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

August 1, 2023

Mr. Robert J. Agasie, Reactor Director
Nuclear Reactor Laboratory
University of Wisconsin - Madison
1513 University Avenue, Room 1215
Madison, WI 53706-1687

SUBJECT: UNIVERSITY OF WISCONSIN – U.S. NUCLEAR REGULATORY COMMISSION ROUTINE INSPECTION REPORT NO. 05000156/2023201

Dear Mr. Agasie:

From June 12 - 15, 2023, the U.S. Nuclear Regulatory Commission (NRC) staff conducted an inspection at the University of Wisconsin Nuclear Reactor. The enclosed report documents the inspection results, which were discussed on June 15, 2023, with you, Corey Edwards, Reactor Supervisor, and Dr. Paul Wilson, Chair of the Engineering Physics Department and Reactor Safety Committee Chair.

This 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 observed various activities in progress, interviewed personnel, and reviewed selected procedures and records. 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 NRC's document system (Agencywide Documents Access and Management System (ADAMS)). ADAMS is accessible from the NRC website at http://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 by email at Craig.Bassett@nrc.gov.

Sincerely,


Signed by Tate, Travis
on 08/01/23

Travis L. Tate, 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. 50-156
License No. R-74

Enclosure:
As stated

cc: w/enclosure to GovDelivery Subscribers

SUBJECT: UNIVERSITY OF WISCONSIN – U.S. NUCLEAR REGULATORY COMMISSION ROUTINE INSPECTION REPORT NO. 05000156/2023201 DATED: AUGUST 1, 2023

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

Docket No.:	50-156
License No.:	R-74
Report No.:	05000156/2023201
Licensee:	University of Wisconsin
Facility:	University of Wisconsin Nuclear Reactor
Location:	Madison, WI
Dates:	June 12-15, 2023
Inspector:	Craig H. Bassett
Approved by:	Travis L. Tate, 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

EXECUTIVE SUMMARY

University of Wisconsin
University of Wisconsin Nuclear Reactor
Inspection Report No. 05000156/2023201

The primary focus of this routine, announced inspection was the on-site review of selected aspects of the University of Wisconsin (UW, the licensee's) Class II research and test reactor safety program including: (1) organization and staffing; (2) operations logs and records; (3) procedures; (4) requalification training; (5) surveillance and limiting conditions for operation (LCOs); (6) experiments; (7) design changes; (8) committees, audits and reviews ; (9) maintenance logs and records; and (10) fuel handling logs and records. The U.S. Nuclear Regulatory Commission (NRC) staff determined the licensee's program was acceptably directed toward the protection of public health and safety and in compliance with NRC requirements.

Organization and Staffing

- The organizational structure and staffing were consistent with technical specifications (TSs) requirements.

Operations Logs and Records

- Reactor operations were conducted in accordance with TSs requirements and applicable procedures.

Procedures

- Procedural review, revision, and control satisfied the requirements specified in section 6.4 of the TSs.

Requalification Training

- The operator requalification/training program was up-to-date and maintained.

Surveillance and Limiting Conditions for Operation

- The program for tracking and completing surveillance checks and LCO verifications satisfied TS requirements and licensee administrative and procedural controls.

Experiments

- Conduct and control of experiments and irradiations met the requirements specified in TS sections 3.8, 4.8, and 6.5, the applicable experiment and irradiation authorizations, and associated procedures.

Design Changes

- The design change protocol was followed, and design changes were reviewed and/or evaluated in accordance with Title 10 of the *Code of Federal Regulations* (10 CFR) 50.59, “Changes, tests and experiments.”

Committees, Audits and Reviews

- Audits and reviews conducted by the Reactor Safety Committee (RSC) were in accordance with TS section 6.2 and the RSC met at the required periodicity.

Maintenance Logs and Records

- Maintenance logs and records were kept, and maintenance activities were conducted in accordance with procedural requirements.

Fuel Handling Logs and Records

- Fuel handling activities and documentation were completed in accordance with TS sections 3.1, 4.1, 5.3, and 5.4, and facility procedures.

REPORT DETAILS

Summary of Facility Status

The UW continued to operate their 1 megawatt TRIGA [Training, Research, Isotopes, General Atomics] conversion reactor as needed in support of laboratory and lecture courses, research and reactor operator training, outreach and community services, and irradiation services. During this inspection, the reactor was not operated due to the ongoing annual maintenance outage.

1. Organization and Staffing

a. Inspection Scope (Inspection Procedure (IP) 69001, Section 02.01)

To verify that the organization, responsibilities, and staffing requirements specified in Section 6.1 of the facility TSs were met, the inspector reviewed selected aspects of the following:

- staffing requirements for reactor operations
- management responsibilities stipulated in the TSs
- selected operating records for June 2021 through the present
- organizational structure of the UW Nuclear Reactor (UWNR) facility
- UWNR Procedure Number (No.) 001, “Standing Operating Instructions”
- UWNR laboratory fiscal year 2020 – 2021 annual operating report
- UWNR laboratory fiscal year 2021 – 2022 annual operating report

b. Observations and Findings

Through discussions with licensee representatives, the inspector confirmed that management responsibilities and the organization at the UWNR laboratory didn’t change since the previous NRC inspection. The inspector noted that the licensee’s current operational organization consisted of a Reactor Director, a Reactor Supervisor, and five reactor operators (ROs). The inspector confirmed that the organization was consistent with that specified in the TSs.

The inspector reviewed selected reactor operating records for the past 2 years and verified that they were maintained as required by facility procedures. The inspector noted that shift staffing met the requirements for duty, relief, and on-call personnel.

c. Conclusion

The inspector determined that the licensee’s organization and staffing met the requirements specified in the TSs and applicable procedures.

2. Operations Logs and Records

a. Inspection Scope (IP 69001, Section 02.02)

The inspector reviewed selected aspects of the following to ensure that actions taken during routine operations were in accordance with TS sections 3 and 4, and that actions following abnormal occurrences, complied with TS sections 6.6 and 6.7:

- various UWNR procedures
- selected operating records for June 2021 through the present
- UWNR operators turn-over log maintained on the control room computer
- selected audits completed by Radiation Safety Department staff personnel and reviews completed by operations staff personnel documented in monthly reports for June 2021 through the present
- the two most recent annual operating reports issued by the facility

b. Observations and Findings

Through selected records, checklists, and forms review, the inspector determined that operations were conducted in accordance with TS requirements and applicable procedures. The inspector also noted that scrams were identified on specific forms in the logs and records, reported as required by procedure, and their cause(s) resolved before operations were resumed under the authorization of a licensed senior reactor operator (SRO). The inspector verified that the information required to be recorded by the TSs and various procedures was logged on the appropriate forms.

c. Conclusion

The inspector determined that reactor operations and other required actions were completed in accordance with TS requirements and applicable procedures.

3. Procedures

a. Inspection Scope (IP 69001, Section 02.03)

To determine whether facility procedures met the requirements outlined in TS section 6.4, the inspector reviewed:

- selected operating procedures and administrative logs
- selected forms and checklists associated with current procedures
- procedural reviews and updates as documented in RSC meeting minutes
- UWNR Procedure No. 005, “UWNR Administrative Guide”
- the two most recent annual operating reports issued by the facility

b. Observations and Findings

The inspector determined that the licensee developed procedures for the operations, tasks, and verifications listed in section 6.4 of the TSs. The inspector noted that UWNR Procedure No. 001 specified the role and use of procedures at the facility. The inspector verified that the licensee’s procedures, forms, and checklists were appropriate for the

current facility status and level of operations, that the procedures were audited and reviewed annually as required by the TSs, and they were updated as needed. The inspector verified that changes to procedures were reviewed and approved by the RSC.

c. Conclusion

The inspector determined that facility procedures satisfied TS section 6.4 requirements and procedure reviews were completed annually.

4. Requalification Training

a. Inspection Scope (IP 69001, Section 02.04)

The inspector reviewed the following to determine that operator requalification activities and training were conducted in accordance with the licensee's operator requalification program and 10 CFR Part 55, "Operators' Licenses," and that medical requirements were met:

- active operators' license status
- written examination records for 2021 and 2022
- selected operator medical examination records from 2021 to the present
- various training records and forms for selected individuals for 2021 through 2023
- audits completed by operations staff personnel documented in monthly reports
- operator requalification program outlined in UWNR Procedure No. 004, "University of Wisconsin Nuclear Reactor Operator Proficiency Maintenance Program"
- selected operating records for June 2021 through the present documenting reactivity manipulations and reactor operator hours of operation
- the two most recent annual operating reports issued by the facility

b. Observations and Findings

The inspector verified there were two qualified SROs who were full-time university employees working at the facility as well as five ROs (one was a university employee, and the others were students). The inspector noted that two student ROs were considered active, two ROs were considered inactive, and one RO recently left the facility, but that individual's license was not terminated to date. The inspector confirmed that all the active operators' licenses were current.

The inspector confirmed that training and lectures were conducted and that annual written examinations were administered to operators as stipulated in the requalification program. The inspector also verified that activities, such as reactivity manipulations, various supervisory activities, quarterly performance evaluations, and semiannual drill participation were completed by each licensed operator as required by the requalification program. The inspector also verified that each operator received a biennial medical examination as required by the regulations.

c. Conclusion

The inspector determined that the requirements of the operator requalification program were met, and the program was implemented.

5. Surveillance and Limiting Conditions for Operation

a. Inspection Scope (IP 69001, Section 02.05)

To determine that surveillance and LCO activities and verifications were completed as required by TS sections 3 and 4, the inspector reviewed:

- selected surveillance records for June 2021 and to date in 2023
- selected forms and records associated with various UWNR procedures including No. 100, “Surveillance Activities,” and No. 169, “Annual Maintenance Procedure”
- the two most recent annual operating reports issued by the facility

b. Observations and Findings

The inspector verified that daily, weekly, monthly, semiannual, and annual checks, tests, and verifications for selected surveillance and LCO activities were completed as required by the TSs and stipulated by procedure. The inspector also confirmed that surveillance and LCO verifications were completed on schedule. All the recorded results reviewed by the inspector were within the TSs and procedurally prescribed parameters. The inspector noted that records and logs were maintained as required by facility procedures.

c. Conclusion

The inspector determined that the program for surveillance and LCO verifications was carried out in accordance with TSs and procedural requirements.

6. Experiments

a. Inspection Scope (IP 69001, Section 02.06)

To verify that experiments were conducted in accordance with approved procedural guidelines and reviewed and approved as specified in TS sections 3.8, 4.8, and 6.5, the inspector reviewed:

- control of irradiated items and potential hazards identification
- various UWNR procedures and the associated documents and records
- records of recently proposed experiments and/or changes to approved experiments

b. Observations and Findings

The inspector noted that UWNR experiments were classified as “routine,” “modified routine,” or “special,” and that routine and modified routine experiments could be conducted at the discretion of the SRO responsible for reactor operation. The inspector also noted that the special experiments were required to be reviewed by the RSC and were of such a nature that they could possibly require review and approval by the NRC. The inspector determined that the experiments conducted at the UWNR were reviewed and approved.

The inspector verified that the conduct of the experiments and irradiations conducted at the facility were completed in accordance with procedure, were documented, and the material produced was controlled as required in the TSs and the applicable authorizations.

c. Conclusion

The inspector determined that the conduct and control of experiments and irradiations met the requirements specified in the TS sections 3.8, 4.8, and 6.5, the applicable authorizations, and associated procedures.

7. Design Changes

a. Inspection Scope (IP 69001, Section 02.08)

To determine whether modifications to the facility were consistent with 10 CFR 50.59, the inspector reviewed:

- RSC meeting minutes from June 2021 through the present
- records of design changes and/or modifications to the facility
- records of 50.59 screenings and evaluations from 2021 to the present
- various UWNR Procedures including No. 005, “UWNR Administrative Guide,” and No. 019, “Changes, Tests, and Experiments”
- the two most recent annual operating reports issued by the facility

b. Observations and Findings

The inspector noted that the design change procedure was implemented and used by the licensee. The inspector verified that the licensee followed the established design change control program and conducted screenings and evaluations as required by procedure. The inspector also verified that the evaluations were approved by the RSC prior to implementation of the associated changes.

c. Conclusion

The inspector determined that the licensee followed the 10 CFR 50.59 process for reviewing and approving design changes at the facility.

8. Committees, Audits and Reviews

a. Inspection Scope (IP 69001, Section 02.09)

To verify that reviews required by TS section 6.2.3 were completed by the RSC and that the audits stipulated in TS section 6.2.4 were conducted by the Radiation Safety Office and the RSC, the inspector reviewed:

- UWNR Procedure No. 005, “UWNR Administrative Guide”
- RSC meeting minutes from June 2021 through the present
- various audits of facility operations as well as the Requalification Plan, the Emergency Plan, and the Security Plan

- selected operating records for 2021 through 2023 as well as selected audits completed by Radiation Safety Department staff personnel and reviews completed by operations staff personnel
- the two most recent annual operating reports issued by the facility

b. Observations and Findings

Through a review of RSC meeting minutes, the inspector confirmed that the RSC met at the required frequency and that a quorum was present. The inspector verified that the RSC, or a designated subcommittee or person, was completing reviews of those items and documents required by the TSs. The inspector confirmed that the RSC was providing oversight for reactor operations.

The inspector noted that various audits were conducted at the facility in the areas of reactor operations, radiation protection, emergency preparedness, security, requalification of operators, and procedures. The inspector confirmed that the RSC reviewed these audits as required by the TSs. The inspector also verified that the licensee took corrective actions for findings as needed.

c. Conclusion

The inspector determined that the review and audit functions required by TS section 6.2 were completed by the RSC.

9. Maintenance Logs and Records

a. Inspection Scope (IP 69001, Section 02.011)

To determine that maintenance activities were conducted in accordance with facility requirements, the inspector reviewed:

- computer files documenting equipment history records for the facility
- selected preventive maintenance records for June 2021 through the present
- selected forms and records associated with various UWNR procedures including No. 100, “Surveillance Activities,” and No. 169, “Annual Maintenance Procedure”
- the two most recent annual operating reports issued by the facility

b. Observations and Findings

The inspector reviewed the maintenance that was completed in 2021, 2022, and to date in 2023. The inspector observed various maintenance and surveillance activities during this inspection. The inspector verified that select maintenance activities were conducted every month and others were completed annually as required by facility procedures. The inspector noted that the majority of the annual maintenance was completed during the summer each year. The inspector confirmed that preventive maintenance items were also tracked and conducted as scheduled. Any problems found were addressed in accordance with the TSs, applicable procedures, or equipment manuals. The inspector verified that unscheduled maintenance or repairs were reviewed to determine if they required a 10 CFR 50.59 review.

c. Conclusion

The inspector determined that maintenance logs and records were maintained, and maintenance activities were conducted in accordance with procedural requirements.

10. Fuel Handling Logs and Records

a. Inspection Scope (IP 69001, Section 02.012)

To verify adherence to fuel handling, use, and inspection requirements specified in TS sections 3.1.6 and 4.1.5, the inspector reviewed:

- various UWNR procedures and associated records
- selected operating records for June 2021 through the present
- core status boards located at the reactor pool top and in the control room and the associated fuel element/bundle map

b. Observations and Findings

The inspector confirmed that procedures and controls specified for fuel handling operations were established and followed. The inspector observed fuel handling and fuel inspection activities during this inspection. The inspector verified that the fuel elements in the core and in storage were inspected annually as required by TSs. The inspector noted that the results of the inspections were recorded and comments on the condition of each element were noted. The inspector also confirmed that the various fuel movements were completed using fuel movement log sheets.

c. Conclusion

The inspector determined that the reactor fuel movements and inspections were completed in accordance with procedure and TS sections 3.1.6 and 4.1.5.

11. Exit Meeting Summary

The inspection scope and results were summarized on June 15, 2023, with licensee management and staff. The inspector discussed the findings for each area reviewed. The licensee acknowledged the results of the inspection.

PARTIAL LIST OF PERSONS CONTACTED

Licensee Personnel

R. Agasie	Reactor Director and Senior Reactor Operator
C. Edwards	Reactor Supervisor and Senior Reactor Operator
A. Holden	Reactor Operator
D. Mancheski	Reactor Operator

Other Personnel

P. Wilson	Chair, Reactor Safety Committee and Chair of the Department of Engineering Physics, College of Engineering, University of Wisconsin-Madison

INSPECTION PROCEDURES USED

IP 69001 Class II Research and Test Reactors

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

None

Closed

None