



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

May 16, 2018

Mr. David B. Hamilton  
Site Vice President  
FirstEnergy Nuclear Operating Company  
Mail Stop A-PY-A290  
P.O. Box 97, 10 Center Road  
Perry, OH 44081-0097

**SUBJECT: PERRY NUCLEAR POWER PLANT, UNIT NO. 1 - ISSUANCE OF  
AMENDMENT NO. 180 CONCERNING CHANGES TO TECHNICAL  
SPECIFICATIONS REGARDING IMPLEMENTATION OF THE ALTERNATIVE  
SOURCE TERM (CAC NO. MF9818; EPID L-2017-LLA-0241)**

Dear Mr. Hamilton:

The U.S. Nuclear Regulatory Commission (the Commission) has issued the enclosed Amendment No. 180 to Facility Operating License No. NPF-58 for Perry Nuclear Power Plant, Unit No. 1. The amendment consists of changes to the technical specifications (TSs) in response to your application dated June 8, 2017, as supplemented by letter dated January 30, 2018.

The amendment revises several technical specifications to reflect previous changes made as part of the alternative source term initiative. The amendment revises the surveillance requirements for the control room emergency recirculation and annulus exhaust gas treatment systems, which are consistent with Technical Specification Task Force (TSTF) traveler TSTF 522, "Revise Ventilation System Surveillance Requirement to Operate for 10 Hours per Month." The amendment also deletes two TS sections related to the fuel handling building (FHB) and FHB ventilation exhaust system, and increases the allowable secondary containment leakage. Lastly, the amendment revises the TS Table of Contents to reflect administrative changes to the titles of TS sections.

D. Hamilton

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

Sincerely,

A handwritten signature in black ink, appearing to read "Kimberly J. Green". The signature is fluid and cursive, with the first name being the most prominent.

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

Docket No. 50-440

Enclosures:

1. Amendment No. 180 to NPF-58
2. Safety Evaluation

cc: Listserv



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

FIRSTENERGY NUCLEAR OPERATING COMPANY

FIRSTENERGY NUCLEAR GENERATION, LLC

DOCKET NO. 50-440

PERRY NUCLEAR POWER PLANT, UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 180  
License No. NPF-58

1. The U.S. Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment filed by FirstEnergy Nuclear Operating Company, et al. (the licensee, FENOC), dated June 8, 2018, as supplemented by letter dated January 30, 2018, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;
  - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
  - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
  - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; 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.

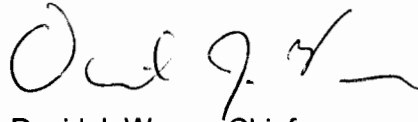
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. NPF-58 is hereby amended to read as follows:

- (2) Technical Specifications

The Technical Specifications contained in Appendix A and the Environmental Protection Plan contained in Appendix B, as revised through Amendment No. 180, are hereby incorporated into the license. FENOC shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This license amendment is effective as of its date of its issuance and shall be implemented within 180 days of the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



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

Attachment:  
Changes to the Facility Operating  
License No. NPF-58 and  
Technical Specifications

Date of Issuance: May 16, 2018

ATTACHMENT TO LICENSE AMENDMENT NO. 180

PERRY NUCLEAR POWER PLANT, UNIT NO. 1

FACILITY OPERATING LICENSE NO. NPF-58

DOCKET NO. 50-440

Replace the following pages of the Facility Operating License and Appendix A Technical Specifications with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

REMOVE

INSERT

License NPF-58

License NPF-58

- 4 -

- 4 -

TSs

TSs

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i

ii

ii

iii

iii

3.6-18

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- C. This license shall be deemed to contain and is subject to the conditions specified in the Commission's regulations set forth in 10 CFR Chapter I and is subject to all applicable provisions of the Act and 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) Maximum Power Level

FENOC is authorized to operate the facility at reactor core power levels not in excess of 3758 megawatts thermal (100% power) in accordance with the conditions specified herein.

(2) Technical Specifications

The Technical Specifications contained in Appendix A and the Environmental Protection Plan contained in Appendix B, as revised through Amendment No. 180, are hereby incorporated into the license. FENOC shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

(3) Antitrust Conditions

- a. FirstEnergy Nuclear Generation, LLC

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SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.6.1.3.9 -----NOTES-----</p> <ol style="list-style-type: none"> <li>1. Only required to be met in MODES 1, 2, and 3.</li> <li>2. Main Steam Line leakage is not included.</li> </ol> <p>-----</p> <p>Verify the combined leakage rate for all secondary containment bypass leakage paths is <math>\leq 0.1008 L_a</math> when pressurized to <math>\geq P_a</math>.</p>	<p>In accordance with the Primary Containment Leakage Rate Testing Program</p>
<p>SR 3.6.1.3.10 -----NOTE-----</p> <p>Only required to be met in MODES 1, 2, and 3.</p> <p>-----</p> <p>Verify leakage rate through each main steam line is <math>\leq 100</math> scfh when tested at <math>\geq P_a</math>, and the total leakage rate through all four main steam lines is <math>\leq 250</math> scfh, when tested at <math>\geq P_a</math>.</p>	<p>In accordance with the Primary Containment Leakage Rate Testing Program</p>

(continued)

**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE		FREQUENCY
SR 3.6.4.3.1	Operate each AEGT subsystem for $\geq 15$ continuous minutes.	In accordance with the Surveillance Frequency Control Program
SR 3.6.4.3.2	Perform required AEGT filter testing in accordance with the Ventilation Filter Testing Program (VFTP).	In accordance with the VFTP
SR 3.6.4.3.3	Verify each AEGT subsystem actuates on an actual or simulated initiation signal.	In accordance with the Surveillance Frequency Control Program

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>F. Two CRER subsystems inoperable during movement of recently irradiated fuel assemblies in the primary containment or fuel handling building, or during OPDRVs.</p> <p><u>OR</u></p> <p>One or more CRER subsystems inoperable due to inoperable CRE boundary during movement of recently irradiated fuel assemblies in the primary containment or fuel handling building, or during OPDRVs.</p>	<p>F.1 Suspend movement of recently irradiated fuel assemblies in the primary containment and fuel handling building</p> <p><u>AND</u></p> <p>F.2 Initiate action to suspend OPDRVs.</p>	<p>Immediately</p> <p>Immediately</p>

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.7.3.1 Operate each CRER subsystem for <math>\geq 15</math> continuous minutes.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.7.3.2 Perform required CRER filter testing in accordance with the Ventilation Filter Testing Program (VTFP).</p>	<p>In accordance with the VTFP</p>

(continued)

3.7 PLANT SYSTEMS

3.7.7 Fuel Pool Water Level

LCO 3.7.7 The fuel pool water level shall be  $\geq 23$  ft over the top of irradiated fuel assemblies seated in the fuel handling building (FHB) and upper containment fuel storage racks.

APPLICABILITY: During movement of irradiated fuel assemblies in the associated fuel storage pools.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Fuel pool water level not within limit.	A.1 -----NOTE----- LCO 3.0.3 is not applicable. -----  Suspend movement of irradiated fuel assemblies in the associated fuel storage pool(s).	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.7.7.1 Verify the fuel pool water level is $\geq 23$ ft over the top of irradiated fuel assemblies seated in the storage racks.	In accordance with the Surveillance Frequency Control Program

5.5 Programs and Manuals (continued)

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5.5.6 Deleted.

5.5.7 Ventilation Filter Testing Program (VFTP)

A program shall be established to implement the following required testing of Engineered Safety Feature (ESF) filter ventilation systems at the frequencies specified in Regulatory Guide 1.52, Revision 4.

(continued)

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5.5 Programs and Manuals

5.5.7 Ventilation Filter Testing Program (VFTP) (continued)

- a. Demonstrate for each of the ESF systems that an in-place test of the high efficiency particulate air (HEPA) filters shows a penetration and system bypass < 0.05% when tested in accordance with Regulatory Guide 1.52, Revision 4 and ANSI N510-1980 at the system flowrate specified below  $\pm 10\%$ :

<u>ESF Ventilation System</u>	<u>Flowrate</u>
a) Control Room Emergency Recirculation	30,000 cfm
b) Annulus Exhaust Gas Treatment	2,000 cfm

- b. Demonstrate for each of the ESF systems that an in-place test of the charcoal adsorber shows a penetration and system bypass < 0.05% when tested in accordance with Regulatory Guide 1.52, Revision 4 and ANSI N510-1980 at the system flowrate specified below  $\pm 10\%$ :

<u>ESF Ventilation System</u>	<u>Flowrate</u>
a) Control Room Emergency Recirculation	30,000 cfm

- c. Demonstrate for each of the ESF systems that a laboratory test of a sample of the charcoal adsorber, when obtained as described in Regulatory Guide 1.52, Revision 4, shows the methyl iodide penetration less than the value specified below when tested in accordance with ASTM D3803-1989 at a temperature of 30°C and equal to the relative humidity (RH) specified below:

<u>ESF Ventilation System</u>	<u>Penetration</u>	<u>RH</u>
a) Control Room Emergency Recirculation	10%	95%

(continued)

5.5 Programs and Manuals

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5.5.7 Ventilation Filter Testing Program (VFTP) (continued)

- d. Demonstrate for each of the ESF systems that the pressure drop across the combined HEPA filters and the charcoal adsorbers is less than the value specified below when tested in accordance with Regulatory Guide 1.52, Revision 4, and ANSI N510-1980 at the system flowrate specified below  $\pm 10\%$ :

	<u>ESF Ventilation System</u>	<u>Delta P</u>	<u>Flowrate</u>
a)	Control Room Emergency Recirculation	4.9" H <sub>2</sub> O	30,000 cfm
b)	Annulus Exhaust Gas Treatment	6.0" H <sub>2</sub> O	2,000 cfm

The provisions of SR 3.0.2 and SR 3.0.3 are applicable to the VFTP test frequencies.

5.5.8 Explosive Gas and Storage Tank Radioactivity Monitoring Program

This program provides controls for potentially explosive gas mixtures contained in the main condenser offgas treatment system, and the quantity of radioactivity contained in unprotected outdoor liquid storage tanks.

The program shall include:

- a. The limits for concentrations of hydrogen in the main condenser offgas treatment system and a surveillance program to ensure the limits are maintained. Such limits shall be appropriate to the system's design criteria (i.e., whether or not the system is designed to withstand a hydrogen explosion); and

(continued)

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
RELATED TO AMENDMENT NO. 180 TO FACILITY OPERATING LICENSE NO. NPF-58

FIRSTENERGY NUCLEAR OPERATING COMPANY

FIRSTENERGY NUCLEAR GENERATION, LLC

PERRY NUCLEAR POWER PLANT, UNIT NO. 1

DOCKET NO. 50-440

1.0 INTRODUCTION

By application dated June 8, 2017 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML17159A720), as supplemented by letter dated January 30, 2018 (ADAMS Accession No. ML18031A156), FirstEnergy Nuclear Operating Company (the licensee or FENOC) requested changes to the technical specifications (TSs) for the Perry Nuclear Power Plant, Unit 1 (PNPP).

The proposed amendment would revise several TSs to reflect changes made as part of the alternative source term (AST) initiative approved in Amendment Nos. 103, 122, and 166. Specifically, the proposed amendment would:

- revise Surveillance Requirements (SRs) 3.7.3.1 and 3.6.4.3.1 to change the runtime requirement;
- delete TS 3.7.8 "Fuel Handling Building" and TS 3.7.9, "Fuel Handling Building Ventilation Exhaust System," in their entirety;
- revise SR 3.6.1.3.9 to increase allowable secondary containment bypass leakage;
- revise associated portions of TS 5.5.7, "Ventilation Filter Testing Program (VFTP)," as well as change the charcoal testing criteria in conjunction with adoption of TS changes provided by Technical Specification Task Force (TSTF) traveler TSTF-522, "Revise Ventilation System Surveillance Requirement to Operate for 10 Hours per Month"; and
- revise the table of contents (TOC) and the impacted TS to provide for editorial consistency.

The TSTF-522 changes the licensee proposed are for TS 3.6.4.3, "Annulus Exhaust Gas Treatment (AEGT) System," and TS 3.7.3, "Control Room Emergency Recirculation (CRER) System." In particular, SRs 3.6.4.3.1 and 3.7.3.1, which currently require operating the respective systems for at least 10 continuous hours with heaters operating at a frequency controlled in accordance with the Surveillance Frequency Control Program (SFCP), would be changed to require at least 15 continuous minutes of ventilation system operation at a frequency

controlled in accordance with the SFCP. To justify the removal of the requirement to test the ventilation system heaters operating in the SRs, the licensee proposed changes to charcoal testing criteria in TS 5.5.7 in conjunction with adoption of the TS changes provided by TSTF-522.

The supplemental letter dated January 30, 2018, provided additional information that clarified the application, did not expand the scope of the application as originally noticed, and did not change the U.S. Nuclear Regulatory Commission (NRC or Commission) staff's original proposed no significant hazards consideration determination as published in the *Federal Register* on August 1, 2017 (82 FR 35841).

## 2.0 REGULATORY EVALUATION

### 2.1 Background

#### **Primary and Secondary Containment**

The primary containment consists of a drywell, a suppression pool, the remainder of the primary containment volume, and supporting systems to limit the fission product release during and following a postulated loss-of-coolant accident (LOCA) with isolation of the containment boundary penetrations. The secondary containment (shield building) which surrounds the primary containment will collect and retain fission product leakage from the primary containment and will release fission products to the environment in a controlled manner through the AEGT system. The AEGT system is a recirculation type system with split flow, with some of the filtered air extracted from the annulus space recirculated, and the remaining discharged to the unit vent.

Although the primary containment is enclosed by the secondary containment, there are systems that penetrate both the primary containment and the shield building boundaries that could create potential pathways through which fission products in the primary containment could bypass the leakage collection and filtration systems associated with the shield building.

#### **Primary Containment Isolation Valves**

The function of the primary containment isolation valves (PCIVs), in combination with other accident mitigation systems, is to limit fission product release during and following postulated design basis accidents (DBAs). Primary containment isolation within the time limits specified for those PCIVs designed to close automatically ensures that the release of radioactive material to the environment will be consistent with the assumptions used in the analyses for a DBA. SR 3.6.1.3.9 ensures that the leakage rate of secondary containment bypass leakage paths is less than the specified leakage rate. This provides assurance that the assumptions used in the radiological evaluations of the updated safety analysis report (USAR), Chapter 15, are met.

#### **Engineered Safety Feature Filter Systems**

The engineered safety feature (ESF) filter systems at PNPP include CRER system, fuel handling area exhaust subsystem (FHAES), and the AEGT system. One of the main reasons these systems are required at nuclear power plants is to lower the airborne radioactive material that may be released to the environment due to design basis events. Lowering the concentration of airborne radioactive materials can mitigate doses to plant operators and members of the public in the event of DBA. A typical ESF atmospheric cleanup system filter

train includes, but not limited to, electric heating coils, roughing filters, high-efficiency particulate air (HEPA) filters, and charcoal adsorbers (iodine adsorbers). The purpose of the heaters is to heat and thereby reduce the relative humidity (RH) of the incoming air to the HEPA and charcoal filters. A lower humidity assists in maintaining the filtration efficiency of the charcoal filters. The HEPA filters remove the fine discrete particulate matter from the air stream. The charcoal filters typically consist of impregnated activated carbon to remove gaseous radioactive elemental and organic forms of iodine. There are two fully redundant (100 percent) filter trains in each of the CRER and AEGT systems, and three 50 percent capacity filter trains in the FHAES.

The PNPP TSs require these systems be tested by periodically operating and monitoring the response of the overall system as well as individual components. TS 3.6.4.3, "Annulus Exhaust Gas Treatment (AEGT) System," TS 3.7.3, "Control Room Emergency Recirculation (CRER) System," and TS 3.7.9, "Fuel handling Building Ventilation Exhaust System," contain the periodic SRs for the overall system and the heater operation. In addition, TS 5.5.7, "Ventilation Filter Testing Program (VFTP)," contains requirements for testing heater capacity and for in-place and laboratory tests of the HEPA and charcoal adsorbers.

For many operating nuclear power plants including PNPP, the characteristics of the fission product release from the core into the containment were derived from Technical Information Document 14844, "Calculation of Distance Factors for Power and Test Reactor Sites," published in 1992. This formed the basis for the design, filter capabilities, and sizing of the ESF atmospheric cleanup systems. Since then, significant advances have been made in the understanding, timing, magnitude, and chemical form of fission product releases from nuclear power plant accidents. In December 1995, the NRC enacted a new regulation in Title 10 of the *Code of Federal Regulations* (10 CFR) 50.67, "Accident source term," to provide a means for operating power reactors on acceptable applications of ASTs. Regulatory Guide (RG) 1.183, "Alternative Radiological Source Terms for Evaluating Design Basis Accidents at Nuclear Power Plants," provides guidance on acceptable AST including acceptable radiological analysis assumptions for use in conjunction with the AST. A significant number of operating power reactors, including PPNP, have adopted the AST. PPNP applied for the adoption of the AST in several license amendment requests (LARs) in the form of revised accident analyses, as further addressed later in this safety evaluation (SE). The licensee has also revised the USAR to reflect the revised accident analyses.

### **Fuel Handling Building**

The fuel handling building (FHB) is a three-story building located between the Unit 1 and Unit 2 reactor buildings. The entire exterior of the building is reinforced concrete, including the foundation, the walls, and the roof slabs. The FHB houses the cask pit, spent fuel storage pool; fuel transfer pool, and fuel storage and preparation pool. The pools are interconnected, by means of gates, to allow the underwater passage of fuel assemblies from one pool to another. The function of the FHB is to contain, dilute, and hold up fission products that are released from a design basis fuel handling accident (FHA). In conjunction with operation of the FHB ventilation exhaust system, the FHB is designed to reduce the activity level of the fission products prior to release to the environment. The FHB ventilation exhaust system consists of three fully redundant subsystems, each with its own set of ductwork dampers exhaust fan, charcoal filter train, instrumentation and controls.

## 2.2 Licensee's Proposed Changes

FENOC proposed the following changes to the PNPP TSs to align the TSs with the use of the AST previously approved in Amendment Nos. 103, 122, and 166.

### TS 3.7.3, "Control Room Emergency Recirculation (CRER) System"

FENOC proposed to revise SR 3.7.3.1 to state, "Operate each CRER subsystem for  $\geq$  15 continuous minutes." FENOC also proposed to delete the requirement "with heaters operating."

### TS 3.6.4.3 Annulus Exhaust Gas Treatment (AEGT) System"

FENOC proposed to revise SR 3.6.4.3.1 to state, "Operate each AEGT subsystem for  $\geq$  15 continuous minutes." Additionally, it proposed to delete the requirement "with heaters operating."

### TS 3.7.8, "Fuel Handling Building," and TS 3.7.9, "Fuel Handling Building Ventilation Exhaust System"

FENOC proposed to delete TS 3.7.8 and TS 3.7.9 in their entirety. As a result, TS 3.7.7, "Fuel Pool Water Level," will need to be revised to add a parenthetical note at the bottom of TS page 3.7-14 to indicate that the next page is 3.7-19.

### TS 3.6.1.3, "Primary Containment Isolation Valves (PCIVs)"

FENOC proposed to revise SR 3.6.1.3.9 to increase the allowable secondary containment bypass leakage rate to 10.08 percent of  $L_a$ .

### TS 5.5.7, "Ventilation Filter Testing Program (VFTP)"

FENOC proposed the following changes to TS 5.5.7:

- All references to the "Fuel Handling Building" will be deleted.
- Testing of the FHB ventilation system in TSs 5.5.7.a.b, 5.5.7.b.b, 5.5.7.c.b, 5.5.7.d.b, and 5.5.7.e.b will be deleted.
- TS 5.5.7.a.c will be renumbered to TS 5.5.7.a.b, and TS 5.5.7.d.c will be renumbered to TS 5.5.7.d.b.
- Testing of the AEGT system charcoal adsorbers in TSs 5.5.7.b.c and 5.5.7.c.c will be deleted.
- TS 5.5.7.e for heater testing will be deleted in its entirety.
- TS 5.5.7.c.a will list the required 95 percent RH test criterion for the charcoal adsorber sample. Additionally, the charcoal adsorber methyl iodine penetration testing criterion will be changed from 2.5 percent to 10 percent.
- References to RG 1.52, Revision 2, "Design, Testing, and Maintenance Criteria for Post-Accident Engineered-Safety-Feature Atmosphere Cleanup System Air Filtration and Absorption Units of Light-Water-Cooled Nuclear Power Plants," will be replaced with a reference to RG 1.52, Revision 4.

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FENOC proposed to revise the TOC to reflect the impact of the changes described above, as well as to reflect other administrative changes as follows:

- The title of TS 3.3.6.1 will be revised to read "Primary Containment and Drywell Isolation Instrumentation."
- The title of TS 3.6.1.9 will be revised to read "Main Steam Shutoff Valves."
- The title of TS 3.6.3.1, "Primary Containment Hydrogen Recombiners," will be removed in its entirety and replaced with "Deleted."
- The title of TS 3.7.8, "Fuel Handling Building," will be removed in its entirety and replaced with "Deleted."
- The title of TS 3.7.9, "Fuel Handling Building Ventilation Exhaust System," will be removed in its entirety and replaced with "Deleted."

### 2.3 Regulatory Requirements

Section 50.36, "Technical specifications," of 10 CFR establishes the regulatory requirements related to the contents of the TSs. Pursuant to 10 CFR 50.36, TSs are required to include items in the following specific categories related to station operation: (1) safety limits, limiting safety system settings, and limiting control settings; (2) limiting conditions for operation (LCOs); (3) SRs; (4) design features; and (5) administrative controls.

Paragraph 50.36(b) of 10 CFR states, in part, "The technical specifications will be derived from the analyses and evaluation included in the safety analysis report, and amendments thereto, submitted pursuant to 50.34."

Paragraph 50.36(c)(2)(ii) of 10 CFR states the following:

A technical specification limiting condition for operation of a nuclear reactor must be established for each item meeting one or more of the following criteria:

(A) *Criterion 1.* Installed instrumentation that is used to detect, and indicate in the control room, a significant abnormal degradation of the reactor coolant pressure boundary.

(B) *Criterion 2.* A process variable, design feature, or operating restriction that is an initial condition of a design basis accident or transient analysis that either assumes the failure of or presents a challenge to the integrity of a fission product barrier.

(C) *Criterion 3.* A structure, system, or component that is part of the primary success path and which functions or actuates to mitigate a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier.

(D) *Criterion 4.* A structure, system, or component which operating experience or probabilistic risk assessment has shown to be significant to public health and safety.

Paragraph 50.36(c)(3) of 10 CFR states:

Surveillance requirements are requirements relating to test, calibration, or inspection to assure that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the limiting conditions for operation will be met.

Paragraph 50.36(c)(5) of 10 CFR states:

Administrative controls are the provisions relating to organization and management, procedures, recordkeeping, review and audit, and reporting necessary to assure operation of the facility in a safe manner.

Section 100.11 of 10 CFR, "Determination of exclusion area, low population zone, and population center distance," provides criteria for evaluating the radiological aspects of the proposed site. A footnote to 10 CFR 100.11 discusses the fission product release assumed in these evaluations should be based upon a major accident involving substantial meltdown of the core with subsequent release of appreciable quantities of fission products.

Section 50.67 of 10 CFR, "Accident source term," contains an optional provision for licensees to revise the source term used in design basis radiological analyses and sets the total effective dose equivalent as the new acceptance criteria at the exclusion area boundary and low population zone.

The regulations in Appendix A to 10 CFR 50, "General Design Criteria for Nuclear Power Plants" (herein after referenced to as GDC), establish the minimum requirements for the principal design criteria of water-cooled nuclear power plants. The principal design criteria establish the necessary design, fabrication, construction, testing, and performance requirements for structure, systems, and components important to safety.

The NRC staff identified the following GDCs that are applicable to the LAR:

- GDC 16, "Containment design," which requires, in part, that the containment establish an essentially leak tight barrier against the uncontrolled release of radioactivity to the environment
- GDC 19, "Control room," which requires, in part, that adequate radiation protection be provided to permit access and occupancy of the control room under accident conditions, without personnel receiving radiation exposures in excess of 5 roentgen equivalent man (rem) whole body, or its equivalent to any part of the body, for the duration of the accident.

## 2.4 Regulatory Guidance

Traveler TSTF-522, "Revise Ventilation System Surveillance Requirements to Operate for 10 hours per Month," was approved by the NRC for adoption in September 2012 (ADAMS Accession No. ML12158A490).

One of the reasons air filtration and adsorption systems are required at nuclear power plants is to lower the concentration of airborne radioactive material that may be released from the site to the environment due to a design basis event. Lowering the concentration of airborne

radioactive materials can mitigate doses to plant operators and members of the public in the event of a design basis event. A typical system consists of ventilation ductwork, fans, dampers, valves, instrumentation, prefilters or demisters, HEPA filters, heaters, and activated charcoal adsorbers. These systems are tested by operating the systems and monitoring the response of the overall system as well as individual components. Laboratory tests of charcoal adsorbers are also performed to ensure the charcoal adsorbs an acceptable amount of radioactive gasses.

Current testing requirements for the air filtration and adsorption systems state that the systems should be operated for at least 10 continuous hours with heaters operating at a frequency controlled by the SFCP. These requirements are based on NRC staff guidance for testing air filtration and adsorption systems that has been superseded. New NRC staff guidance states at least 15 continuous minutes of ventilation system operation with heaters operating every 31 days is acceptable for those plants that test ventilation system adsorption at a relative humidity of less than 95 percent. Plants that test ventilation system adsorption at a relative humidity of 95 percent do not require heaters for the ventilation system to perform its specified safety function and the bracketed phrase "with heaters operating" is not included in the SRs.

The regulatory requirements for design and testing of these systems are contained in 10 CFR Section 50.67 and Part 100, as well as Part 50, Appendix A, "General Design Criteria for Nuclear Power Plants," General Design Criteria 19, 41, 42, 43, and 61.

The RG 1.52, Revision 2, "Design, Testing, and Maintenance Criteria for Post-Accident Engineered-Safety-Feature Atmosphere Cleanup System Air Filtration and Adsorption Units of Light-Water-Cooled Nuclear Power Plants" (ADAMS Accession No. ML003740139), was published in March 1978 to provide guidance and criteria acceptable to the NRC staff for licensees to implement the regulations in 10 CFR related to air filtration and adsorption systems.

Regulatory Position 4.d of RG 1.52, Revision 2, states that "Each ESF atmosphere cleanup train should be operated at least 10 hours per month, with the heaters on (if so equipped), in order to reduce the buildup of moisture on the adsorbers and HEPA filters." The purpose of this position is to minimize the moisture content in the system and thereby enhance efficiency in the event the system is called upon to perform its design basis function. The SRs 3.6.4.3.1 and 3.7.3.1 currently require operating the heaters in the respective ventilation and filtering systems for at least 10 continuous hours every 31 days. The current Standard Technical Specification (STS) Bases explain that operation of heaters for 10 hours would eliminate moisture on the charcoal adsorbers and HEPA filters.

Subsequently, the NRC staff was informed that 10 continuous hours of system operation would dry out the charcoal adsorber for a brief period of time but, following heater deenergization, the level of moisture accumulation in adsorbers would rapidly return to the pre-test level. The NRC staff found this information persuasive and subsequently issued NRC Generic Letter (GL) 99-02, "Laboratory Testing of Nuclear-Grade Activated Charcoal" (ADAMS Accession No. ML082350935 and errata sheet at Accession No. ML031110094). The GL 99-02 requested licensees to confirm their charcoal testing protocols accurately reflect the adsorber gaseous activity capture capability. The GL 99-02 also requested the licensees to account for the effects of moisture accumulation in adsorbers.

Therefore, the NRC staff updated RG 1.52 to include the new information (ADAMS Accession No. ML011710176). Regulatory Guide 1.52, Revision 3, Regulatory Position 6.1, states, "Each ESF atmosphere cleanup train should be operated continuously for at least 15 minutes each month, with the heaters on (if so equipped), to justify the operability of the system and all its

components.” This same position exists in Revision 4 to RG 1.52 as Regulatory Position 6.a (ADAMS Accession No. ML12159A013).

One of the reasons for the previous 10-hour requirement for ventilation system operation with heaters operating was to minimize the effects of moisture on the adsorber’s ability to capture gaseous activity. However, these effects are already accounted for in the VFTP by performing testing at a relative humidity of 95 percent.

The RG 1.183, “Alternative Radiological Source Terms for Evaluating Design Basis Accidents at Nuclear Power Reactors” provides guidance to licensees of operating power reactors on acceptable applications of ASTs; the scope, nature, and documentation of associated analyses and evaluations; consideration of impacts on analyzed risk; and content of submittals. This guide establishes an acceptable AST and identifies the significant attributes of other ASTs that may be found acceptable by the NRC staff. This guide also identifies acceptable radiological analysis assumptions for use in conjunction with the accepted AST.

NUREG-0800, “Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR [Light-Water Reactor] Edition” (hereinafter referred to as the SRP) contains guidance for NRC staff in performing safety reviews of construction permit or operating license applications (including requests for amendments) under 10 CFR Part 50.

Relevant sections of the SRP used in the review of this LAR include the following:

- Section 6.4, “Control Room Habitability System,” as it applies to DBA radiological consequence analyses using the AST.
- Section 15.0.1, “Radiological Consequence Analyses Using Alternative Source Terms,” as it applies to DBA radiological consequence analyses using the AST.
- Section 16.0, “Technical Specifications,” March 2010 (ADAMS Accession No. ML100351425). As described therein, as part of the regulatory standardization effort, the NRC staff has prepared standard technical specifications (STS) for each of the light-water reactor nuclear designs.

The NRC’s guidance for the format and content of licensee TSs can be found in NUREG-1434, “Standard Technical Specifications General Electric Plants, BWR/6” (ADAMS Accession No. ML12104A195). The STS contain guidance for the format and content of TSs that meet the requirements of 10 CFR 50.36.

*Federal Register* (FR) 58 FR 39132 contains the NRC’s “Final Policy Statement on Technical Specifications Improvements for Nuclear Power Reactors.” In reference to the four criteria listed in 50.36(c)(2)(ii), the Policy Statement states: “LCOs which do not meet any of the criteria below may be proposed for removal from the Technical Specifications and relocation to licensee-controlled documents, such as the FSAR [final safety analysis report].”

NUREG-1465, “Accident Source Terms for Light-Water Nuclear Power Plants,” provides estimates of an AST that are more physically based and could be applied to a boiling-water reactor.



### 3.0 TECHNICAL EVALUATION

The Perry DBAs associated with the AST are described in USAR Chapter 15, "Accident Analysis" (ADAMS Accession No. ML17305A212). The DBAs reviewed include:

- LOCA inside containment,
- FHA outside containment,
- control rod drop accident, and
- large steam line break outside containment.

By letter dated March 26, 1999, the NRC issued License Amendment No. 103 to Facility Operating License No. NPF-58 for the PNPP (ADAMS Accession No. ML021840462), which approved the use of the revised AST in NUREG-1465, "Accident Source Terms for Light-Water Nuclear Power Plants," for certain DBAs (ADAMS Accession No. ML041040063).

By letter dated March 4, 2003, the NRC issued Amendment No. 122 to Facility Operating License No. NPF-58 for the PNPP (ADAMS Accession No. ML023580025). Pursuant to 10 CFR 50.67, this amendment approved the use of the AST methodology to update the design basis analysis for the FHA. The license amendment included the following changes as a result of the use of the AST for the FHA:

- No credit is taken for the fuel handling building exhaust system (FHBES).
- No credit is taken for FHB integrity.
- Movement of irradiated fuel that has been subcritical < 24 hours is prohibited.

The current PNPP TSs for the FHB and the FHBES are applicable during the movement of recently irradiated fuel (irradiated fuel that has been subcritical < 24 hours). Therefore, the current TSs are not aligned with the change approved in Amendment No. 122.

By letter dated March 30, 2015, the NRC issued Amendment No. 166 to Facility Operating License No. NPF-58 for the PNPP (ADAMS Accession No. ML15079A255). The license amendment included the following changes as a result of the use of the AST:

- An increase in allowable secondary containment bypass leakage to  $0.1008 L_a$ .
- An 80 percent removal efficiency of elemental iodine and organic iodide by the CRER system charcoal filters for the LOCA.
- No credit for removal of elemental and organic iodides by the AEGT system charcoal filters in any of radiological consequence analyses.

The current PNPP TS allowable secondary containment bypass leakage criterion is  $> 0.0504 L_a$ . The current VFTP TS is based on a 95 percent removal efficiency by the CRER system charcoal filters and credits removal of elemental iodine and organic iodides by the AEGT system charcoal filters. The current TSs are not aligned with the change approved by Amendment No. 166.

#### 3.1 Accident Dose Consequence Analysis

Amendment Nos. 122 and 166 to the PPNP license approved the adoption of AST. The NRC staff reviewed the SEs accompanying these amendments and the subsequent USAR. The intent was to confirm that the proposed changes in the current LAR are consistent with the

accident analysis performed by the licensee in support of Amendment Nos. 122 and 166. The following assumptions in the radiological consequence analysis are directly applicable to the proposed changes:

Design basis fuel handling accident in the spent fuel area and in the containment, associated with Amendment No. 122

- No credit taken for either containment or FHB integrity
- No credit taken for removal of fission products by the FHB, FHAES, AEGT system, or CRER system.
- Fission product decay period of 24 hours (time period from the reactor shutdown to the first recently irradiated fuel movement).
- No credit taken for using protective equipment or prophylactic drugs by the control room operators.

Design basis loss-of-coolant accident, associated with Amendment No. 166

- HEPA filter in AEGT system is credited with 99 percent removal efficiency.
- No credit taken for the charcoal adsorbers in AEGT system for the removal of elemental iodine and organic iodides.
- The testing requirement in the current TS for the CRER system could justify using a charcoal adsorber removal efficiency of 95 percent. For added operational margin, an elemental and organic iodine efficiency of 80 percent was assumed.
- Secondary containment bypass conservatively assumed a bypass rate that is twice the TS maximum allowable value of 0.0504  $L_a$ .

### 3.2 Evaluation of TS Changes

#### 3.2.1 Revision to TS 3.6.4.3, "Annulus Exhaust Gas Treatment (AEGT) System," and TS 3.7.3, "Control Room Emergency Recirculation (CRER) System"

The licensee proposed reducing system testing time in SR 3.6.4.3.1 and SR 3.7.3.1 from 10 hours with heaters operating to 15 minutes without heaters operating. As discussed in Section 2.4 above, a similar change to the STS was reviewed by the NRC staff and approved in TSTF-522. The staff evaluated the licensee's proposed change against the applicable regulatory guidance, guidance in the STS as modified by TSTF-522, and the regulatory requirements of 10 CFR 50.36.

The proposed changes adopted the STS format and content, to the extent practicable, contained in the changes made to NUREG-1434, "Standard Technical Specifications General Electric Plants, BWR/6," by TSTF-522. The NRC staff found that the proposed changes are consistent with guidance in STS, as modified by TSTF-522.

The NRC staff compared the proposed change to the existing SRs, as well as the regulatory requirements of 10 CFR 50.36. The existing SRs provide assurance that the necessary quality of ventilation systems and components will be maintained and that the LCOs will be met. The proposed change reduces the amount of required system operational time from 10 hours to 15 minutes. The 10-hour operational requirement for heaters was based on using the SR to eliminate moisture in the adsorbers and thus ensure the adsorbers would capture gaseous activity. As discussed in Section 2.4, the effects of moisture on the adsorber's ability to capture gaseous activity will be accounted for in the licensee's VFTP by performing testing at a relative humidity of 95 percent, as discussed below. Since the SR's are no longer relied upon to ensure the effects of moisture on the adsorber's ability to capture gaseous activity are accounted for, the 10-hour heater operational requirement is unnecessary. The staff found that reducing the required minimum system operation time to 15 minutes, consistent with RG 1.52, Revision 3 and Revision 4, is sufficient to justify operability of the system and all its components. The staff found that the proposed SRs meet the regulatory requirements of 10 CFR 50.36 because they provide assurance that the necessary quality of ventilation systems and components will be maintained and that the LCOs will be met. Therefore, the NRC staff finds the proposed change acceptable.

The regulation at 10 CFR 50.36, states: "A summary statement of the bases or reasons for such specifications . . . shall also be included in the application, but shall not become part of the technical specifications." The licensee may make changes to the TS Bases without prior NRC staff review and approval in accordance with the TS Bases Control Program TS 5.5.11. Accordingly, along with the proposed TS changes, the licensee also submitted TS Bases changes corresponding to the proposed TS changes for information only. Because the TS Bases are subject to another change process and because they were submitted for information only, the NRC staff verified that the application included the TS Bases changes, but did not make a finding on the acceptability of the TS Bases changes.

The licensee, in addition to the deleting the heater operation requirement for SR 3.6.4.3.1 and 3.7.3.1, also proposed deletion of the heater testing requirements from TS 5.5.7.e. The licensee justified the proposed removals by proposing to increase the CRER system's charcoal adsorber testing requirement from 70 percent to 95 percent RH. The licensee stated that the ASTM D3803-1989 is already cited in TS 5.5.7. In NUREG-1434, the NRC staff has stated the following with regard to ASTM D3803-1989:

ASTM D3803-1989 is a more stringent testing standard because it does not differentiate between used and new charcoal, it has a longer equilibrium period performed at a temperature of 30°C (86°F) and a relative humidity (RH) of 95% (or 70% RH with humidity control) and it has more stringent tolerances that improve repeatability of the test.

The NRC staff reviewed the proposed changes and the licensee's justification. TS 5.5.7.c requires testing of the charcoal adsorbers in accordance with ASTM D3803-1989. The staff determined that the proposed changes to SR 3.6.4.3.1 and SR 3.7.3.1 and TS 5.5.7.e are acceptable because they are in alignment with NUREG-1434 and are sufficient to demonstrate the performance of the charcoal adsorbers.

### 3.2.2 Deletion of TS 3.7.8, "Fuel Handling Building," and TS 3.7.9, "Fuel Handling Building Ventilation Exhaust System"

The licensee proposed deleting TSs 3.7.8 and 3.7.9 from the TSs. As discussed above in Section 3.0, Amendment No. 122 established a design basis FHA which specified no credit taken for the FHBES, no credit taken for FHB integrity, and a fission product decay period of 24 hours as the time period from the reactor shutdown to the first fuel movement occurs. The licensee stated that TS 3.7.8 and 3.7.9 no longer meet the criteria of 10 CFR 50.36(c)(2)(ii), and therefore, can be deleted.

The NRC staff reviewed the licensee's LAR and Amendment No. 122, and confirmed that the systems no longer meet the criteria for establishment of a TS per 10 CFR 50.36(c)(2)(ii) and can be eliminated from TS. In light of the commission policy stated in 58 FR 39132 (discussed in Section 2.4 above), the staff requested information from the licensee regarding what activities will continue to be performed to maintain the systems and structures as safety-related and seismic category 1 structures and systems and what change control process would apply to the activities and any future changes to the structures and systems. The licensee supplemented its LAR to provide information to address the staff's request with the following:

Per the Perry Nuclear Power Plant (PNPP) Updated Safety Analysis Report (USAR), the FHB is a safety-related, seismic category I structure, and the FHBES is a safety-related, seismic category I system. Both the FHB and FHBES are governed by 10 CFR 50.65, "Requirements for monitoring the effectiveness of maintenance at nuclear power plants," and are included in the PNPP maintenance rule program. For the FHB, program-related inspections are performed by qualified staff every four years. For the FHBES, equipment performance is monitored daily by plant operators, and component monitoring (fan and motor vibration) is performed periodically, as necessary. Conditions adverse to quality that are entered into FENOC's corrective action program are evaluated for their effects on maintenance rule status and may increase the frequency of monitoring. Procurement of replacement components and performance of maintenance activities are done in accordance with safety-related, seismic category I requirements, as applicable. Changes to the USAR (license basis), maintenance rule program, procedures governing safety-related, seismic category I activities, or the FHB and FHBES safety-related, seismic category I design and license basis designations, are governed by FENOC's change control processes, as described below.

The FENOC procedure, "Evaluation of Changes, Tests and Experiments," implements the requirements of 10 CFR 50.59 at the Perry Nuclear Power Plant. This change control process would apply to any future changes to the FHB and FHBES. As described in the PNPP design and license basis, the FHB and FHBES are designated safety-related, seismic category I. As such, changes to the FHB and FHBES, including a departure from their safety-related, seismic category I design and license basis designations or related activities, would either require prior NRC approval or would be made in accordance with the allowances in 10 CFR 50.59. Additionally, as the FHB and FHBES are described in the PNPP USAR, changes would also be governed by FENOC's "Licensing Document Change Process," which implements the requirements of 10 CFR 50.71 (e) and requires periodic revisions to be submitted to the NRC.

The NRC staff reviewed the response and determined that the information supplied demonstrates that the licensee is consistent with the policy statement because the USAR and other licensee-controlled documents contain the required information related to the information being removed from the TSs and because changes to the facility or to procedures described in the USAR will be made in accordance with 10 CFR 50.59. Therefore, the staff determines that removal of TS 3.7.8 and TS 3.7.9 is acceptable.

### 3.2.3 Revision to TS 3.6.1.3, "Primary Containment Isolation Valves"

The licensee proposed increasing the allowable secondary containment bypass leakage rate from 0.0504  $L_a$  to 0.1008  $L_a$  in SR 3.6.1.3.9 and deleting items 5.5.7.b.c and 5.5.7.c.c from the testing requirements of TS 5.5.7, "Ventilation Filter Testing Program." As discussed above in Section 3.0, Amendment No. 166 increased the allowable secondary containment bypass leakage to 0.1008  $L_a$ , credits an 80 percent removal efficiency of elemental iodine and organic iodides by the CRER system charcoal filters during a design basis LOCA, and did not credit any removal of elemental and organic iodides by the AEGT system charcoal filters in any of the radiological consequence analyses. The NRC staff reviewed the proposed changes and determined that SR 3.6.1.3.9 will continue to meet the requirements of 10 CFR 50.36(c)(3), and the VFTP will continue to contain requirements necessary to assure operation of the facility in a safe manner in accordance with 10 CFR 50.36(c)(5). Therefore, the staff determined that the proposed changes are acceptable.

However, the NRC staff notes that the USAR currently states that the maximum secondary containment bypass leakage value in the TSs is  $\leq 0.0504 L_a$ . The following is an excerpt from the PPNP USAR, pages 6.2-72 and 6.2-73:

The sources listed in Table 6.2-33 are a summary of potential leakage paths that could bypass the AEGTS. The containment design basis accident leakage is 0.2 percent by weight of the contained atmosphere in 24 hours. The maximum test leakage rate permitted from the sources listed in Table 6.2-33 is 5.04 percent of the total containment leakage (although the radiological dose calculations have been revised to assume a secondary containment bypass leakage limit of 10.08 percent of  $L_a$ ). This value will be the technical specification commitment for leakage bypassing the AEGTS as listed in the Technical Specifications. In order to verify that the total amount of potential bypass leakage will be within this limit, a testing and evaluation program will be conducted on isolation valves, personnel airlocks and guard pipes as described in Section 6.2.4.3.1.)

The NRC staff also noted similar statements regarding secondary containment bypass appear in USAR pages 6.2-85, 6.2-126, and 15.6-31. It is expected that the licensee will modify the USAR as part of the periodic update in accordance with 10 CFR 50.71. Because the licensee dose analyses used the larger bypass value and the results were found to be acceptable with margin, the staff finds the proposed revision to the allowable combined leakage rate from secondary containment bypass paths to be acceptable.

### 3.2.4 Revisions to TS 5.5.7, "Ventilation Filter Testing Program (VFTP)"

As discussed in Section 3.2.2, the licensee proposed the deletion of TS 3.7.8 and TS 3.7.9 in their entirety. With the deletion of the FHB from TSs, the licensee also proposed deletion of all occurrences of the "Fuel Handling Building" from TS 5.5.7. Associated with the proposed deletion of TS 3.7.9, the licensee proposed deleting items 5.5.7.a.b, 5.5.7.b.b, 5.5.7.c.b,

5.5.7.d.b, and 5.5.7.e.b from the testing requirements of the VFTP. The NRC staff reviewed the proposed deletions and determined that they are acceptable because the USAR no longer credits the FHB or the FHBES. Therefore, TS testing requirements of the FHBES as part of the VFTP is no longer necessary.

As discussed above in Section 3.2.1, the licensee proposed changes related to the AEGT and CRER systems in TS 5.5.7. TS 5.5.7.b addresses in-place testing for the penetration of the charcoal adsorbers, and TS 5.5.7.c addresses laboratory testing for the penetration of the charcoal adsorbers. References to testing of the AEGT system charcoal adsorbers would be deleted from TS 5.5.7.b and TS 5.5.7.c.

For the CRER system, acceptable charcoal adsorber filter efficiency in laboratory tests would be reduced from 95 percent to 80 percent. This will be accomplished by increasing the allowable methyl iodine penetration in TS 5.5.7.c for the CRER system from 2.5 percent to 10 percent. In addition, the test for RH would be increased from 70 percent to 95 percent.

The licensee provided the following justification for the change:

Changing the methyl iodine penetration criterion from 2.5% to 10% for the CRER system is consistent with USAR Section 15.6.5.5.1, which states "The LOCA analysis is based on... utilizing elemental and organic iodine removal efficiencies of 80 percent for the control room emergency recirculation system charcoal adsorbers." The LOCA analysis is the only accident analysis that credits the control room emergency recirculation system charcoal adsorbers. NUREG-1434, TS 5.5.8, provides the methodology for determining methyl iodine allowable penetration criterion as follows:

Allowable Penetration =  $[(100\% - \text{Methyl Iodine Efficiency for Charcoal Credited in Licensee's Accident Analysis}) / \text{Safety Factor}]$

When ASTM D3803-1989 is used with 30 °C [degree Celsius] (86 °F [degree Fahrenheit]) and 95% RH (or 70% RH with humidity control) is used, the staff accepts a safety factor > 2 for systems with or without humidity control.

As stated, the license basis cites an 80 percent removal efficiency for the CRER system. Inserting the 80 percent value into the NUREG-1434 equation results in the following methyl iodine penetration criterion:

Allowable Penetration =  $[(100\% - 80\%) / 2] = 10 \text{ percent.}$

The dose consequence analysis for a LOCA did not take any credit for the charcoal adsorbers in the AEGT system to remove elemental iodine and organic iodides. With no credit taken for the charcoal adsorbers, it follows that heaters in the AEGT do not have a required function in the dose consequence analysis. The analysis of record also used 80 percent charcoal adsorber efficiency in CRER. Increasing the RH from 70 percent to 95 percent will require laboratory tests to be performed at 95 percent RH. The licensee has not proposed any changes to the LOCA analysis, and, therefore, the existing analyses associated with Amendment No. 166 remain applicable. Therefore, charcoal adsorbers in the AEGT system and the heaters in AEGT and CRER systems no longer meet the 10 CFR 50.36 criteria for establishing technical specification requirements related to surveillance, tests and inspections. Consequently, the

NRC staff finds the deletion of the testing of the AEGT system charcoal adsorbers from TS 5.5.7.b and TS 5.5.7.c acceptable. In addition, the staff finds that the proposed changes to TS 5.5.7.c to increase the methyl iodine allowable penetration from 2.5 percent to 10 percent and increase the RH from 70 percent to 95 percent for the CRER system are acceptable.

In TS 5.5.7, the licensee also proposed to replace references to RG 1.52, Revision 2, with RG 1.52, Revision 4. As stated in pages 9 and 10 of the enclosure to the LAR, the changes are due to the proposed heater operational changes in the TSs. In addition, the licensee also stated that the testing frequency remains unaffected by the proposed change. The NRC staff notes that references to testing standards in TS 5.5.7—American National Standards Institute N510-1980 for in-place filter testing and ASTM D3803-1989 for charcoal adsorber laboratory tests—remain unchanged. Revision 4 to RG 1.52 contains references to later versions of these standards. The newer versions of the standards would be applicable for filter trains built to updated standards. Based on the scope of RG 1.52, Revision 4, as it applies to heater operation and testing frequencies, the NRC staff finds the proposed change acceptable.

### 3.2.5 Administrative Changes

In the TS TOC, the title for 3.3.6.1, "Primary Containment Isolation Instrumentation," will be revised to state, "Primary Containment and Drywell Instrumentation." The licensee stated that this change aligns the TOC with the title of TS established by License Amendment No. 69 issued June 23, 1995.

In the TS TOC, the title for 3.6.1.9, "Main Steam Isolation Valve (MSIV) Leakage Control System," will be replaced by the text, "Main Steam Shutoff Valves." The licensee stated that this change aligns the TOC with the title of TS 3.6.1.9 established by License Amendment No. 103, issued March 2, 1999.

In the TS TOC, the title of 3.6.3.1, "Primary Containment Hydrogen Recombiners," will be removed and replaced with "Deleted." This change aligns the TOC with Amendment No. 135, issued on April 19, 2005 (ADAMS Accession No. ML050400059), which deleted the hydrogen recombiners from the TSs.

The title of TS 3.7.8, "Fuel Handling Building," will be removed in its entirety and replaced with "Deleted." Also, the title of TS 3.7.9, "Fuel Handling Building Ventilation Exhaust System," will be removed in its entirety and replaced with "Deleted."

Due to the deletion of TS 3.7.8 and TS 3.7.9, a parenthetical note will be added to TS 3.7.7 at the bottom of TS page 3.7-14 to indicate that the next page is TS page 3.7.-19.

Due to the deletion of TS 3.7.8 and its subsequent impact on TS 5.5.7, i.e., removal of "Fuel Handling Building," from the VFTP, TS 5.5.7.a.c will be renumbered to TS 5.5.7.a.b, and TS 5.5.7.d.c will be renumbered to TS 5.5.7.d.b.

The NRC staff reviewed the above changes and determined that these changes are administrative in nature and they do not impact the accident analyses previously approved by Amendment Nos. 103, 122, and 166, nor the TS changes directly related to this amendment. Therefore, the NRC staff finds the administrative changes described above to be acceptable.

### 3.3 Technical Evaluation Conclusion

Based on the evaluation above, the NRC staff concludes that the requested TS changes appropriately reflect the previously approved changes and are consistent with the current USAR dose analyses of record. PNPP compliance with GDC 16 and GDC 19 will be unaffected because the results of the USAR accident consequence analyses are unchanged. The staff has reasonable assurance that, with the proposed changes, the functional capability of ESF atmospheric cleanup systems for PNPP will be maintained. The staff also concludes that there is reasonable assurance that PNPP, as modified by the requested license amendment, will continue to provide sufficient safety margins and adequate defense-in-depth under conditions of unanticipated events, and in presence of the uncertainties in accident progression, assumptions, parameters, and analyses outlined in the USAR. In addition, the NRC staff finds that the proposed changes to PNPP TSs will continue to comply with the regulatory requirements and guidance identified in Section 2.0 above.

### 4.0 STATE CONSULTATION

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

### 5.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20, and changes the surveillance requirements. The NRC staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendment involves no significant hazards consideration and there has been no public comment on such finding (82 FR 35841, dated August 1, 2017). 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 need 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.

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Date of issuance: May 16, 2018



SUBJECT: PERRY NUCLEAR POWER PLANT, UNIT NO. 1 - ISSUANCE OF AMENDMENT NO. 180 CONCERNING CHANGES TO TECHNICAL SPECIFICATIONS REGARDING IMPLEMENTATION OF THE ALTERNATIVE SOURCE TERM (CAC NO. MF9818; EPID L-2017-LLA-0241) DATED MAY 16, 2018

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