



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

July 15, 2025

Dr. Kenan Unlu, Director
Pennsylvania State University
Breazeale Nuclear Reactor
104 Breazeale Nuclear Reactor Building
University Park, PA 16802-2301

SUBJECT: PENNSYLVANIA STATE UNIVERSITY – ISSUANCE OF AMENDMENT NO. 43
TO RENEWED FACILITY OPERATING LICENSE NO. R-2 TO AMEND THE
TECHNICAL SPECIFICATIONS FOR THE PENN STATE BREAZEALE
REACTOR (EPID NO. L-2025-NFA-0004)

Dear Dr. Unlu:

The U.S. Nuclear Regulatory Commission (NRC) has issued the enclosed Amendment No. 43 to Renewed Facility Operating License No. R-2 for the Penn State Breazeale Reactor (the facility). The amendment consists of changes to the renewed facility operating license and technical specifications (TSs) in response to the Pennsylvania State University application dated April 21, 2025 (Agencywide Documents Access and Management System Accession No. ML25118A019). The amendment changes the organizational structure in TS section 6.1.1, "Structure," and TS section 6.1.2, "Responsibility," and makes editorial revisions to titles.

A copy of the NRC staff's safety evaluation is also enclosed. If you have any questions, please contact me at (301) 415-2856, or via email at Michael.Balazik@nrc.gov.

Sincerely,



Signed by Balazik, Michael
on 07/15/25

Michael F. Balazik, Project Manager
Non-Power Production and Utilization Facility
Licensing Branch
Division of Advanced Reactors and Non-Power
Production and Utilization Facilities
Office of Nuclear Reactor Regulation

Docket No. 50-005
License No. R-2

Enclosures:

1. Amendment No. 43 to Renewed Facility
Operating License No. R-2
2. Safety Evaluation

cc w/enclosures: GovDelivery Subscribers

SUBJECT: PENNSYLVANIA STATE UNIVERSITY – ISSUANCE OF AMENDMENT NO. 43 TO RENEWED FACILITY OPERATING LICENSE NO. R-2 TO AMEND THE TECHNICAL SPECIFICATIONS FOR THE PENN STATE BREAZEALE REACTOR (EPID NO. L-2025-NFA-0004) DATED: JULY 15, 2025

DISTRIBUTION:

PUBLIC
 JRady, NRR
 TBrown, NRR
 NParker, NRR
 MBalazik, NRR
 BGallagher, NRR
 JLovett, NRR
 BLin, NRR

ADAMS Accession No.: ML25162A280

NRR-058

OFFICE	NRR/DANU/UNPL/PM	NRR/DANU/UNPL/PM	NRR/DANU/UNPL/LA
NAME	BGallagher	MBalazik	NParker
DATE	6/23/2025	6/25/2025	6/25/2025
OFFICE	OGC	NRR/DANU/UNPL/BC	NRR/DANU/UNPL/PM
NAME	JWachutka	JRady	MBalazik
DATE	7/11/2025	7/13/2025	7/15/2025

OFFICIAL RECORD COPY



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

PENNSYLVANIA STATE UNIVERSITY

DOCKET NO. 50-005

PENN STATE BREAZEALE REACTOR

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 43
License No. R-2

1. The U.S. Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for an amendment to Renewed Facility Operating License No. R-2, filed by Pennsylvania State University (the licensee) on April 21, 2025, 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 Title 10 of the *Code of Federal Regulations* (10 CFR) Chapter I;
 - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
 - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
 - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public;
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51, "Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions," of the Commission's regulations and all applicable requirements have been satisfied; and
 - F. Prior notice of this amendment was not required by 10 CFR 2.105, "Notice of proposed action," and publication of a notice for this amendment is not required by 10 CFR 2.106, "Notice of issuance."

2. Accordingly, the license is amended as described in Attachment 1 to this license amendment and by changes to the Technical Specifications as described in Attachment 2. Paragraph 2.C.2 of Renewed Facility Operating License No. R-2 is hereby amended to read as follows:

Technical Specifications

2. The technical specifications contained in Appendix A, as revised by Amendment No. 43, are hereby incorporated in the license. The licensee shall operate the reactor in accordance with the technical specifications.
3. This license amendment is effective as of its date of issuance and shall be implemented within 30 days of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Jeffrey S. Rady, Chief
Non-Power Production and Utilization Facility
Licensing Branch
Division of Advanced Reactors and Non-Power
Production and Utilization Facilities
Office of Nuclear Reactor Regulation

Attachments:

1. Changes to Renewed Facility Operating License No. R-2
2. Changes to Appendix A, "Technical Specifications"

Date of Issuance: July 15, 2025

ATTACHMENT 1 TO LICENSE AMENDMENT NO. 43

RENEWED FACILITY OPERATING LICENSE NO. R-2

DOCKET NO. 50-005

Replace the following page of Renewed Facility Operating License No. R-2 with the attached revised page. The revised page is identified by amendment number and contains a marginal line indicating the area of change.

Renewed Facility Operating License No. R-2

Remove

Insert

- 3 -

- 3 -

3. Pursuant to the Act and 10 CFR Part 30, "Rules of General Applicability to Domestic Licensing of Byproduct Material," to receive, possess, and use in connection with operation of the reactor: (1) two sealed 50-curie antimony-beryllium neutron sources, either or both of which may be used for reactor start-up, (2) a sealed 0.235 milligram californium-252 neutron source, and (3) a sealed 3-curie americium-beryllium neutron source.
 4. Pursuant to the Act and 10 CFR Part 30 to possess, use, and transfer but not to separate, except for byproduct material produced in non-fueled experiments, such byproduct material as may be produced by operation of the reactor.
- C. This renewed license shall be deemed to contain and is subject to the conditions specified in Parts 20, 30, 50, 51, 55, 70, and 73 of the Commission's regulations; is subject to all applicable provisions of the Act and rules, regulations, and orders of the Commission now or hereafter in effect; and is subject to the additional conditions specified below:

Maximum Power Level

1. The licensee is authorized to operate the reactor at a steady-state power level of 1.0 megawatt (thermal). The maximum power level shall not exceed 1.1 megawatts (thermal) when operated in the manual control mode, the automatic control mode, or the square wave mode. In pulsing mode, reactivity insertions shall not exceed $2.45\% \Delta k/k$.

Technical Specifications

2. The technical specifications contained in Appendix A, as revised by Amendment No. 43, are hereby incorporated in the license. The licensee shall operate the reactor in accordance with the technical specifications.

Additional Conditions

3. The licensee shall fully implement and maintain in effect all provisions of the Commission-approved physical security plan, including amendments and changes made pursuant to the authority of 10 CFR 50.90 and 10 CFR 50.54(p). The approved physical security plan consists of a Pennsylvania State University document, withheld from public disclosure pursuant to 10 CFR 73.21, entitled, "The Physical Security Plan for the Pennsylvania State University Breazeale Reactor," dated June 11, 1990, as revised.

ATTACHMENT 2 TO LICENSE AMENDMENT NO. 43

RENEWED FACILITY OPERATING LICENSE NO. R-2

DOCKET NO. 50-005

Replace the following pages of 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.

Technical Specifications

Remove

Page 47 of 56
Page 48 of 56

Insert

Page 47 of 56
Page 48 of 56

TECHNICAL SPECIFICATIONS: PENN STATE BREAZEALE REACTOR (PSBR)
FACILITY LICENSE NO. R-2

6.0 **ADMINISTRATIVE CONTROLS**

6.1 Organization

6.1.1 Structure

The University Senior Vice President for Research (level 1) has the responsibility for the reactor facility license. The management of the facility is the responsibility of the Director (level 2), who reports to the Senior Vice President for Research through the office of the Dean of the College of Engineering. Administrative and fiscal responsibility is within the office of the Dean.

The minimum qualifications for the position of Director of the PSBR are an advanced degree in science or engineering, and 2 years experience in reactor operation. Five years of experience directing reactor operations may be substituted for an advanced degree.

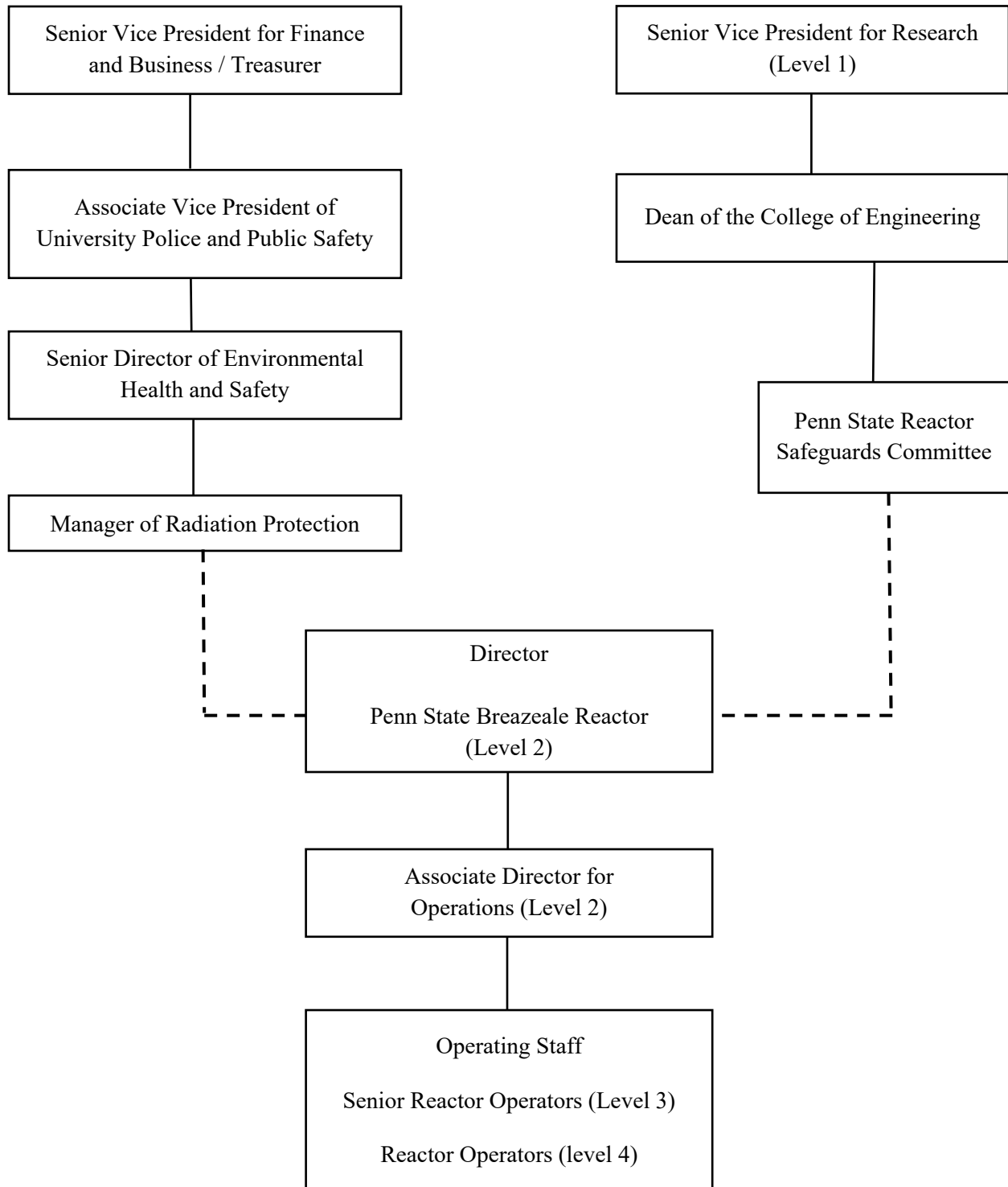
The Manager of Radiation Protection reports through the Senior Director of Environmental Health and Safety and the Associate Vice President of University Police and Public Safety, and to the Senior Vice President for Finance and Business/Treasurer. The qualifications for the Manager of Radiation Protection position are the equivalent of a graduate degree in radiation protection, 3 to 5 years experience with a broad byproduct material license, and certification by The American Board of Health Physics or eligibility for certification.

6.1.2 Responsibility

Responsibility for the safe operation of the reactor facility SHALL be within the chain of command shown in the organization chart. Individuals at the various management levels, in addition to having responsibility for the policies and operation of the reactor facility, SHALL be responsible for safeguarding the public and facility personnel from undue radiation exposures and for adhering to all requirements of the operating license and technical specifications.

In all instances, responsibilities of one level may be assumed by designated alternates or by higher levels, conditional upon appropriate qualifications.

ORGANIZATION CHART





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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 43 TO

RENEWED FACILITY OPERATING LICENSE NO. R-2

PENNSYLVANIA STATE UNIVERSITY

PENN STATE BREAZEALE REACTOR

DOCKET NO. 50-005

1.0 INTRODUCTION

By letter dated April 21, 2025 (Agencywide Documents Access and Management System Accession No. ML25118A019), Pennsylvania State University (PSU, the licensee) requested an amendment to Renewed Facility Operating License No. R-2 for the Penn State Breazeale Reactor (the facility) under the provisions of Title 10 of the *Code of Federal Regulations* (10 CFR) section 50.90, "Application for amendment of license, construction permit, or early site permit." The requested amendment would revise the facility's technical specification (TS) section 6.1, "Organization," to incorporate changes in the organizational structure at PSU and to update a manager's title.

2.0 REGULATORY EVALUATION

The U.S. Nuclear Regulatory Commission (NRC, the Commission) staff evaluated PSU's license amendment request (LAR) based on the following regulations and guidance:

- Part 50, "Domestic Licensing of Production and Utilization Facilities," of 10 CFR, section 50.36, "Technical specifications," which provides the requirements for TSs to be included in facility operating licenses, including for a research reactor. Section 50.36(c)(5), "Administrative controls," of 10 CFR requires that TSs include provisions relating to organization and management, procedures, recordkeeping, review and audit, and reporting necessary to assure operation of the facility in a safe manner.
- NUREG-1537, Part 1, "Guidelines for Preparing and Reviewing Applications for the Licensing of Non-Power Reactors: Format and Content" (ML042430055), which provides guidance to applicants and licensees on preparing research reactor license applications and TSs.
- NUREG-1537, Part 2, "Guidelines for Preparing and Reviewing Applications for the Licensing of Non-Power Reactors: Standard Review Plan and Acceptance Criteria"

(ML042430048), which provides guidance to the NRC staff on reviewing research reactor LARs.

- American National Standards Institute/American Nuclear Society (ANSI/ANS)-15.1-2007, "The Development of Technical Specifications for Research Reactors," which provides guidance that identifies and establishes the content of TSs for research reactors.

3.0 TECHNICAL EVALUATION

3.1 Technical Specification 6.1, "Organization"

The proposed changes discussed in this section use the following format: a ~~strike through~~ indicates a deletion from the TSs and an underline indicates an addition to the TSs.

3.1.1 Technical Specification 6.1.1, "Structure"

The licensee proposed to revise TS 6.1.1 to change the title "Director of Environmental Health and Safety" to "Senior Director of Environmental Health and Safety" to update the position title to reflect the title change of the organization for radiation protection. Additionally, PSU proposed to change the reporting structure for the Manager of Radiation Protection by removing "assistant Vice President for Safety and Environmental Services" and adding "Associate Vice President of University Police and Public Safety." In the LAR, PSU stated, in part, that the title of Assistant Vice President for Safety and Environment is a secondary title held by the Director of Environmental Health and Safety and, therefore, is redundant. The licensee further explained in the LAR that the proposed addition of Associate Vice President of University Police and Public Safety is to better align the functions of the environmental and health safety (EHS) staff with those of University Police and Public Safety (UPPS) to enhanced organizational efficiency and overall capacity across EHS and UPPS.

Current TS 6.1.1 states, in part:

The Manager of Radiation Protection reports through the Director of Environmental Health and Safety, the assistant Vice President for Safety and Environmental Services, and to the Senior Vice President for Finance and Business/Treasurer.

Proposed TS 6.1.1 would state, in part:

The Manager of Radiation Protection reports through the Senior Director of Environmental Health and Safety ~~and, the assistant Vice President for Safety and Environmental Services, and~~ the Associate Vice President of University Police and Public Safety, and to the Senior Vice President for Finance and Business/Treasurer.

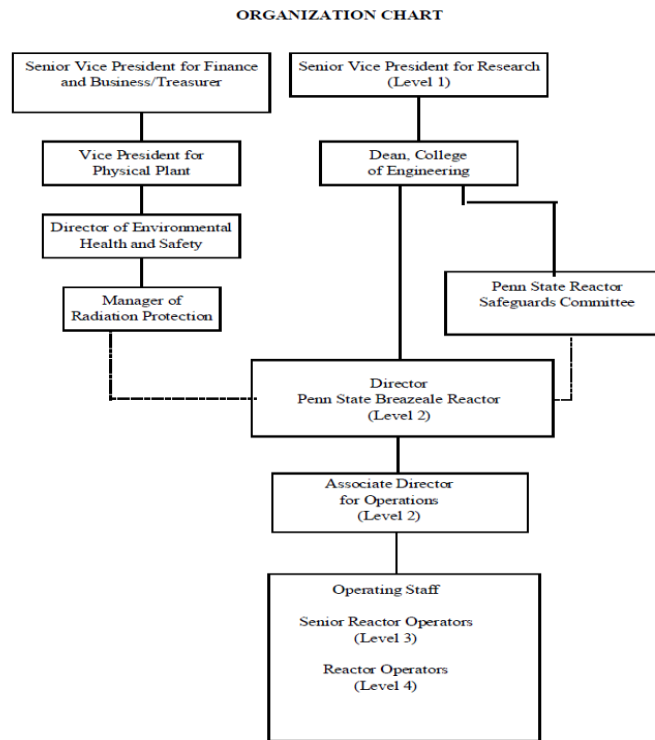
The NRC staff evaluated the proposed changes using guidance in ANSI/ANS-15.1-2007, section 6.1, "Organization," which states, in part, that the functions, assignments, and responsibilities shall be specified. The NRC staff finds that the updated title from Director of Environmental Health and Safety to Senior Director of Environmental Health and Safety is an administrative change to the title and that the removal of assistant Vice President for Safety and Environmental Services does not alter the responsibilities and overall reporting structure of the

organizations since the two titles are for a single individual. ANSI/ANS-15.1-2007, section 6.1.1, "Structure," states, in part, that other organizational levels or staffing may be added to meet specific facility needs. The NRC staff finds that the addition of the Associate Vice President of University Police and Public Safety to the reporting chain of the Manager of Radiation Protection continues to ensure that radiation protection staff maintain communication lines with senior management at PSU. Because the proposed changes to TS 6.1.1 are consistent with guidance and provide administrative controls relating to organization, management, review, and reporting that are necessary to assure operation of the facility in a safe manner as required by 10 CFR 50.36(c)(5), the NRC staff finds the proposed changes acceptable.

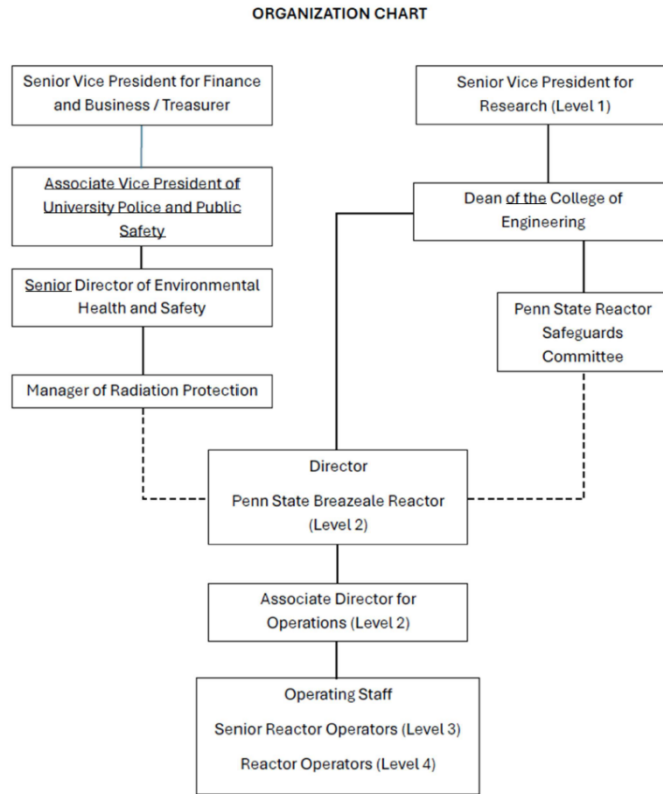
3.1.2 Technical Specification 6.1.2, "Responsibility"

The licensee proposed to revise TS 6.1.2 to change the facility Organization Chart to reflect the proposed changes to TS 6.1.1. Specifically, these changes would update "Director of Environmental Health and Safety" to "Senior Director of Environmental Health and Safety," remove "Vice President for Physical Plant," and add "Associate Vice President of University Police and Public Safety" to the management organizational structure for the Manager of Radiation Protection. During a discussion on May 7, 2025 (ML25129A007), the licensee also confirmed its intent to make an editorial revision to the Organization Chart to change the title of "Dean, College of Engineering" to "Dean of the College of Engineering."

Current TS 6.1.2 states, in part:



Proposed TS 6.1.2 would state, in part:



The NRC staff reviewed the proposed TS 6.1.2 Organization Chart and finds that it is consistent with the guidance in NUREG-1537, Part 1, section 12.1.5, "Radiation Safety," and Part 2, section 12.1, "Organization," because the chart continues to provide a management structure that ensures that the radiation organization can report radiological safety issues to university management independent of facility operation management. The NRC staff also finds that the proposed changes to TS 6.1.2 ensure consistency with proposed TS 6.1.1, which was found to be acceptable as described in section 3.1.1 of this safety evaluation. The NRC finds that the proposed change from "Dean, College of Engineering" to "Dean of the College of Engineering" is editorial and, therefore, acceptable. Because the proposed changes to TS 6.1.2 are consistent with guidance and provide administrative controls relating to organization, management, review, and reporting that are necessary to assure operation of the facility in a safe manner as required by 10 CFR 50.36(c)(5), the NRC staff finds the proposed changes acceptable.

3.2 Technical Evaluation Conclusion

The NRC staff reviewed PSU's proposed changes using the applicable regulations in 10 CFR Part 50 and guidance in NUREG-1537 and ANSI/ANS-15.1-2007. The NRC staff finds that the proposed changes to TS 6.1.1 and TS 6.1.2 are consistent with the guidance in NUREG-1537 and ANSI/ANS-15.1-2007 and that, as amended, the TSs will continue to provide organization and management controls that ensure operation of the facility in a safe manner as required by 10 CFR 50.36(c)(5). Therefore, based on its review, the NRC staff concludes that the proposed changes to TS 6.1.1 and TS 6.1.2 are acceptable.

4.0 ENVIRONMENTAL CONSIDERATION

The amendment changes recordkeeping, reporting, or administrative procedures or requirements; changes the name, position, or title of an officer of the licensee; or changes the format of the license or otherwise makes editorial, corrective, or other minor revisions. Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(10)(ii), (iv), or (v). 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.

5.0 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: M. Balazik, NRR

Date: July 15, 2025