



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

August 23, 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. 183 CONCERNING ADOPTION OF TECHNICAL  
SPECIFICATION TASK FORCE TRAVELER TSTF-546, "REVISE APRM  
CHANNEL ADJUSTMENT SURVEILLANCE REQUIREMENT"  
(EPID L-2018-LLA-0041)

Dear Mr. Hamilton:

The U.S. Nuclear Regulatory Commission (the Commission) has issued the enclosed Amendment No. 183 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 February 14, 2018.

The amendment revises Surveillance Requirement 3.3.1.1.2 of TS 3.3.1.1, "Reactor Protection System (RPS) Instrumentation," to require adjustment of the average power range monitor (APRM) channels only if the calculated power exceeds the APRM output by more than 2 percent rated thermal power.

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 blue ink that reads "Kimberly J. Green".

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. 183 to NPF-58
2. Safety Evaluation

cc: ListServ



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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. 183  
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 February 14, 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.

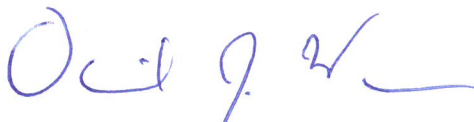
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. NPF-58 is hereby amended to read as follows:

- (2) Technical Specifications

The Technical Specifications contained in Appendix A and the Environmental Protection Plan contained in Appendix B, as revised through Amendment No. 183, 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 90 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: August 23, 2018

ATTACHMENT TO LICENSE AMENDMENT NO. 183

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 -

TS

TS

3.3-3

3.3-3

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. 183, 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

SURVEILLANCE REQUIREMENTS

-----NOTES-----

1. Refer to Table 3.3.1.1-1 to determine which SRs apply for each RPS Function.
  2. When a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed for up to 6 hours provided the associated Function maintains RPS trip capability.
- 

SURVEILLANCE		FREQUENCY
SR 3.3.1.1.1	Perform CHANNEL CHECK.	In accordance with the Surveillance Frequency Control Program
SR 3.3.1.1.2	<p>-----NOTE-----</p> <p>Not required to be performed until 12 hours after THERMAL POWER <math>\geq</math> 23.8% RTP.</p> <p>-----</p> <p>Compare the average power range monitor (APRM) channels to the calculated power. Adjust the APRM channels if the calculated power exceeds the APRM output by more than 2% RTP while operating at <math>\geq</math> 23.8% RTP.</p>	In accordance with the Surveillance Frequency Control Program
SR 3.3.1.1.3	Adjust the channel to conform to a calibrated flow signal.	In accordance with the Surveillance Frequency Control Program
SR 3.3.1.1.4	<p>-----NOTE-----</p> <p>Not required to be performed when entering MODE 2 from MODE 1 until 12 hours after entering MODE 2.</p> <p>-----</p> <p>Perform CHANNEL FUNCTIONAL TEST.</p>	In accordance with the Surveillance Frequency Control Program

(continued)



UNITED STATES  
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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
RELATED TO AMENDMENT NO. 183 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 February 14, 2018 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML18045A195), FirstEnergy Nuclear Operating Company (the licensee or FENOC) requested changes to the technical specifications (TSs) for the Perry Nuclear Power Plant, Unit 1 (PNPP). Specifically, the licensee requested changes to the TSs to adopt Technical Specifications Task Force (TSTF) traveler TSTF-546, Revision 0, "Revise APRM [Average Power Range Monitor] Channel Adjustment Surveillance Requirement," dated April 21, 2016 (ADAMS Accession No. ML16112A208). The U.S. Nuclear Regulatory Commission (NRC or Commission) approved the traveler on August 31, 2017 (ADAMS Accession No. ML17206A431).

The proposed changes would revise a surveillance requirement (SR) to require adjustment of the APRM channels only if the calculated power exceeds the APRM output by more than 2 percent rated thermal power (RTP).

2.0 REGULATORY EVALUATION

2.1 System Description

The APRMs monitor neutron flux within the core to provide an indication of core power. The APRM channels receive input signals from the local power range monitors (LPRM) within the reactor core to provide an indication of the power distribution and local power changes. The APRM channels average these LPRM signals to provide a continuous indication of average reactor power from a few percent to greater than RTP.

The APRM system is a safety-related system with two purposes. One purpose is to monitor the core thermal power level. The other purpose is to provide reactor scram and control rod block signals to preserve the fuel cladding integrity. The APRM system consists of a number of APRM channels that each receive input signals from LPRMs located in the reactor core. The

APRM channels average the LPRM inputs and because the LPRMs assigned to specific APRM channels are located in diverse axial and radial locations throughout the reactor core, each APRM provides a continuous indication of average reactor power. A gain adjustment can be made to each APRM channel output allowing it to be calibrated to the calculated core thermal power. Gain adjustments change the amplification levels of the APRM circuits so that a given input signal received from a nuclear detector produces an accurate power level signal at the output of the APRM channel. The typical allowable absolute difference between calculated core thermal power and the APRM channel output is 2 percent.

## 2.2 Proposed Technical Specification Changes

The proposed changes would revise SR 3.3.1.1.2, which is associated with Limiting Condition for Operation (LCO) 3.3.1.1, "Reactor Protection System (RPS) Instrumentation."

SR 3.3.1.1.2 currently states:

Verify the absolute difference between the average power range monitor (APRM) channels and the calculated power  $\leq 2\%$  RTP while operating at  $\geq 23.8\%$  RTP.

The proposed SR 3.3.1.1.2 would state:

Compare the average power range monitor (APRM) channels to the calculated power. Adjust the APRM channels if the calculated power exceeds the APRM output by more than 2% RTP while operating at  $\geq 23.8\%$  RTP.

## 2.3 Regulatory Requirements and Guidance

The regulation at Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.36(a)(1) requires an applicant for an operating license to include in the application proposed TS in accordance with the requirements of 10 CFR 50.36. The applicant must include in the application a "summary statement of the bases or reasons for such specifications, other than those covering administrative controls...." However, per 10 CFR 50.36(a)(1), these TS bases "shall not become part of the technical specifications."

Additionally, 10 CFR 50.36(b) requires:

Each license authorizing operation of a . . . utilization facility . . . will include technical specifications. The technical specifications will be derived from the analyses and evaluation included in the safety analysis report, and amendments thereto, submitted pursuant to [10 CFR] 50.34 ["Contents of applications; technical information"]. The Commission may include such additional technical specifications as the Commission finds appropriate.

The categories of items required to be in the TSs are provided in 10 CFR 50.36(c). As required by 10 CFR 50.36(c)(2)(i), the TSs will include LCOs, which are the lowest functional capability or performance levels of equipment required for safe operation of the facility. Per 10 CFR 50.36(c)(2)(i), when an LCO of a nuclear reactor is not met, the licensee shall shut down the reactor or follow any remedial action permitted by the TSs until the condition can be met.



The regulation at 10 CFR 50.36(c)(3) requires that TSs include SRs, which 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 LCOs will be met.

The NRC staff's guidance for the review of TSs is in Chapter 16, "Technical Specifications," of NUREG-0800, Revision 3, "Standard Review Plan [SRP] for the Review of Safety Analysis Reports for Nuclear Power Plants," dated March 2010 (ADAMS Accession No. ML100351425).

### 3.0 TECHNICAL EVALUATION

The existing TS SR 3.3.1.1.2 requires verification that the absolute difference between the APRM channels and the calculated power is  $\leq 2$  percent RTP while operating at  $\geq 23.8$  percent RTP. If the absolute difference is greater than 2 percent, the APRM channel is declared inoperable in accordance with TS SR 3.0.1 and LCO 3.1.1.1. An acceptable way to restore operability is to adjust the gain for the APRM channel to restore the absolute difference to  $\leq 2$  percent.

The proposed change would require adjustment of the APRM channel only if the APRM is reading lower than calculated thermal power by more than 2 percent. When the APRM is reading lower than the calculated thermal power, the licensee must adjust the APRM channel because actual thermal power is higher than the APRM indication. If the APRM indication is less than calculated thermal power, then the APRMs may not initiate a trip signal when the actual reactor power reaches the trip setpoint value. In a situation where the APRM signal is reading higher than calculated thermal power, the adjustment of the APRM channel is permitted, but not required, because the actual thermal power is lower than the APRM indication.

The regulation at 10 CFR 50.36(c)(3) requires that the TSs contain SRs, which 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. The NRC staff reviewed the changes proposed to PNPP SR 3.3.1.1.2 as described in this safety evaluation. The NRC staff determined that the SR, as modified, continues to provide appropriate controls and acceptance criteria for adjustment of the APRMs to ensure that the APRMs will not read less than 2 percent below calculated thermal power during operation at greater than 23.8 percent power level. The NRC staff determined that the SR continues to verify the operability of the APRMs and provide assurance that the necessary quality of systems and components is maintained.

#### 3.1 Variations from the Approved Traveler

The licensee is proposing one variation from the TS changes described in TSTF-546 or the applicable parts of the NRC staff's safety evaluation of TSTF-546. The variation states that the PNPP TSs utilizes a power level of 23.8 percent in SR 3.3.1.1.2, in lieu of 25 percent as stated in TSTF-546. A change in the value from 25 to 23.8 percent used in PNPP TSs was previously found acceptable and approved for the plant by the NRC in Amendment No. 112 dated June 1, 2000 (ADAMS Accession No. ML003724441). Therefore, this variation is acceptable.

### 3.2 Technical Conclusion

The NRC staff reviewed the proposed changes to the TSs and determined that they meet the standards for TSs in 10 CFR 50.36(b). The proposed changes to the SR assure that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the LCOs will be met, and satisfy 10 CFR 50.36(c)(3). Additionally, the changes to the TSs were reviewed for technical clarity and consistency with customary terminology and format in accordance with SRP Chapter 16.

### 4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Ohio State official was notified of the proposed issuance of the amendment on June 15, 2018. The State official had no comments.

### 5.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a SR. 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 (83 FR 17863, dated April 24, 2018) and there has been no public comment on such finding. 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.

Principal Contributor: R. Stattel

Date of issuance: August 23, 2018

SUBJECT: PERRY NUCLEAR POWER PLANT, UNIT NO. 1 - ISSUANCE OF AMENDMENT NO. 183 CONCERNING ADOPTION OF TECHNICAL SPECIFICATION TASK FORCE TRAVELER TSTF-546, "REVISE APRM CHANNEL ADJUSTMENT SURVEILLANCE REQUIREMENT" (EPID L-2018-LLA-0041) DATED August 23, 2018

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**ADAMS Accession No.: ML18199A280**

OFFICE	NRR/DORL/LPL3/PM	NRR/DORL/LPL3/LA	NRR/DE/EICB/BC	NRR/DSS/STSB/BC
NAME	KGreen	SRohrer	MWaters	VCusumano
DATE	7 / 20 /18	7/ 19 /18	5 / 31 /18	7 / 23 /18
OFFICE	OGC	NRR/DORL/LPL3/BC	NRR/DORL/LPL3/PM	
NAME	<i>M. Young</i>	DWrona	KGreen	
DATE	8 / 9 /18	8 / 22 /18	8 / 23 /18	

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