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

October 28, 2022

Mr. Kevin Cimorelli
Site Vice President
Susquehanna Nuclear, LLC
769 Salem Boulevard
NUCSB3
Berwick, PA 18603-0467

SUBJECT: SUSQUEHANNA STEAM ELECTRIC STATION, UNITS 1 AND 2 – ISSUANCE OF AMENDMENT NOS. 283 AND 266 RE: CHANGE TO REACTOR STEAM DOME PRESSURE—LOW INSTRUMENT FUNCTION ALLOWABLE VALUE IN TECHNICAL SPECIFICATIONS (EPID L-2021-LLA-0184)

Dear Mr. Cimorelli:

The U.S. Nuclear Regulatory Commission (NRC or the Commission) has issued the enclosed Amendment No. 283 to Renewed Facility Operating License No. NPF-14 and Amendment No. 266 to Renewed Facility Operating License No. NPF-22 for the Susquehanna Steam Electric Station (Susquehanna), Units 1 and 2, respectively. These amendments consist of changes to the technical specifications (TS) in response to Susquehanna Nuclear, LLC's application dated October 5, 2021, as supplemented by letters dated December 16, 2021, May 23, 2022, and August 10, 2022.

These amendments revise the allowable values for the core spray and the low-pressure cooling injection systems' reactor steam dome pressure—low initiation and injection permissive instrumentation functions in Table 3.3.5.1-1 in each unit's TS 3.3.5.1, "Emergency Core Cooling System (ECCS) Instrumentation."

The NRC staff's safety evaluation for these amendments is enclosed. The NRC will include a notice of issuance in the Commission's monthly *Federal Register* notice.

Sincerely,

/RA/

Audrey Klett, Senior Project Manager
Plant Licensing Branch I
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-387 and 50-388

Enclosures:
1. Amendment No. 283 to NPF-14
2. Amendment No. 266 to NPF-22
3. Safety Evaluation

cc: Listserv

SUSQUEHANNA NUCLEAR, LLC

ALLEGHENY ELECTRIC COOPERATIVE, INC.

DOCKET NO. 50-387

SUSQUEHANNA STEAM ELECTRIC STATION, UNIT 1

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 283
Renewed License No. NPF-14

1. The U.S. Nuclear Regulatory Commission (the Commission or the NRC) has found that:

   A. The application for the amendment filed by Susquehanna Nuclear, LLC, dated October 5, 2021, as supplemented by letters dated December 16, 2021, May 23, 2022, and August 10, 2022, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's 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 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 Renewed Facility Operating License and Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Renewed Facility Operating License No. NPF-14 is hereby amended to read as follows:

   2.C.(2) Technical Specifications and Environmental Protection Plan

   The Technical Specifications contained in Appendix A, as revised through Amendment No. 283, and the Environmental Protection Plan contained in Appendix B are hereby incorporated in the license. Susquehanna Nuclear, LLC 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 issuance and shall be implemented within 90 days.

FOR THE NUCLEAR REGULATORY COMMISSION

Richard V. Guzman

Digitally signed by Richard V. Guzman
Date: 2022.10.28 16:29:00 -04'00'

Hipólito J. González, Chief
Plant Licensing Branch I
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Renewed Facility Operating License and Technical Specifications

Date of Issuance: October 28, 2022

ATTACHMENT TO LICENSE AMENDMENT NO. 283

SUSQUEHANNA STEAM ELECTRIC STATION, UNIT 1

RENEWED FACILITY OPERATING LICENSE NO. NPF-14

DOCKET NO. 50-387

Replace the following page of Renewed Facility Operating License No. NPF-14 with the attached revised page. The revised page is identified by amendment number and contains a marginal line indicating the area of change.

REMOVE	INSERT
Page 3	Page 3

Replace the following pages of the 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
3.3-43	3.3-43
3.3-44	3.3-44

(3) Susquehanna Nuclear, LLC, pursuant to the Act and 10 CFR Parts 30, 40, and 70, to receive, posses, and use at any time any byproduct, source and special nuclear material as sealed neutron sources for reactor startup, sealed neutron sources for reactor instrumentation and radiation monitoring equipment calibration, and as fission detectors in amounts as required;

(4) Susquehanna Nuclear, LLC, pursuant to the Act and 10 CFR Parts 30, 40, and 70 to receive, posses, and use in amounts as required any byproduct, source or special nuclear material without restriction to chemical or physical form, for sample analysis or instrument calibration or associated with radioactive apparatus or components; and

(5) Susquehanna Nuclear, LLC, 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 operation of the facility.

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 nor or hereafter in effect; and is subject to the additional conditions specified or incorporated below:

(1) <u>Maximum Power Level</u>

Susquehanna Nuclear, LLC is authorized to operate the facility at reactor core power levels not in excess of 3952 megawatts thermal in accordance with the conditions specified herein. The preoperational tests, startup tests and other items identified in License Conditions 2.C.(36), 2.C.(37), 2.C.(38), and 2.C.(39) to this license shall be completed as specified.

(2) <u>Technical Specifications and Environmental Protection Plan</u>

The Technical Specifications contained in Appendix A, as revised through Amendment No. 283, and the Environmental Protection Plan contained in Appendix B are hereby incorporated in the license. Susquehanna Nuclear, LLC shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

For Surveillance Requirements (SRs) that are new in Amendment 178 to Facility Operating License No. NPF-14, the first performance is due at the end of the first surveillance interval that begins at implementation of Amendment 178. For SRs that existed prior to Amendment 178, including SRs with modified acceptance criteria and SRs whose frequency of performance is being extended, the first performance is due at the end of the first surveillance interval that begins on the date the Surveillance was last performed prior to implementation of Amendment 178.

Table 3.3.5.1-1 (page 1 of 5)
Emergency Core Cooling System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER FUNCTION	CONDITIONS REFERENCED FROM REQUIRED ACTION A.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Core Spray System					
a. Reactor Vessel Water Level — Low Low Low, Level 1	1, 2, 3	4[(a)]	B	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.5	≥ -136 inches
b. Drywell Pressure — High	1, 2, 3	4[(a)]	B	SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5	≤ 1.88 psig
c. Reactor Steam Dome Pressure — Low (initiation)	1, 2, 3	4	B	SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5	≥ 382 psig (lower) ≤ 443 psig (upper)
d. Reactor Steam Dome Pressure — Low (injection permissive)	1, 2, 3	4	C	SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5	≥ 382 psig (lower) ≤ 443 psig (upper)
e. Manual Initiation	1, 2, 3	2 1 per Subsystem	C	SR 3.3.5.1.5	NA

(a) Also required to initiate the associated diesel generator (DG), initiate Drywell Cooling Equipment Trip, and Emergency Service Water (ESW) Pump timer reset.

Table 3.3.5.1-1 (page 2 of 5)
Emergency Core Cooling System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER FUNCTION	CONDITIONS REFERENCED FROM REQUIRED ACTION A.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
2. Low Pressure Coolant Injection (LPCI) System					
a. Reactor Vessel Water Level — Low Low Low, Level 1	1, 2, 3	4[b]	B	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.5	≥ -136 inches
b. Drywell Pressure — High	1, 2, 3	4[b]	B	SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5	≤ 1.88 psig
c. Reactor Steam Dome Pressure — Low (initiation)	1, 2, 3	4	B	SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5	≥ 382 psig (lower) ≤ 443 psig (upper)
d. Reactor Steam Dome Pressure — Low (injection permissive)	1, 2, 3	4	C	SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5	≥ 382 psig (lower) ≤ 443 psig (upper)
e. Reactor Steam Dome Pressure — Low (Recirculation Discharge Valve Permissive)	1[c], 2[c], 3[c]	4	C	SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5	≥ 216 psig
f. Manual Initiation	1, 2, 3	2 1 per subsystem	C	SR 3.3.5.1.5	NA

(b) Also required to initiate the associated DGs, ESW pump timer reset and Turbine Building and Reactor Building Chiller trip.

(c) With either associated recirculation pump discharge or bypass valves open.

UNITED STATES
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WASHINGTON, D.C. 20555-0001

SUSQUEHANNA NUCLEAR, LLC

ALLEGHENY ELECTRIC COOPERATIVE, INC.

DOCKET NO. 50-388

SUSQUEHANNA STEAM ELECTRIC STATION, UNIT 2

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 266
Renewed License No. NPF-22

1. The U.S. Nuclear Regulatory Commission (the Commission or the NRC) has found that:

   A. The application for the amendment filed by Susquehanna Nuclear, LLC, dated October 5, 2021, as supplemented by letters dated December 16, 2021, May 23, 2022, and August 10, 2022, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's 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 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 Renewed Facility Operating License and Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Renewed Facility Operating License No. NPF-22 is hereby amended to read as follows:

   2.C.(2) Technical Specifications and Environmental Protection Plan

   The Technical Specifications contained in Appendix A, as revised through Amendment No. 266, and the Environmental Protection Plan contained in Appendix B are hereby incorporated in the license. Susquehanna Nuclear, LLC 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 issuance and shall be implemented within 90 days.

FOR THE NUCLEAR REGULATORY COMMISSION

Richard V. Guzman

Digitally signed by Richard V. Guzman
Date: 2022.10.28 16:29:31 -04'00'

Hipólito J. González, Chief
Plant Licensing Branch I
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Renewed Facility Operating License and Technical Specifications

Date of Issuance: October 28, 2022

ATTACHMENT TO LICENSE AMENDMENT NO. 266

SUSQUEHANNA STEAM ELECTRIC STATION, UNIT 2

RENEWED FACILITY OPERATING LICENSE NO. NPF-22

DOCKET NO. 50-388

Replace the following page of Renewed Facility Operating License No. NPF-22 with the attached revised page. The revised page is identified by amendment number and contains a marginal line indicating the area of change.

REMOVE	INSERT
Page 3	Page 3

Replace the following page of the Appendix A Technical Specifications with the attached revised page. The revised page is identified by amendment number and contains marginal lines indicating the areas of change.

REMOVE	INSERT
3.3-43	3.3-43
3.3-44	3.3-44

(3) Susquehanna Nuclear, LLC, pursuant to the Act and 10 CFR Parts 30, 40, and 70, to receive, posses, and use at any time any byproduct, source and special nuclear material as sealed neutron sources for reactor startup, sealed neutron sources for reactor instrumentation and radiation monitoring equipment calibration, and as fission detectors in amounts as required;

(4) Susquehanna Nuclear, LLC, pursuant to the Act and 10 CFR Parts 30, 40, and 70 to receive, posses, and use in amounts as required any byproduct, source or special nuclear material without restriction to chemical or physical form, for sample analysis or instrument calibration or associated with radioactive apparatus or components; and

(5) Susquehanna Nuclear, LLC, 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 operation of the facility.

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 nor or hereafter in effect; and is subject to the additional conditions specified or incorporated below:

(1) Maximum Power Level

Susquehanna Nuclear, LLC is authorized to operate the facility at reactor core power levels not in excess of 3952 megawatts thermal in accordance with the conditions specified herein. The preoperational tests, startup tests and other items identified in License Conditions 2.C.(20), 2.C.(21), 2.C.(22), and 2.C.(23) to this license shall be completed as specified.

(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 266, and the Environmental Protection Plan contained in Appendix B are hereby incorporated in the license. Susquehanna Nuclear, LLC shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

For Surveillance Requirements (SRs) that are new in Amendment 151 to Facility Operating License No. NPF-22, the first performance is due at the end of the first surveillance interval that begins at implementation of Amendment 151. For SRs that existed prior to Amendment 151, including SRs with modified acceptance criteria and SRs whose frequency of performance is being extended, the first performance is due at the end of the first surveillance interval that begins on the date the Surveillance was last performed prior to implementation of Amendment 151.

Table 3.3.5.1-1 (page 1 of 5)
Emergency Core Cooling System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER FUNCTION	CONDITIONS REFERENCED FROM REQUIRED ACTION A.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Core Spray System					
a. Reactor Vessel Water Level — Low Low Low, Level 1	1, 2, 3	4[(a)]	B	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.5	≥ -136 inches
b. Drywell Pressure — High	1, 2, 3	4[(a)]	B	SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5	≤ 1.88 psig
c. Reactor Steam Dome Pressure — Low (initiation)	1, 2, 3	4	B	SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5	≥ 382 psig (lower) ≤ 443 psig (upper)
d. Reactor Steam Dome Pressure — Low (injection permissive)	1, 2, 3	4	C	SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5	≥ 382 psig (lower) ≤ 443 psig (upper)
e. Manual Initiation	1, 2, 3	2 1 per subsystem	C	SR 3.3.5.1.5	NA

(a) Also required to initiate the associated diesel generator (DG), initiate Drywell Cooling Equipment Trip, and Emergency Service Water (ESW) Pump timer reset.

Table 3.3.5.1-1 (page 2 of 5)
Emergency Core Cooling System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER FUNCTION	CONDITIONS REFERENCED FROM REQUIRED ACTION A.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
2. Low Pressure Coolant Injection (LPCI) System					
a. Reactor Vessel Water Level — Low Low Low, Level 1	1, 2, 3	4(b)	B	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.5	≥ -136 inches
b. Drywell Pressure — High	1, 2, 3	4(b)	B	SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5	≤ 1.88 psig
c. Reactor Steam Dome Pressure — Low (initiation)	1, 2, 3	4	B	SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5	≥ 382 psig (lower) ≤ 443 psig (upper)
d. Reactor Steam Dome Pressure — Low (injection permissive)	1, 2, 3	4	C	SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5	≥ 382 psig (lower) ≤ 443 psig (upper)
e. Reactor Steam Dome Pressure — Low (Recirculation Discharge Valve Permissive)	1(c), 2(c), 3(c)	4	C	SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5	≥ 216 psig
f. Manual Initiation	1, 2, 3	2 1 per subsystem	C	SR 3.3.5.1.5	NA

(b) Also required to initiate the associated DGs, ESW pump timer reset and Turbine Building and Reactor Building Chiller trip.

(c) With either associated recirculation pump discharge or bypass valves open.

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

October 28, 2022

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION FOR AMENDMENT NO. 283 TO RENEWED FACILITY OPERATING LICENSE NO. NPF-14 AMENDMENT NO. 266 TO RENEWED FACILITY OPERATING LICENSE NO. NPF-22 SUSQUEHANNA NUCLEAR, LLC ALLEGHENY ELECTRIC COOPERATIVE, INC. SUSQUEHANNA STEAM ELECTRIC STATION, UNITS 1 AND 2 DOCKET NOS. 50-387 AND 50-388

Table of Contents

Enclosure 3

1.0 INTRODUCTION

1.1 Background

By application dated October 5, 2021 [1], as supplemented by letters dated December 16, 2021 [2], May 23, 2022 [3], and August 10, 2022 [4], Susquehanna Nuclear, LLC (the licensee) submitted a license amendment request (LAR) pertaining to the Susquehanna Steam Electric Station (Susquehanna), Units 1 and 2 technical specifications (TS), which are in Appendix A of the Susquehanna Renewed Facility Operating License Nos. NPF-14 and NPF-22. The proposed changes would modify Table 3.3.5.1-1 in each unit's TS 3.3.5.1, "Emergency Core Cooling System (ECCS) Instrumentation," by revising the instrumentation allowable values for the core spray and the low-pressure cooling injection (LPCI) systems' reactor steam dome pressure—low instrumentation functions.

The NRC staff audited various licensee documents and interviewed licensee staff to support the licensing review. The NRC staff issued its audit plan on March 4, 2022 [5], and conducted the audit using an internet-based portal provided by the licensee and a virtual meeting held on March 24, 2022. The staff issued its audit report on August 17, 2022 [6].

By email dated April 21, 2022 [7], the NRC staff requested additional information from the licensee. The licensee responded to the NRC staff's request by letter dated May 23, 2022 [3]. The supplements dated May 23 [3] and August 10, 2022 [4], provided additional information that clarified the application, did not expand the scope of the application as originally noticed, and did not change the NRC staff's original proposed no significant hazards consideration determination as published in the *Federal Register* on February 22, 2022 [8].

1.2 Description of ECCS Instrumentation Functions and Values

Section 6.3, "Emergency Core Cooling Systems," of the Updated Final Safety Analysis Report (UFSAR) [9] indicates that the ECCS has diverse, reliable, and redundant systems that limit fuel cladding temperature and provide continuous core cooling during a loss-of-coolant accident (LOCA). The ECCS initiates automatically when required and consists of the following systems and functions:

- high-pressure coolant injection system, which cools the reactor core to prevent excessive fuel clad temperatures for breaks in the nuclear system that do not result in rapid depressurization of the reactor vessel
- automatic depressurization system, which reduces reactor pressure so that the low-pressure systems (core spray and LPCI) can inject water into the reactor vessel in time to cool the core and prevent excessive fuel clad temperature
- core spray system, which cools the fuel by spraying water onto the core (either core spray loop can prevent excessive fuel clad temperatures following a LOCA)
- LPCI system, which provides water to the reactor vessel via the recirculation loop after a LOCA and prevents low-pressure ECCS system over-pressurization events

The core spray and LPCI systems function to prevent excessive fuel cladding temperatures after a LOCA. Section 7.3, "Engineered Safety Feature Systems," of the UFSAR [9] indicates that the ECCS instrumentation and controls detect the need for system operation and initiate system responses to ensure that the fuel is adequately cooled. ECCS instrumentation and controls monitor conditions indicating a LOCA and actuate the core spray and LPCI systems, and those systems deliver low-pressure water to the core after reactor vessel pressure, as measured in the reactor steam dome, is reduced.

As indicated in the LAR [1], the reactor steam dome pressure—low function is one of the functions assumed to be operable and capable of permitting initiation of the ECCS during the transients analyzed in chapter 15 of the UFSAR [9]. As indicated in the licensee's supplement [3], the upper analytical limit for the reactor steam dome pressure—low function is the maximum pressure allowed by the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel (BPV) code [10] with consideration of the elevation head that would be present in the core spray and LPCI systems. The licensee further indicates in the LAR [1], that the lower analytical limit for the reactor steam dome pressure—low function is the pressure assumed in the UFSAR [9], chapter 15 LOCA analysis for actuation of the core spray and LPCI systems that ensures the requirements in Title 10 of the *Code of Federal Regulations* (10 CFR), Section 50.46, "Acceptance criteria for emergency core cooling systems for light-water nuclear power reactors" (10 CFR 50.46), are met. The upper and lower analytical limits are used to determine the upper and lower allowable values in the technical specifications for the reactor steam dome pressure—low function.

As indicated in the LAR [1], the core spray and LPCI systems in each unit have four instrument channels of the reactor steam dome pressure—low initiation and injection permissive functions. The four pressure instruments sense the reactor dome pressure and generate the reactor steam dome pressure—low signals for the core spray and LPCI systems. The reactor steam dome pressure—low signals function to prevent a false LOCA signal and to ensure that, prior to opening the injection valves of the core spray and LPCI systems, the reactor pressure has fallen to a value below these systems' maximum design pressure. One check valve and one power-operated pressure isolation valve are on the pump discharge side in the piping of the core spray and LPCI systems to isolate those systems from the reactor coolant system. The pressure isolation valves are normally closed and would open on a reactor steam dome pressure—low signal.

The pressure instruments (Cameron-Barton 288A switches) are set to actuate between the upper and lower allowable values on decreasing reactor steam dome pressure. The upper allowable values in the technical specifications need to provide reasonable assurance of reactor coolant system isolation and over-pressurization protection. As indicated in the LAR [1], these values need to be low enough to ensure that the reactor steam dome pressure has fallen below the core spray and LPCI maximum design pressures to preclude piping over-pressurization. The lower allowable values in the TS need to provide reasonable assurance that the cores spray and LPCI systems provide coolant to the reactor coolant system during a LOCA and satisfy the ECCS performance criteria in 10 CFR 50.46. As indicated in the LAR [1], these values need to be high enough to ensure that the ECCS injection prevents the fuel peak cladding temperature (PCT) from exceeding the limits of 10 CFR 50.46.

Limiting condition for operation (LCO) 3.3.5.1 in the technical specifications states that the ECCS instrumentation for each function in Table 3.3.5.1-1 shall be operable. Table 3.3.5.1-1 lists, in part, the ECCS subsystem functions and allowable values for the associated instrumentation. The system functions from Table 3.3.5.1-1 that apply to the amendment request are the core spray and LPCI systems' reactor steam dome pressure—low (initiation) functions 1.c and 2.c, which start the core spray and LPCI (residual heat removal) pumps; and reactor steam dome pressure—low (injection permissive) functions 1.d and 2.d, which allow system initiation and injection. The technical specifications require the four channels of the reactor steam dome pressure—low function to be operable when the ECCS is required to be operable to ensure that no single instrument failure can preclude ECCS initiation. In its LAR [1], the licensee identified that the setpoints for functions 1.c, 1.d, 2.c, and 2.d, which, per the licensee's supplement [3], are located in the licensee's technical requirements manual, must be within the upper and lower allowable values specified in the technical specifications in order for these functions to be operable.

1.3 Description of the Proposed Changes

In its LAR [1], as supplemented [2] [3], the licensee proposed to modify the upper and lower allowable values for functions 1.c, 1.d, 2.c, and 2.d in Table 3.3.5.1-1 of the technical specifications. These values are for the core spray and LPCI systems' reactor steam dome pressure—low initiation and injection permissive functions. The licensee proposed to decrease the lower allowable value from 407 to 382 pounds per square inch gauge (psig) and to increase the upper allowable value from 433 to 443 psig. In its supplement [4], the licensee proposed an editorial change to Table 3.3.5.1-1 to group the LPCI instrumentation functions together on the same page.

In its LAR [1], as supplemented [2] [3], the licensee proposed to increase the upper analytical limit for reactor steam dome pressure—low from 440 psig to 445 psig and to decrease the lower analytical limit from 400 to 380 psig. The licensee also proposed to increase the upper nominal trip setpoint from 427 to 428.5 psig and to decrease the lower nominal trip setpoint from 413 to 396.5 psig. The licensee proposed to change the setpoint from 420 to 412.5 psig.

The licensee proposed these amendments to resolve issues associated with setpoint drift of the installed pressure transmitters that measure the reactor steam dome pressure.

2.0 REGULATORY EVALUATION

2.1 Regulatory Requirements

Under 10 CFR 50.92(a), in determining whether an amendment to a license will be issued, the NRC staff is guided by the considerations that govern the issuance of initial licenses to the extent applicable and appropriate. The common standards for licenses in 10 CFR 50.40(a), and those specifically for issuance of operating licenses in 10 CFR 50.57(a)(3), provide that there must be "reasonable assurance" that the activities at issue will not endanger the health and safety of the public. Accordingly, for this LAR, the NRC must conclude that there is reasonable assurance that the actions taken when an LCO is not met do not endanger public health and safety.

Section 50.36, "Technical specifications," of 10 CFR establishes the requirements related to the content of the technical specifications. Pursuant to 10 CFR 50.36(c), technical specifications are required, in part, to include LCOs. Section 50.36(c)(2)(i) states, in part, that LCOs are the lowest functional capability or performance level of equipment required for safe operation of the facility, and when LCOs are not met, the licensee shall shut down the reactor or follow any remedial action permitted by the technical specifications until the LCO can be met.

Section 50.36(c)(1)(ii)(A) of 10 CFR states:

> Where a limiting safety system setting is specified for a variable on which a safety limit has been placed, the setting must be so chosen that automatic protective action will correct the abnormal situation before a safety limit is exceeded. If, during operation, it is determined that the automatic safety system does not function as required, the licensee shall take appropriate action, which may include shutting down the reactor.

Section 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.

Section 50.46, “Acceptance criteria for emergency core cooling systems for light-water nuclear power reactors,” of 10 CFR requires, in part, that the ECCS be designed to assure that the design safety limits specified in 10 CFR 50.46(b) are met during LOCAs. Section 50.46(b)(1), “Peak cladding temperature,” states, “The calculated maximum fuel element cladding temperature shall not exceed 2200° F.”

Appendix A, “General Design Criteria for Nuclear Power Plants,” to 10 CFR Part 50, “Domestic Licensing of Production and Utilization Facilities,” provides the minimum necessary design, fabrication, construction, testing, and performance requirements for structures, systems, and components important to safety. General design criterion (GDC) 13, “Instrumentation and control,” states:

> Instrumentation shall be provided to monitor variables and systems over their anticipated ranges for normal operation, for anticipated operational occurrences, and for accident conditions as appropriate to assure adequate safety, including those variables and systems that can affect the fission process, the integrity of the reactor core, the reactor coolant pressure boundary, and the containment and its associated systems. Appropriate controls shall be provided to maintain these variables and systems within prescribed operating ranges.

2.2 Licensing Basis

The NRC staff considered the following licensing basis during its review:

- Amendment No. 181 to Renewed Facility Operating License No. NPF-14 [11] and Amendment No. 144 to Renewed Facility Operating License No. NPF-22 [12], which revised the TS for the reactor steam dome pressure – low allowable value
- Amendment Nos. 278 and 260 to Renewed Facility Operating License Nos. NPF-14 and NPF-22 [13], which authorized the licensee to apply Framatome ATRIUM-11 fuel methodologies

- The ASME BPV Code of record for Susquehanna, as identified in Section 3.9 of the UFSAR [9], for Class 2 piping is ASME BPV Code, Section III, 1971 Edition through 1972 Winter Addenda.
- Chapter 15, “Accident Analyses,” of the UFSAR [9], which examines the effects and consequences of anticipated process disturbances and postulated component failures and evaluates the capability of the units to control or accommodate such failures and events.

2.3 Guidance

NRC Regulatory Guide (RG) 1.105, Revision 4, “Setpoints for Safety-Related Instrumentation” [14], describes an acceptable method for complying with regulations to ensure that setpoints for safety-related instrumentation are initially and remain within technical specification limits. Unless otherwise noted, citations of RG 1.105 in this safety evaluation refer to Revision 4. RG 1.105 endorses American National Standards Institute/International Society of Automation (ANSI/ISA) Standard 67.04.01-2018, “Setpoints for Nuclear Safety-Related Instrumentation” [15].

NRC Regulatory Issue Summary (RIS) 2006-17, “NRC Staff Position on the Requirements of 10 CFR 50.36, ‘Technical Specifications,’ Regarding Limiting Safety System Settings During Periodic Testing and Calibration of Instrument Channels” [16], discusses issues that could occur during testing of limiting safety system settings and may have an adverse effect on equipment operability. The RIS also presents an acceptable approach for addressing such issues.

3.0 TECHNICAL EVALUATION

Under 10 CFR 50.92(a), in determining whether an amendment to a license will be issued, the NRC staff is guided by the considerations that govern the issuance of initial licenses to the extent applicable and appropriate. The staff evaluated the request to determine whether the proposed changes are consistent with the regulations, licensing basis, and guidance discussed in section 2.0 of this safety evaluation. The staff reviewed the proposed changes to technical specifications to determine whether they meet the requirements of 10 CFR 50.36, 10 CFR 50.46, and GDC 13 and provide reasonable assurance that operation within the new allowable values will not endanger the health and safety of the public.

3.1 Evaluation of Proposed Changes to Upper and Lower Analytical Limits

3.1.1 Upper Analytical Limit

The licensee proposed an increase of the upper analytical limit for the reactor steam dome pressure from 440 to 445 psig and an increase in the upper allowable value from 433 psig to 443 psig. Per the LAR [1], the upper analytical limit, which bounds the upper allowable value, is set to remain low enough to ensure that the low-pressure portion of the core spray and LPCI piping systems would not experience over-pressurization.

The licensee based the proposed upper analytical limit of 445 psig on the maximum pressure of the core spray and LPCI piping minus the elevation head of 50 pounds per square inch (psi) that would be present in the both the core spray and LPCI systems. The current maximum pressures of the core spray and LPCI system piping are 550 psig and 495 psig, respectively. When accounting for the water head of 50 psi, the maximum pressure would yield an upper analytical limit of 500 psig for the core spray system and 445 psig for the LPCI system. The licensee chose an upper analytical limit of 445 psig for both core spray and LPCI system reactor steam dome pressure—low functions.

As indicted in the licensee's supplement [3], the licensee performed an evaluation and confirmed that the maximum pressures of the LPCI (and residual heat removal) system and core spray system piping still meet the requirements in Section III of the ASME BPV Code [10]. The NRC staff determined the upper analytical limit is acceptable because the low-pressure piping is designed to ASME BPV Code [10] requirements, and the proposed upper analytical limit is within the limits prescribed by the ASME BPV Code [10].

The licensee determined the pressure associated with the head of water in each system in the following manner. As stated in its supplement [3], the licensee assumed a head of water from the reactor vessel elevation to the core spray or residual heat removal pump discharge check valve elevation, which yielded a water column of approximately 130 feet. The closed containment isolation valve (HV1(2)51F015A/B for residual heat removal and HV1(2)52F005A/B for core spray) divides the water column into two distinct zones. Upon reaching a reactor steam dome pressure of 445 psig, the containment isolation valves could open, thereby exposing the low-pressure piping to this reactor pressure. The licensee assumed the piping in the reactor building to be at reactor building conditions when determining the pressure associated with this column of water. The licensee assumed the piping within containment and the head of water in the reactor vessel to be at saturated reactor conditions (445 psig) prior to the containment valve opening because this piping is directly tied to the reactor vessel and the recirculation loops. In its supplement [3], the licensee confirmed that it used the same assumptions related to piping elevations and the temperatures and pressures for the water in the piping that were previously approved [11] [12] by the NRC staff for determining the pressure associated with the water head for the licensee. Therefore, the NRC staff concluded that the calculated water head pressure is acceptable because the licensee has adequately accounted for the effect of the plant elevation differences on the calculated water head pressure.

3.1.2. Lower Analytical Limit

The licensee proposed a decrease of the lower analytical limit for the reactor steam dome pressure from 400 to 380 psig. The licensee is loading ATRIUM-11 fuel into Units 1 and 2 as previously reviewed and approved by the staff [13]. The licensee loaded the first batch of ATRIUM-11 fuel into the Unit 2 reactor core in spring 2021. In its LAR [1], the licensee stated that it planned to load ATRIUM-11 fuel into Unit 1 in spring 2022. Because there will be some time when both ATRIUM-11 and ATRIUM-10 fuel types will reside in the reactor core, as identified in the LAR [1], the NRC staff considered the effect of the proposed change on the UFSAR [9], chapter 15 transient analyses for both fuel types.

To support the planned transition to ATRIUM-11 fuel, the licensee analyzed the spectrum of LOCA events for this fuel using the AURORA-B LOCA evaluation model [17]. The AURORA-B LOCA evaluation model [17] is a 10 CFR Part 50, Appendix K, "ECCS Evaluation Models" conformant analysis methodology that the NRC staff approved in March 2019 [18]. In its analyses, the licensee assumed the reactor permissive for opening valves in the core spray and LPCI systems was 380 psig. This resulted in a PCT of 1784 °F. After these analyses, pursuant to 10 CFR 50.46, the licensee submitted an annual report [19] of changes to evaluation models pursuant to 10 CFR 50.46 identifying errors and corrections. The licensee recalculated the limiting PCT for ATRIUM-11 fuel to be 1785 °F, which is within the 10 CFR 50.46(b)(1)-specified limit of 2200 °F.

For ATRIUM-10 fuel, the licensee calculated the limiting PCT for a fresh fuel assembly to be 1876 °F when the assumed reactor permissive for opening valves in the core spray and LPCI systems was 380 psig [1]. This is lower than the limit of 2200 °F in 10 CFR 50.46(b)(1). The licensee will not be loading new ATRIUM-10 fuel into either reactor core during the transition to ATRIUM-11 fuel. Considering that all ATRIUM-10 fuel will have exposures consistent with one cycle of operation, as identified in the LAR [1], the NRC staff expects the PCT to be less than the PCT for fresh fuel because it will produce less energy than the new fuel bundles.

The NRC staff determined that the proposed lower analytical limit is acceptable because the UFSAR [9], chapter 15 transient analyses was performed with the assumption that Functions 1c, 1d, 2c, and 2d actuate at a lower analytical limit of 380 psig, and the analyses' results meet the requirements in 10 CFR 50.46.

3.2 Evaluation of Upper and Lower Allowable Values and Setpoint Values

The NRC staff reviewed the licensee's analyses for the proposed changes to the upper and lower allowable values and setpoint values. The licensee provided these analyses in its LAR [1], as supplemented [2] [3]. The staff reviewed the licensee's calculations for allowable values, nominal trip setpoints, drift allowance, and as-left tolerance, as documented in the licensee's calculations EC-080-1006 and EC-080-1007. The licensee provided excerpts of these calculations in enclosure 2 to the LAR supplement [3]. These calculations establish the setpoints associated with the allowable values for functions 1.c, 1.d, 2.c, and 2.d in TS Table 3.3.5.1-1. The NRC staff evaluated the licensee's proposed changes against the guidance in RG 1.105 [14] and Part I of ANSI/ISA 67.04.01-2018 [15]. The staff verified whether the setpoints are within the proposed technical specification limits, as discussed in the following sections.

3.2.1 Licensee's Methodology for Calculating Allowable Values and Setpoint Values

As described in the LAR [1], as supplemented [2] [3], the licensee's methodology for determining the upper and lower allowable values and setpoint values included the following inputs, assumptions, and analyses:

- setpoint calculations that use section 1.2.3.2 of the General Electric (GE) NEDC-31336P-A, "General Electric Instrument Setpoint Methodology" [20]
- Unit 1 calculation EC-080-1006, "Setpoint Determination to Support TS Change," Revision 3, Appendix A, pages 14—21 and Unit 2 calculation EC-080-1007, "Setpoint Determination to Support TS Change," Revision 4, Appendix A, pages 14—21 (The licensee determined the allowable values and nominal trip setpoints from the upper and lower analytical limits, total drift, and the calibration accuracy in accordance with GE NEDC-31336P-A, sections 1.2.3.2 and 1.2.3.3.)
- accuracy of repeatability (A_{acc}) for the Cameron Barton Nuclear Model 288A device (differential pressure indicating switch).

The NRC staff verified that the licensee's square root of sum of the squares (SRSS) methodology for calculating the proposed allowable values, nominal trip setpoints, and drift is consistent with GE NEDC-31336P-A [20]; section 4.5, "Combination of uncertainties," of Part I of ANSI/ISA 67.04.01-2018 [15]; and RG 1.105 [14]. Because the licensee's SRSS methodology is consistent with Part I of ANSI/ISA 67.04.01-2018 [15] and RG 1.105 [14], the staff finds that the licensee's SRSS methodology provides reasonable assurance that the proposed setpoints are established and maintained in a manner consistent with plant safety function requirements.

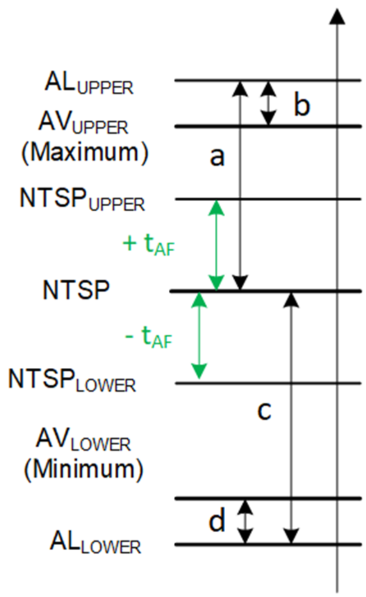
3.2.2 Licensee Proposed Setpoint Values and Calculations

As part of its evaluation, the NRC staff did an independent confirmatory evaluation to determine whether the licensee's setpoint calculation values are adequate to provide reasonable assurance that required protective actions initiate before the associated plant process parameters exceed their analytical limits based upon the margins established between allowable values and analytical limits. For the purpose of this safety evaluation and independent confirmation, the staff used the following terms, as derived from ANSI/ISA 67.04.01 [15]:

- analytical limit (AL) – the limit of a measure or calculated variable established by the safety analysis to ensure that a safety limit is not exceeded (The licensee used the upper analytical limit to develop the upper allowable value in TS Table 3.3.5.1-1.)
- allowable value (AV) – a limiting value that the trip setpoint may have when tested periodically, beyond which appropriate action shall be taken
- nominal trip setpoint (NTSP) – a predetermined value for actuation of the final setpoint device to initiate a protective action
- trip margin – an allowance provided between the trip setpoint and the analytical limit to ensure a trip before the analytical limit is reached
- NTSP margin ($Margin_{NTSP}$) – an allowance provided between the nominal trip setpoint and the analytical limit (Region (A + B) in Figure 1 of ANSI/ISA 67.04.01-2018 [15])
- AV margin ($Margin_{AV}$) – the margin between the minimum allowable value (AV_{Min}) and the minimum analytical limit (AL_{Min}) that is observable during technical specification surveillances where the channel may be determined inoperable (Region C in Figure 1 of ANSI/ISA-67.04.01-2018 [15]).

The NRC staff used the information in the LAR [1] and the supplements [2] [3] and followed the guidance in RG 1.105 [14] to independently calculate the margins and relationships among the ECCS instrumentation, analytical limits, nominal trip setpoints, and allowable values for functions 1.c, 1.d, 2.c, and 2.d in TS Table 3.3.5.1-1. The staff's independent confirmatory evaluation is summarized in the following figure. (The proposed setting values in this figure are for both units.)

Analytical Limits, Nominal Trip Setpoints, and Allowable Values for Functions 1.c, 1.d, 2.c, and 2.d in TS Table 3.3.5.1-1



Note: Diagram Not To Scale

Row	Function 1.c, 1.d, 2.c, 2.d in TS Table 3.3.5.1-1	Setting (psig)	
		Existing	Proposed
1	AL_{UPPER}	440.0	445
2	AV_{UPPER} (Maximum AV)	433.0	443
3	NTSP+ t_{AF}		428.5
4	$NTSP_{UPPER}$	427.0	428.5
5	NTSP	420.0	412.5
6	$NTSP_{LOWER}$	413.0	396.5
7	NTSP - t_{AF}		396.5
8	AV_{LOWER} (Minimum AV)	407.0	382
9	AL_{LOWER}	400.0	380
	Margins*	(psig)	
10	$Margin_{AV\_U}$ (b)	7.0	2.0
11	$Margin_{NTSP\_U}$ (a)	20.0	32.5
12	$Margin_{AV\_L}$ (d)	7.0	2.0
13	$Margin_{NTSP\_L}$ (c)	20.0	32.5
	Margin Ratios	(%)	
14	Upper: ((b/a)x100)	35.0	6.2
15	Lower: ((d/c)x100)	35.0	6.2

Margins* (absolute values)
$a = |AL_{UPPER} - NTSP|$; $b = |AL_{UPPER} - AV_{UPPER}|$
$c = |AL_{LOWER} - NTSP|$; $d = |AL_{LOWER} - AV_{LOWER}|$

Based on its review of the licensee's calculations and its independent confirmatory results in the figure above, the NRC staff have determined the following with respect to the proposed upper and lower allowable values:

- The licensee's equations from the excerpts of EC-080-1006 and EC-080-1007 [3] used to calculate the proposed allowable values, nominal trip setpoints, and drift allowances are consistent with GE NEDC-31336P-A [20] and RG 1.105 [14].The licensee's calculations resulted in an as-found tolerance (t_{AF}) value of 16 psig. The NRC staff determined that this value is acceptable because it is the maximum allowed variation in the device setpoint that will remain within the range of acceptable setpoints.

- The NRC staff concludes that reasonable assurance that the trip signals from the ECCS circuitry will initiate before reactor steam dome pressure exceeds the upper and lower allowable values is provided because the value of the nominal trip setpoint plus the as-found tolerance (NTSP + t_{AF}) is less than the upper allowable value (AV_{UPPER}), and the value of the nominal trip setpoint minus the as-found tolerance (NTSP - t_{AF}) is greater than the lower allowable value (AV_{LOWER}). The staff also finds that the licensee determined the as-found tolerance values associated with the setpoint changes in a manner consistent with RIS 2006-17 [16]. The licensee periodically makes calibration adjustments as needed to ensure instrument calibration remains within a calibration tolerance band per plant technical specification surveillance requirements. The need for making calibration adjustments is determined by comparing as-found setpoint values with predetermined limits in accordance with RIS 2006-17 [16].

- The proposed changes result in a reduction of the margins between the proposed analytical limits and allowable values for both the upper and lower levels ($Margin_{AV\_U}$ and $Margin_{AV\_L}$ from rows 10 and 12 in the figure above) from 7 psig to 2 psig. This corresponds in a decrease of the margin ratio for both upper and lower levels (rows 14 and 15 in the figure above) from 35 to 6.2 percent. However, the NRC staff's evaluation has confirmed that the licensee's uncertainty calculation results are adequately bounded by the requested allowable values. Therefore, the staff finds the proposed allowable value settings continue to assure that a trip or safety actuation will occur well before the measured process reaches the analytical limits. The staff also finds that the proposed allowable value settings will continue to support an automatic protective action before a safety limit is exceeded because the licensee has established adequate margins between the allowable values and the analytical limits.

Based on the above evaluation, the NRC staff finds that the licensee's methodology, analysis, assumptions used for this application, and the proposed changes maintain adequate allowable values based on the margins to analytical limits established that are consistent with RG 1.105 [14]. The proposed changes provide the ability to monitor variables over their anticipated ranges for both normal and accident conditions to assure adequate safety and integrity of the reactor core, and the reactor coolant pressure boundary because of the acceptable allowable values established and surveillance testing that will be performed to ensure continued instrument operability; therefore, the proposed changes satisfy the requirements of GDC 13. The NRC staff further finds that the requirements of 10 CFR 50.36(c)(1)(ii)(A) and 10 CFR 50.36(c)(3) will continue to be met because the automatic protective action will continue to support automatic protective actions before the established safety limits are exceeded.

3.3 Editorial Change

In its supplement [4], the licensee proposed an editorial change to TS Table 3.3.5.1-1 to group the LPCI instrumentation functions together on the same page. The staff confirmed that the proposed editorial change does not materially change technical specification requirements and, therefore, the change is acceptable.

3.4 Technical Evaluation Conclusion

As discussed above, the NRC staff finds that the proposed upper analytical limits are acceptable because they are within the limits prescribed by the ASME BPV Code [10]. The staff finds that the proposed lower analytical limits are acceptable because they continue to meet 10 CFR 50.46. The staff finds that the upper and lower allowable values are acceptable because they are within the proposed upper and lower analytical limits and maintain adequate margin consistent with RG 1.105 [14]. The staff also finds that the licensee's methodology for calculating the allowable values and nominal trip setpoints is acceptable because it is consistent with Part I of ANSI/ISA 67.04.01-2018 [15] and RG 1.105 [14] and provides reasonable assurance that the proposed setpoints are established and maintained in a manner consistent with plant safety function requirements. The staff finds that the licensee's calculated values for the allowable values and nominal trip setpoints maintain adequate margin and satisfy the requirements of GDC 13, 10 CFR 50.36(c)(1)(ii)(A), and 10 CFR 50.36(c)(3).

The staff concludes that the proposed changes do not adversely impact the lowest functional capability or performance level of the core spray and LPCI systems' reactor steam dome pressure functions in TS Table 3.3.5.1-1 and, therefore, the changes meet 10 CFR 50.36(c)(2)(i). Therefore, the proposed revisions to the allowable values for functions 1.c, 1.d., 2.c, and 2.d in TS Table 3.3.5.1-1 are acceptable.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, on August 1, 2022 [21], the NRC staff notified the Commonwealth of Pennsylvania official of the proposed issuance of the amendment. The Commonwealth official had no comments.

5.0 ENVIRONMENTAL CONSIDERATION

The amendments change a requirement with respect to installation or use of facility components located within the restricted area as defined in 10 CFR Part 20, "Standards for protection against radiation." The NRC staff has determined that the amendments involve 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 in the *Federal Register* [8] that the amendments involve no significant hazards consideration, and there has been no public comment on this finding. Accordingly, the amendments meet 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 amendments.

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] Cimorelli, K., Susquehanna Nuclear, LLC, letter to U.S. Nuclear Regulatory Commission, "Susquehanna Steam Electric Station Proposed Amendment to Licensees NPF-14 and NPF-22: Revise Reactor Steam Dome Pressure – Low Instrumentation Function Allowable Value PLA-7950," October 5, 2021, ADAMS Accession No. ML21279A026.

[2] Cimorelli, K., Susquehanna Nuclear, LLC, letter to U.S. Nuclear Regulatory Commission, "Susquehanna Steam Electric Station Proposed Amendment to Licensees NPF-14 and NPF-22: Revise Reactor Steam Dome Pressure – Low Instrumentation Function Allowable Value PLA-7950," December 16, 2021, ADAMS Accession No. ML21350A265.

[3] Cimorelli, K., Susquehanna Nuclear, LLC, letter to U.S. Nuclear Regulatory Commission, "Susquehanna Steam Electric Station Response to Request for Additional Information Regarding License Amendment to Revise Reactor Steam Dome Pressure – Low Instrumentation Function Allowable Value PLA-8005," May 23, 2022, ADAMS Accession No. ML22144A003.

[4] Cimorelli, K., Susquehanna Nuclear, LLC, letter to U.S. Nuclear Regulatory Commission, "Susquehanna Steam Electric Station Supplement to License Amendment to Revise Reactor Steam Dome Pressure – Low Instrumentation Function Allowable Value PLA-8025," August 10, 2022, ADAMS Accession No. ML22222A137.

[5] Klett, A., U.S. Nuclear Regulatory Commission, letter to Cimorelli, K., Susquehanna

Nuclear, LLC, “Susquehanna Steam Electric Station, Units 1 and 2 – Regulatory Audit Plan in Support of License Amendment Request to Revise Technical Specifications for Reactor Steam Dome Pressure – Low Instrumentation Function Allowable Values (EPID L-2021-LLA-0062) *[sic]*,” March 4, 2022, ADAMS Accession No. ML22056A012.

[6] Klett, A., U.S. Nuclear Regulatory Commission, letter to Cimorelli, K., Susquehanna Nuclear, LLC, “Susquehanna Steam Electric Station, Units 1 and 2 – Summary of Regulatory Audit in Support of License Amendment Request to Revise Technical Specifications for Reactor Steam Dome Pressure – Low Instrumentation Function Allowable Values,” (EPID L-2021-LLA-0184), August 17, 2022, ADAMS Accession No. ML22213A178.

[7] Klett, A., U.S. Nuclear Regulatory Commission, email to Jurek, S., Susquehanna Nuclear, LLC, “NRC Request for Additional Information - Susquehanna License Amendment Request (EPID L-2021-LLA-0184),” April 21, 2022, ADAMS Accession No. ML22111A313.

[8] U.S. Nuclear Regulatory Commission, “Monthly Notice; Applications and Amendments to Facility Operating Licenses and Combined Licenses Involving No Significant Hazards Considerations,” Office of the Federal Register, Volume 87, Page 9683 (87 FR 9653), February 22, 2022.

[9] Cimorelli, K., Susquehanna Nuclear, LLC, letter to U.S. Nuclear Regulatory Commission, “Susquehanna Steam Electric Station Submittal of Updated Final Safety Analysis Report Revision 70 and Fire Protection Review Report Revision 24, PLA-7935,” October 12, 2021, ADAMS Accession No. ML21294A245.

[10] American Society of Mechanical Engineers, “Boiler and Pressure Vessel Code,” Section III, “Rules for Construction of Nuclear Facility Components,” 1971 Edition through 1972 Winter Addenda.

[11] Nerses, V., U.S. Nuclear Regulatory Commission, letter to Byram, R., PP&L, Inc., “Susquehanna Steam Electric Station, Unit 1 – Issuance of Amendment Re: Technical Specification Changes on Reactor Steam Dome Pressure – Low Allowable Value (TAC No. MA4982),” May 25, 1999, ADAMS Accession No. ML010160341.

[12] Nerses, V., U.S. Nuclear Regulatory Commission, letter to Byram, R., PP&L, Inc., “Susquehanna Steam Electric Station, Unit 2, Technical Specification Changes on Reactor Steam Dome Pressure – Low Allowable Value (TAC No. MA2447),” March 4, 1999, ADAMS Accession No. ML010160354.

[13] Goetz, S., U.S. Nuclear Regulatory Commission, letter to Cimorelli, K., Susquehanna Nuclear, LLC, “Susquehanna Steam Electric Station, Units 1 and 2 – Issuance of Amendment Nos. 278 and 260 to Allow Application of Advanced Framatome ATRIUM 11 Fuel Methodologies (EPID L-2019-LLA-0153),” January 21, 2021, ADAMS Accession No. ML20164A181.

[14] U.S. Nuclear Regulatory Commission, Regulatory Guide 1.105, Revision 4, “Setpoints for Safety Related Instrumentation,” February 2021, ADAMS Accession No. ML20330A329.

[15] American National Standards Institute/International Society of Automation, ANSI/ISA-67.04.01-2018, “Setpoints for Nuclear Safety Related Instrumentation,” December 8, 2018.

[16] U.S. Nuclear Regulatory Commission, Regulatory Issue Summary 2006-17, “NRC Staff Position on the Requirements of 10 CFR 50.36, ‘Technical Specifications,’ Regarding Limiting Safety System Settings During Periodic Testing and Calibration of Instrument Channels,” August 24, 2006, ADAMS Accession No. ML051810077.

[17] Peters, G., Framatome Inc., letter to U.S. Nuclear Regulatory Commission, “Publication of ANP-10332P-A, Revision 0, ‘AURORA-B: An Evaluation Model for Boiling Water Reactors;

Application to Loss of Coolant Accident Scenarios,'" June 7, 2019, ADAMS Accession No. ML19163A231.

[18] Morey, D.C., U.S. Nuclear Regulatory Commission, letter to Peters, G., Framatome Inc., "Final Safety Evaluation for Framatome Inc. Topical Report ANP-10332P, Revision 0, 'AURORA-B: An Evaluation Model for Boiling Water Reactors; Application to Loss of Coolant Accident Scenarios' (CAC No. MF3829/EPID: L-2014-TOP-0004)," March 26, 2019, ADAMS Accession No. ML19057A551.

[19] Cimorelli, K., Susquehanna Nuclear, LLC, letter to U.S. Nuclear Regulatory Commission, "Susquehanna Steam Electric Station 10 CFR 50.46 Annual Report PLA-7947," June 10, 2021, ADAMS Accession No. ML21161A005.

[20] Brown, Robert E., GE Hitachi Nuclear Energy, letter to U.S. Nuclear Regulatory Commission, "NEDO-31336-A, General Electric Instrument Setpoint Methodology, September 1996," December 7, 2007, ADAMS Accession No. ML073450560.

[21] Klett, A., U.S. Nuclear Regulatory Commission, email to Shields, M., Pennsylvania Department of Environmental Protection, "NRC Notification to the State of Pennsylvania Re. Susquehanna Steam Electric Station, Units 1 and 2 Amendment – Instrumentation and Control Technical Specifications," August 1, 2022, ADAMS Accession No. ML22213A261.

8.0 ABBREVIATIONS

A_{cc}	accuracy of repeatability
AL	analytical limit
AL_{LOWER}	lower analytical limit
AL_{Min}	minimum analytical limit
AL_{UPPER}	upper analytical limit
ANSI	American National Standards Institute
ASME	American Society of Mechanical Engineers
AV	allowable value
AV_{LOWER}	lower allowable value
AV_{Min}	minimum allowable value
AV_{UPPER}	upper allowable value
BPV	boiler and pressure vessel
CFR	*Code of Federal Regulations*
ECCS	emergency core cooling system
GDC	general design criterion (criteria)
GE	General Electric
ISA	International Society of Automation
LAR	license amendment request
LCO	limiting condition for operation
LOCA	loss-of-coolant accident
LPCI	low-pressure coolant injection
$Margin_{AV}$	allowable value margin
$Margin_{AV\_L}$	lower allowable value margin
$Margin_{AV\_U}$	upper allowable value margin
$Margin_{NTSP}$	nominal trip setpoint margin
$Margin_{NTSP\_L}$	lower nominal trip setpoint margin
$Margin_{NTSP\_U}$	upper nominal trip setpoint margin

NTSP	nominal trip setpoint
$NTSP_{LOWER}$	lower nominal trip setpoint
$NTSP_{UPPER}$	upper nominal trip setpoint
PCT	peak cladding temperature
psi	pounds per square inch
psig	pounds per square inch gauge
RG	regulatory guide
RIS	regulatory issue summary
SRSS	square root of sum of the squares
t_{af}	as-found tolerance
TS	technical specification(s)
UFSAR	updated final safety analysis report

9.0 PRINCIPAL CONTRIBUTORS

Summer Sun, NRR
Ashley Smith, NRR
Hang Vu, NRR
Richard Stattel, NRR

Date: October 28, 2022

SUBJECT: SUSQUEHANNA STEAM ELECTRIC STATION, UNITS 1 AND 2 – ISSUANCE OF AMENDMENT NOS. 283 AND 266 RE: CHANGE TO REACTOR STEAM DOME PRESSURE—LOW INSTRUMENT FUNCTION ALLOWABLE VALUE IN TECHNICAL SPECIFICATIONS (EPID L-2021-LLA-0184) DATED OCTOBER 28, 2022

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OFFICE	NRR/DORL/LPL1/PM	NRR/DORL/LPL1/LA	NRR/DEX/EMIB/BC
NAME	AKlett	KZeleznock	SBailey (KHsu for)
DATE	09/12/2022	09/13/2022	09/13/2022
OFFICE	NRR/DSS/SFNB/BC	NRR/DSS/SNSB/BC	NRR/DEX/EICB/BC
NAME	SKrepel	DWoodyatt	MWaters
DATE	09/12/2022	09/15/2022	09/20/2022
OFFICE	NRR/DSS/STSB/BC	OGC – NLO	NRR/DORL/LPL1/BC
NAME	VCusumano	MWoods	HGonzalez (RGuzman for)
DATE	09/18/2022	10/27/2022	10/28/2022
OFFICE	NRR/DORL/LPL1/PM		
NAME	AKlett		
DATE	10/28/2022		

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