: (1) the effect of the proposed changes on the FPP that produced changes to the PRA can be assessed using the methods and approaches previously approved in the original NFPA 805 SE, and (2) the licensee used state-of-practice approaches, including NUREG/CR-7150 which contains acceptable PRA approaches and data to produce its risk estimates.

The NRC staff finds that the methods used in the PRA are acceptable for the integrated risk study. In LAR Attachment W, Table W-2, "PNP Fire Area Risk Summary," the licensee indicated that the change in CDF and change in LERF are  $-2.6E-04/\text{year}$  and  $-1.5E-05/\text{year}$ , respectively. The licensee indicated that the additional risk of RAs results in a CDF of  $1.4E-06/\text{year}$  and a LERF of  $7.5E-08/\text{year}$ . The licensee did not provide a total CDF or LERF, which is acceptable because the change in CDF and LERF is negative. Based on the information

provided by the licensee, the NRC staff concludes that the proposed changes produce a change in CDF and a change in LERF within the RG 1.174 acceptance guidelines and an acceptable additional risk of RAs in accordance with RG 1.205.

Regarding the licensee's proposed changes to cancel six modifications and clarify Modifications S2-15 and S2-21, the NRC staff concludes that these changes are acceptable because: (1) the changes when integrated into the PRA produce negative changes in CDF and LERF, and fall within the RG 1.174 risk acceptance guidelines; (2) the licensee's process and results followed guidance approved by the NRC staff in its NFPA 805 SE or guidance documents; and (3) the results of the changes are consistent with guidance in NEI 04-02, Revision 2; RG 1.205, Revision 1; and RG 1.174, Revision 3.

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 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 can 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.

#### 4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Michigan State official was notified of the proposed issuance of the amendment on June 19, 2019. The Michigan State official had no comments.

#### 5.0 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 proposed findings that the amendment involves no significant hazards consideration, and there has been no public comment on such findings published in the *Federal Register* on February 5, 2019 (84 FR 1801), and May 7, 2019 (84 FR 19969). 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.

#### 6.0 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.

## 7.0 REFERENCES

- 1 Halter, Mandy, Entergy Nuclear Operations, Inc., letter to U.S. Nuclear Regulatory Commission, "License Amendment Request to Revise Existing Facility Operating License Conditions Regarding NFPA 805 Modifications," November 1, 2018 (ADAMS Package Accession No. ML18305B320).
- 2 Gaston, Ron, Entergy Nuclear Operations, Inc., letter to U.S. Nuclear Regulatory Commission, "Response to Request for Additional Information, License Amendment Request to Revise Existing Facility Operating License Conditions Regarding NFPA 805 Modifications," May 28, 2019 (ADAMS Package Accession No. ML19149A300).
- 3 Halter, Mandy, K., 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," March 8, 2019 (ADAMS Accession No. ML19067A004).
- 4 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.
- 5 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).
- 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 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 3, January 2018 (ADAMS Accession No. ML17317A256).
- 8 U.S. Nuclear Regulatory Commission NUREG/CR-6850, "EPRI/NRC-RES Fire PRA Methodology for Nuclear Power Facilities, Volume 1: Summary and Overview," NUREG/CR-6850, September 2005 (ADAMS Accession No. ML052580075).
- 9 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).
- 10 U.S. Nuclear Regulatory Commission, "Fire Probabilistic Risk Assessment Methods Enhancements," NUREG/CR-6850, Supplement 1, September 2010 (ADAMS Accession No. ML103090242).
- 11 Vitale, Anthony, J., Entergy Nuclear Operations, Inc., letter to U.S. Nuclear Regulatory Commission, "Response to Request for Additional Information - 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," November 4, 2014 (ADAMS Accession No. ML14308A228).
- 12 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).
- 13 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).
- 14 U.S. Nuclear Regulatory Commission, "Joint Assessment of Cable Damage and Quantification of Effects from Fire (JACQUE-FIRE), Volume 2: Expert Elicitation Exercise for Nuclear Power Plant Fire-Induced Electrical Circuit Failure," NUREG/CR-7150, Vol. 2; EPRI 3002001989; BNL-NUREG-98204-2012, May 2014 (ADAMS Accession No. ML14141A129).
- 15 U.S. Nuclear Regulatory Commission, "Potential for Loss of Remote Shutdown Capability During a Control Room Fire," Information Notice No. 92-18.

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Date of issuance: August 20, 2019

SUBJECT: PALISADES NUCLEAR PLANT - ISSUANCE OF AMENDMENT NO. 269  
 REGARDING CHANGES TO NFPA 805 MODIFICATIONS AND CHANGE TO  
 FULL COMPLIANCE IMPLEMENTATION DATE FOR THE FIRE PROTECTION  
 PROGRAM (EPIDS L-2018-LLA-0296 AND L-2019-LLA-0049) DATED  
 AUGUST 20, 2019

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