



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

May 5, 2025

Mr. Corey Hines, Director  
Washington State University  
Nuclear Science Center  
PO Box 641300  
Pullman, WA 99164-1300

SUBJECT: WASHINGTON STATE UNIVERSITY – U.S. NUCLEAR REGULATORY  
COMMISSION SAFETY INSPECTION REPORT NO. 05000027/2025201

Dear Mr. Hines:

From March 31 – April 3, 2025, the U.S. Nuclear Regulatory Commission (NRC) staff conducted a safety inspection at the Washington State University Modified TRIGA Nuclear Reactor facility. The inspection results were discussed with you and members of your staff on April 3, 2025. The enclosed report documents the inspection results.

The inspection examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. The inspector reviewed selected procedures and records, observed various activities, and interviewed personnel. Based on the results of this inspection, no findings of significance were identified. No response to this letter is required.

In accordance with Title 10 of the *Code of Federal Regulations* Section 2.390, "Public inspections, exemptions, requests for withholding," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records component of NRC's document system (Agencywide Documents Access and Management System (ADAMS)). ADAMS is accessible from the NRC website at <https://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Should you have any questions concerning this inspection, please contact Craig Bassett at (240) 535-1842, or via email at [Craig.Bassett@nrc.gov](mailto:Craig.Bassett@nrc.gov).

Sincerely,

A handwritten signature in black ink, appearing to read 'Tony Brown', followed by a horizontal line.

Signed by Brown, Tony  
on 05/05/25

Tony Brown, Chief  
Non-Power Production and Utilization Facility  
Oversight Branch  
Division of Advanced Reactors and Non-Power  
Production and Utilization Facilities  
Office of Nuclear Reactor Regulation

Docket No. 50-027  
License No. R-76

Enclosure:  
As stated

cc: GovDelivery Subscribers

SUBJECT: WASHINGTON STATE UNIVERSITY – U.S. NUCLEAR REGULATORY  
COMMISSION SAFETY INSPECTION REPORT NO. 05000027/2025201  
DATED: MAY 5, 2025

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**U.S. NUCLEAR REGULATORY COMMISSION**  
**OFFICE OF NUCLEAR REACTOR REGULATION**

Docket No.: 50-027

License No.: R-076

Report No.: 05000027/2025201

Licensee: Washington State University

Facility: Washington State University Modified TRIGA Nuclear Reactor

Location: Pullman, Washington

Dates: March 31 – April 3, 2025

Inspector: Craig Bassett, Reactor Inspector

Approved by: Tony Brown, Chief  
Non-Power Production and Utilization Facility  
Oversight Branch  
Division of Advanced Reactors and Non-Power  
Production and Utilization Facilities  
Office of Nuclear Reactor Regulation

Enclosure

## SUMMARY

The U.S. Nuclear Regulatory Commission (NRC) continued monitoring the licensee's performance by conducting an inspection at the Washington State University (WSU) Modified TRIGA Nuclear Reactor facility located in the Nuclear Science Center (NSC) of the Dodgen Research Center, in accordance with the research and test reactor inspection program. This is the NRC's program for overseeing the safe operation of licensed research and test reactors. Refer to <https://www.nrc.gov/reactors/non-power.html> for more information.

### List of Violations

No violations of more than minor significance were identified.

### Additional Tracking Items

Type	Issue Number	Title	Status
Inspector Follow-up Item (IFI)	05000027/2020201-01	Follow-up on completed revision to Administrative Procedure (AP)-3	Closed

## REPORT DETAILS

### Facility Status

The Washington State University Modified TRIGA Nuclear Reactor 1 megawatt Modified Training, Research, Isotopes, General Atomics (TRIGA) research reactor was operated in support of undergraduate instruction, laboratory experiments, reactor operator training, and various types of research. During the inspection, the reactor was started up, operated, and shut down as needed in accordance with applicable procedures to support ongoing activities.

### Inspection Scopes

Inspections were conducted using the appropriate portions of the inspection procedures (IPs) in effect at the beginning of the inspection unless otherwise noted. Currently approved IPs with their attached revision histories are located on the public website at <https://www.nrc.gov/reading-rm/doc-collections/insp-manual/inspection-procedure/index.html>. Inspections were declared complete when the IP requirements most appropriate to the inspection activity were met consistent with Inspection Manual Chapter 2545, "Research and Test Reactor Inspection Program." The inspector reviewed selected procedures and records, observed activities, and interviewed personnel to assess licensee performance and compliance with Commission rules and regulations, license conditions, site procedures, and standards.

#### 69001 – Class II Research and Test Reactors

This inspection included a review of selected aspects of the research and test reactor, since the last inspection, to verify activities were conducted safely and in accordance with regulatory requirements and licensee commitments.

#### Organization and Staffing (IP 69001, Section 02.01)

This inspection included a review of the licensee's organizational changes and shift staffing records to verify compliance with technical specification (TS) requirements and licensee commitments. Specifically, the inspection included a review of the following:

- facility organizational structure and shift staffing
- current copy of the TSs for the WSU Modified TRIGA reactor
- various WSU NSC reactor operating log forms (O.1)

#### Operations Logs and Records (IP 69001, Section 02.02)

This inspection included a review of the licensee's operation logs and records to verify they were maintained and that significant issues were reported and resolved as required by the TSs and the licensee's administrative procedures. Specifically, the inspection included a review of the following:

- scram summary log
- selected daily reactor start-up forms
- standard operating procedures

- WSU NSC annual reports for the last two reporting periods
- various WSU NSC reactor operating log forms (O.1)
- inspector observed a reactor start-up and shutdown

#### Requalification Training (IP 69001, Section 02.04)

This inspection included a review of selected documents pertaining to operator requalification training to verify requirements of the licensee's approved requalification plan and Title 10 of the *Code of Federal Regulations* (10 CFR) Part 55, "Operators' Licenses" were met. Specifically, the inspection included a review of the following:

- select annual reactor operation exams
- select biennial written requalification exams
- medical records for selected licensed operators
- WSU NSC "Reactor Staff Requalification Program"
- requalification records for select licensed operators

#### Surveillance and Limiting Conditions for Operation (IP 69001, Section 02.05)

This inspection included a review of surveillances listed in the TSs to verify requirements were met. Limiting conditions for operation were also reviewed to verify that operating conditions were maintained in accordance with the licensee's procedural requirements. Specifically, the inspection included a review of the following:

- surveillance procedure
- control element calibration log (O.4)
- power calibration log forms (also in (O.2)
- monthly core reactivity parameters log (O.7)
- various WSU NSC reactor operating log forms (O.1)
- preventative maintenance checklists documenting various surveillance items

#### Experiments (IP 69001, Section 02.06)

This inspection included a review of selected experiments and procedures to verify licensee experiments were reviewed, approved, and conducted in accordance with TS requirements, licensee procedures, and the requirements of 10 CFR 50.59, "Changes, test and experiments." Specifically, the inspection included a review of the following:

- experiments procedure
- requests for reactor operation
- WSU NSC irradiation data log sheets
- various WSU NSC reactor operating log forms (O.1)
- selected experiments with changes and project addendum and modification approval forms

#### Design Changes (IP 69001, Section 02.08)

This inspection included a review of design changes to determine whether they were reviewed, approved, and implemented in accordance with 10 CFR 50.59 the TSs, and the licensee's

administrative procedures. The inspection also verified that modified equipment would continue to meet regulatory and procedural requirements and licensee commitments. Specifically, the inspection included a review of the following:

- modification procedure
- documentation of recent changes and modifications
- reactor safeguards committee (RSC) meeting minutes
- annual operating reports for the WSU TRIGA reactor facility for the last two reporting periods

#### Committees, Audits and Reviews (IP 69001, Section 02.09)

This inspection included a review of the licensee's committees, audits and reviews to verify the safety committee audits and independent audits were conducted in accordance with the TSs and that issues identified from reviews were resolved in accordance with TS requirements and the licensee's procedures. Specifically, the inspection included a review of the following:

- RSC meeting minutes
- current copy of the TSs for the WSU Modified TRIGA Reactor
- audit reports completed by the reactor supervisor and submitted to the RSC
- annual operating reports for the WSU TRIGA reactor facility for the last two reporting periods

#### Emergency Planning (IP 69001, Section 02.10)

This inspection included a review of the licensee's emergency procedures, exercises and drills, training, and equipment to verify compliance with the licensee's emergency plan and applicable regulatory requirements. Specifically, the inspection included a review of the following:

- emergency procedures
- emergency drill final reports for the last 2 years
- training records for licensee staff and support personnel
- WSU NSC Emergency Plan and implementing procedures
- offsite support as documented in the letter of agreement
- inspector and a licensee representative visited the Pullman Regional Hospital

#### Maintenance Logs and Records (IP 69001, Section 02.11)

This inspection included a review of the licensee's maintenance logs and records to verify that operational and maintenance activities were conducted and maintained in accordance with regulatory and TS requirements. Specifically, the inspection included a review of the following:

- maintenance procedure
- reactor operations summary sheets (O.2)
- preventative maintenance checklists (O.2)
- various WSU NSC reactor operating log forms (O.1)



- monthly console and auxiliary equipment checklist log (O.9) containing documentation of equipment maintenance

#### Fuel Handling Logs and Records (IP 69001, Section 02.12)

This inspection included a review of the licensee's fuel handling logs and records to verify TS and procedural requirements were met. Specifically, the inspection included a review of the following:

- fuel inspection procedure
- control element inspection log (O.5)
- fuel movement and surveillance records
- core change and fuel movement procedure
- various WSU NSC reactor operating log forms (O.1)
- core 35-A cumulative inspection summary for 2023, 2024, and 2025

#### **Inspection Results**

No violations of more than minor significance were identified.

One Inspector Follow-up Item was closed.

IFI (Closed)	Follow-up on completed revision to Administrative Procedure (AP)-3 Item Number - 05000027/2020201-01	IP 69001, Section 02.08
<p>Description: During an inspection in July 2020, the inspector reviewed selected records and observed the changes that were made at the facility from 2018 to 2020. The inspector noted that the licensee was in the process of, but did not finish, updating procedure AP-3, "Approval and Review of Facility Modifications and Special Tests or Experiments," to reflect changes to their process. The licensee was informed that completion of the update to the procedure would be considered an IFI by the NRC. During a subsequent inspection in March 2024, the inspector again reviewed the update of AP-3. The inspector found that the licensee initiated a revision to the procedure but did not complete it as of that date and the procedure still referred to the outdated terminology of "unreviewed safety question." The inspector noted that the licensee's process for reviewing facility changes included the use of the 8 questions stated in 10 CFR 50.59 but the practice was not formalized by the procedure.</p> <p>Planned Closure Actions: The licensee indicated that the AP-3 revision was in process and would be presented to the RSC during the committee's next quarterly meeting.</p> <p>Licensee Actions: The licensee presented the revised procedure to the RSC on July 24, 2024. The RSC reviewed and approved the procedure. The revised procedure was read by all reactor operators and operator trainees as required by the licensee. This issue is closed.</p>		

### **Exit Meeting and Debriefs**

The inspector verified no proprietary information was retained or documented in this report.

- On April 3, 2025, the inspector presented the NRC inspection results to Mr. Corey Hines, Director and other members of the licensee staff.

## Documents Reviewed

Inspection Procedure & Section	Document Type	Designation	Description or Title	Revision Number (No.) and/or Date
IP 69001 – Section (Sec) 02.01 (Org & Staffing)	Technical Specifications (TSs)	WSU NSC TSs	“Technical Specifications and Bases for the Washington State University Modified TRIGA Reactor”	Amendment No. 22, dated 4/9/2024
	Operating records documenting staffing	WSU NSC Checklists	NSC Form No. 34 – “WSU Reactor Startup Checkout”	Rev. 04/2024
		WSU NSC reactor log form	NSC Form No. 22 – “WSU Nuclear Science Center Reactor Operating Logs” (O.1) <sup>1</sup> which indicated which operators were present during operations	Rev. 5/2018 (April 2023 to the present)
IP 69001 – Sec. 02.02 (Opns logs & records)	Facility records related to reactor operations	WSU NSC Checklists	NSC Form No. 34 – “WSU Reactor Startup Checkout checklists”	Rev. 04/2024
		WSU NSC reactor log form	NSC Form No. 22 – “WSU Nuclear Science Center Reactor Operating Logs” (O.1) which included reactor shutdown information	Rev. 5/2018 (April 2023 to the present)
		Summaries	Reactor operations summary sheets (O.2)	Rev. 7/2021
		WSU NSC scram log	NSC Form No. 27 – “Scram Summary Log” (S.1)	2023 to the present
	SOPs	1) SOP-1	“Standard Procedure for Use of the Reactor”	Rev. 0.8
		2) SOP-2	“Standard Procedures for Startup, Operation, and Shutdown of the Reactor”	Rev. 0.8
	Licensee Reports	Annual Operating Reports	“2023 Annual Report for the WSU Nuclear Science Center”	8/30/2023
			“2024 Annual Report for the WSU Nuclear Science Center”	8/29/2024
IP 69001 – Sec. 02.04 (Requal)	Licensee program	Requalification Program	“Reactor Staff Requalification Program”	8/2/2018
	Licensee records	Personnel records	Medical records for selected licensed operators	Various dates
	Facility documents related to operator requalification	Requalification records	Selected annual reactor operation exams	2023 to the present
			Selected biennial written requalification exams	2023 to the present
IP 69001 – Sec. 02.05 (Surveil)	Facility records related to surveillance	Calibration logs	Selected power calibration log forms (O.2)	Rev. 6/2021
			Selected control element calibration log (O.4) and NSC Form No. 15 – “Control Element Doubling Times”	Rev. 4/2022
		Core logs	Selected core reactivity parameter logs (O.7) and associated form – NSC Form No. 14 – “Shutdown Margin Calculation,”	Rev. 11/2015

Inspection Procedure & Section	Document Type	Designation	Description or Title	Revision Number (No.) and/or Date
IP 69001 – Sec. 02.05 (Surveil) (Cont'd)	Facility records related to surveillance (Cont'd)	WSU NSC Checklists	Preventative Maintenance Checklist forms	2023 to the present
		WSU NSC reactor log form	NSC Form No. 22 – “WSU Nuclear Science Center Reactor Operating Logs” (O.1)	Rev. 5/2018 (April 2023 to the present)
	SOP	SOP-20	“Standard Procedure for Reactor Power Calibrations”	Rev. 0.8
	AP	AP-5	“Surveillance Documentation Review”	Rev. 0.2
IP 69001 – Sec. 02.06 (Exp)	Facility records related to experiments	Data log sheets	WSU NSC irradiation data log sheets	2023 to the present
		WSU NSC reactor log form	NSC Form No. 22 – “WSU Nuclear Science Center Reactor Operating Logs” (O.1)	Rev. 5/2018 (April 2023 to the present)
		Experiment approvals (AKA requests for reactor operation)	recent experiment (Project No. 111722) with the associated overview, safety review and analysis, isotope production data, accident analysis, and approvals - documented on WSU NSC Form No. 1 – “Project Request Form” (form Rev. 06/2021)	project approval dated 11/17/2022
			prior experiment (Project No. 101714) with recent change documented as Addendum No. 2 on NSC Form No. 1.1 – “Project Addendum” (form Rev. 06/2021)	change approval dated 6/4/2024
	Experiments SOP	SOP-3	“Standard Procedure for Performing Experiments Using the Reactor”	Rev. 0.8
IP 69001 – Sec. 02.08 (Design Changes)	RSC records	Meeting minutes	RSC meeting minutes (full RSC required by the TSs to meet at least semiannually)	April 2023 to the present
	50.59 facility changes	Change records	115-2024 – “Cooling Tower Replacement and Upgrade”	11/27/2024
			116-2024 – “Modification of SOP-25, Standard Procedure for Core Changes and Fuel Movement”	12/18/2024
	Modification Procedure	AP-3	“Review and Approval of Facility Modifications, Special Tests, or Experiments Performed Under 10 CFR 50.59”	Rev. 0.2
	Licensee reports	Annual Operating Reports	“2023 Annual Report for the WSU Nuclear Science Center”	8/30/2023
			“2024 Annual Report for the WSU Nuclear Science Center”	8/29/2024
IP 69001 – Sec. 02.09 (Comm, Audits, & Reviews)	RSC records	Meeting minutes	RSC meeting minutes (full RSC required by the TSs to meet at least semiannually)	April 2023 to the present
	Audits	Audits conducted by the RSC	Quarterly audits of various facility records (conducted by the full RSC or a subcommittee as allowed by the TSs)	2023 to the present

Inspection Procedure & Section	Document Type	Designation	Description or Title	Revision Number (No.) and/or Date
IP 69001 – Sec. 02.09 (Comm, Audits, & Reviews) (Cont’d)	Technical Specifications	WSU NSC TSs	“Technical Specifications and Bases for the Washington State University Modified TRIGA Reactor” designating the duties of the RSC	Amendment No. 22, dated 4/9/2024
	Licensee Reports	Annual Operating Reports	“2023 Annual Report for the WSU Nuclear Science Center”	8/30/2023
			“2024 Annual Report for the WSU Nuclear Science Center”	8/29/2024
IP 69001 – Sec. 02.10 (Emerg)	Emergency Preparedness	Emergency Plan	WSU NSC Emergency Plan	Dated 4/2020
	Emergency functions documentation	Drills & critiques	Documentation of the emergency drills and critiques for 2023 & 2024	1/8/2024 and 8/30/2024
	Training documentation	Training records	Training for reactor operators and other staff which included emergency preparedness	12/22/2023 and 12/13/2024
	SOPs	SOP-14	“Standard Procedure in the Event of an Emergency Situation”	Rev. 0.5
		SOP-15	“Standard Procedure in the Event of an Emergency Situation”	Rev. 0.5
	Associated Procedures	Implementing Procedures	Emergency Plan implementing procedures	Rev. 3/2021
	Agreement with the city	Letter of Agreement	LOA with Pullman Regional Hospital	6/5/2024
IP 69001 – Sec. 02.11 (Maint)	Facility records related to maintenance	Checklists	Preventative maintenance checklists (O.2)	2023 to the present
		Operation Summaries	Reactor operations summary sheets (O.2)	2023 to the present
		Checklist Log	Monthly console and auxiliary equipment checklist Log (O.9) containing documentation of equipment maintenance as indicated on NSC Form No. 40, entitled “Console Auxiliary Equipment Maintenance Checklist”	2023 to the present
		WSU NSC reactor log form	NSC Form No. 22 – “WSU Nuclear Science Center Reactor Operating Logs” (O.1)	Rev. 5/2018 (April 2023 to the present)
	SOP	SOP-5	“Standard Procedure for Performing Preventative Maintenance on the Reactor and Associated Equipment”	Rev. 0.8
IP 69001 – Sec. 02.12 (Fuel)	Facility records related to fuel inspections and handling	Inspection log & surveillance records	Control element inspection log (O.5) (for control elements 1 – 5)	2023 to the present
IP 69001 – Sec. 02.12 (Fuel) (Cont’d)		Core inspection data including fuel movement & surveillance records	Core 35-A cumulative inspection summary for 2023	1/13/2023
	Core 35-A cumulative inspection summary for 2024		1/12/2024	
	Core 35-A cumulative inspection summary for 2025		1/23/2025	

Inspection Procedure & Section	Document Type	Designation	Description or Title	Revision Number (No.) and/or Date
	and handling (Cont'd)	WSU NSC reactor log form	NSC Form No. 22 – “WSU Nuclear Science Center Reactor Operating Logs” (O.1)	Rev. 5/2018 (April 2023 to the present)
	SOPs	SOP-23	“Standard Procedure for Annual Fuel Inspections”	Rev. 0.8
		SOP-25	“WSU Reactor Core Changes and Fuel Movement”	Rev. 0.8

<sup>1</sup>The licensee maintains some of their written records in notebooks. These notebooks are designated according to what their contents refer to, i.e., Operations related functions – O.x, Scram – S.x, etc.