WASHINGTON STATE UNIVERSITY | Nuclear Science Center

September 30, 2019

ATTN: Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Reference: Washington State University Modified TRIGA Reactor
License No. R-76; Docket No. 50-027

Subject: License Amendment Request – Nuclear Radiation/Science Center Name Change and Removal of Primary Coolant pH Specification

To Whom It May Concern:

The WSU Nuclear Science Center requests amendment to the Technical Specifications and Bases for the Washington State University Modified TRIGA Reactor. The nature of these changes are to update the center name from Nuclear Radiation Center to Nuclear Science Center, to update the WSU organizational chart in order to accurately reflecting the job titles and reporting lines of the WSU Office of Research Assurances which now encompasses the Radiation Safety Office (RSO) and the University Radiation Safety Officer (URSO), and to remove the technical specification requiring pH measurement of the primary coolant.

A summary of the changes is provided with discussion. Only those pages identified in the proposed amendment are enclosed, including change bars and the addition of "Amendment XX" and "Date YY" to any pages that are changed.

The proposed changes were reviewed and approved by the Reactor Safeguards Committee on July 16, 2019.

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Page 7

The numbered list under the definition of Licensed Area was formatted to match other lists in this section.

Justification: The proposed change is requested to stylistically unify the WSU Technical Specifications.

Safety Basis: No material changes to the technical specifications will occur as a result of the minor formatting change. No safety impacts due to the requested change will occur.

Pages 21 and 22

Remove specification 3.3(2) and associated basis with renumbering of the remaining bases.

Justification: Technical Specification 3.3(2) states that the pH of the primary coolant shall be between 5.0 and 7.5. The WSU facility proposes removal of TS 3.3(2) specification, basis, and the renumbering of the remaining specifications and bases. Due to the relationship of electrolytic conductivity and pH, and because there is an established limit and surveillance requirement currently within the technical specifications for electrolytic conductivity, acceptable control of primary coolant chemistry without a specification limit for pH of primary coolant is maintained in order to prevent corrosion of reactor components. The conductivity monitoring system is a real-time continuous measurement. The system will alarm at the reactor control console and will alert the operator of increased conductivity at 1.1 micromhos/cm. The pool water purification system will continue to maintain conductivity within the LCO and will be monitored through conductivity measurements as required. It therefore follows that the pH will remain within acceptable limits. The amendment request will not impact the objectives in section 3.3(2).

Safety Basis: In the memorandum dated May 11, 2015 with the subject "Research and Test Reactors Pool Water – Safety Evaluation on Electrolytic Conductivity (TAC No. ME8511)," the NRC determined that the license condition involving pH limits and measurement of pool water contained in research and test reactors may be eliminated if electrolytic conductivity is controlled with a license limit and associated surveillance schedule. WSU Technical Specification 3.3(1) specifies a conductivity limit of 5 micromhos/cm as part of a limiting condition of operation. Thus, the reactor shall not be operated if the electrolytic conductivity is above 5 micromhos/cm. This LCO is therefore sufficient to maintain pool water chemistry and to prevent corrosion of reactor components. The ME8511 document serves as the technical basis for revision of NUREG-1537, and the requested modification to the WSU technical specifications are in accordance with the technical basis document.

Page 42

Amend specification 4.3(1) and associated basis to remove pH surveillance requirements.

Justification: Technical Specification 4.3(1) contains surveillance requirements conductivity and pH measurement interval of the primary coolant, requiring that primary coolant pH and conductivity be measured at least once every two weeks. Due to the relationship between electrolytic conductivity and pH, and because there is an

established limit and surveillance schedule currently within the technical specifications for electrolytic conductivity, acceptable control of primary coolant chemistry is maintained. The objective is section 4.3 is not impacted by the amendment request.

Safety Basis: The U.S. NRC determined in ME8511 that a licensee need not have a requirement for a pH technical specification in an open pool research reactor if a technical specification and related surveillance requirement are in affect and require that conductivity be kept at 5 micromhos/cm or below. Specification 4.3(1) requires surveillance of electrolytic conductivity and a limiting condition of operation limit for primary coolant conductivity, therefore the pH specification on surveillance may be removed. The monitoring and control of electrolytic conductivity with surveillance requirements is sufficient to provide control of primary coolant chemistry for protection against degradation of reactor components.

Pages 52, 60, 61, 63, and 64

All instances of Nuclear Radiation Center in the Technical Specifications are replaced with Nuclear Science Center.

Justification: The proposed change is requested as an update to the name of the Nuclear Science Center.

Safety Basis: No material changes to the Nuclear Radiation Center or organizational structure are occurring as a result of the name change to Nuclear Science Center. Reporting lines, authority, and staffing are unchanged. As such, no safety impacts due to the name change of the Center will occur.

Pages 60, 61, and Figure 6.1

The WSU Radiation Safety Officer (URSO) has been updated to accurately reflect the current WSU organizational structure pertinent to the license.

Justification: The proposed change is requested as an update to the organizational reporting lines and job titles of the Director of the Radiation Safety Office and University Radiation Safety Officer. The Director of the Radiation Safety Office and the Radiation Safety Officer have historically been the same individual. The Radiation Safety Office was moved by WSU to report to the University's compliance unit, the Office of Research Assurances (ORA). The Director of ORA, with oversight of the Radiation Safety Office, and the University Radiation Safety Officer are no longer the same individual. The Radiation Safety Officer performs the regulatory responsibilities of the Radiation Safety Office and reports to the ORA management structure, which reports to the Level 1. The facility organization as depicted in the technical specifications has changed; therefore, a change to the technical specifications is requested.

Safety Basis: The intent of the requested changes are to accurately reflect the organizational structure in the current facility organization. The Director of the ORA and the URSO are two separate individuals, both of which are members of the Reactor Safeguards Committee. The URSO is a permanent *ex-officio* member of this committee.

WSU has determined that the University Radiation Safety Officer will report to ORA management. As the administrative head of the compliance unit at WSU, the Director of the ORA direct reports to the Level 1. This change will not reduce the effectiveness of reporting by the Radiation Safety Officer to the Level 1 for all required information and in case of emergencies; the University Radiation Safety Officer, the Radiation Safety Office, and the Reactor Safeguards Committee will continue to remain responsible for reactor safety at the WSU facility.

If you have any questions, please do not hesitate to contact me.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on 9/30/2019 .

Best regards,

C. Corey Hines
Director

Attachment: Proposed Amendment to the Technical Specifications and Bases for the WSU Modified TRIGA Reactor

cc: Mr. Duane Hardesty, Sr. Project Manager
U.S. Nuclear Regulatory Commission

Mr. Craig Bassett, Inspector
U.S. Nuclear Regulatory Commission