



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

July 27, 2022

Dr. Mary Lou Dunzik-Gougar
Reactor Administrator
Idaho State University
Professor of Nuclear Engineering
921 S. 8th Avenue, MS 8060
Pocatello, ID 83209-8060

SUBJECT: IDAHO STATE UNIVERSITY – U.S. NUCLEAR REGULATORY COMMISSION
ROUTINE INSPECTION REPORT NO. 05000284/2022201

Dear Dr. Dunzik-Gougar:

From June 13-16, 2022, the U.S. Nuclear Regulatory Commission (NRC) staff conducted an inspection at the Idaho State University Aerojet General Nucleonics-201 Modified Research Reactor Facility. The enclosed report documents the inspection results discussed on June 16, 2022, with you (via Zoom) Jonathan Scott, Reactor Supervisor; Dr. Jay Kunze, Professor Emeritus and member of the Reactor Safety Committee (via Zoom); Mason Jaussi, campus Radiation Safety Officer (via Zoom); and, Kishor Paudel, Assistant Radiation Safety Officer (via Zoom).

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 the inspection, no findings of significance were identified. No response to this letter is required.

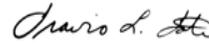
In accordance with Title 10 of the *Code of Federal Regulations*, Section 2.390, "Public inspections, exemptions, requests for withholding," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from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

M. Dunzik-Gougar

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Should you have any questions concerning this inspection, please contact Craig Bassett at (240) 535-1842, or by email to Craig.Bassett@nrc.gov.

Sincerely,



Signed by Tate, Travis
on 07/27/22

Travis 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. 50-284
License No. R-110

Enclosure:
As stated

Idaho State University

Docket No. 50-284

cc:

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Boise, ID 83606

Test, Research and Training
Reactor Newsletter
Attention: Ms. Amber Johnson
Dept. of Materials Science and Engineering
University of Maryland
4418 Stadium Drive
College Park, MD 20742-2115

SUBJECT: IDAHO STATE UNIVERSITY – U.S. NUCLEAR REGULATORY COMMISSION
ROUTINE INSPECTION REPORT NO. 05000284/2022201 DATED: JULY 27,
2022

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

Docket No.: 50-284

License No.: R-110

Report No: 05000284/2022201

Licensee: Idaho State University

Facility: AGN-201M Research Reactor Facility

Location: Pocatello, Idaho

Dates: June 13-16, 2022

Inspector: Craig Bassett

Approved by: Travis 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

Idaho State University
Aerojet General Nucleonics-201 Modified
Research Reactor Facility
Inspection Report No. 05000284/2022201

This routine, announced inspection included onsite review of selected aspects of the Idaho State University (ISU, the licensee) Class II research reactor safety program including: (1) organization and staffing; (2) procedures; (3) health physics; (4) design changes; (5) committees, audits and reviews; (6) emergency planning, and (7) transportation activities since the last U.S. Nuclear Regulatory Commission (NRC) inspection of these areas. The 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 licensee's organization structure and staffing were in compliance with requirements specified in the technical specifications (TSs).

Procedures

- Facility procedural review, revision, control, and implementation satisfied TS requirements.

Health Physics

- The facility radiation protection program was implemented and satisfied the regulatory and TS requirements.

Design Changes

- The design change program developed and implemented by the licensee was in accordance with Title 10 of the *Code of Federal Regulations* (10 CFR) 50.59, "Changes, tests and experiments," guidance.

Committees, Audits and Reviews

- The Reactor Safety Committee (RSC) was meeting at least annually as required by the TSs and completed the review and audit program.

Emergency Planning

- The emergency preparedness program was conducted in accordance with the Emergency Plan (E-Plan) and implementing procedures.

Transportation Activities

- No radioactive material was shipped from the reactor facility under the reactor license during the past several years.

REPORT DETAILS

Summary of Facility Status

The ISU Aerojet General Nucleonics-201 Modified (AGN-201M) Research Reactor Facility, licensed to operate at a maximum steady-state thermal power of 5 watts, continued to operate in support of operator training, surveillance, experiments, and laboratory work. During the inspection, the reactor was not operated.

1. Organization and Staffing

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

The inspector reviewed the following regarding the licensee's organization and staffing to ensure that the requirements of the TS Sections 6.1 and 6.2 were met:

- organizational structure and staffing for the facility
- administrative controls and management responsibilities
- ISU AGN-201M reactor facility master logs for the periods from March 2020 through the present
- ISU AGN-201M reactor facility annual operating report for calendar year (CY) 2019, dated June 29, 2020
- ISU AGN-201M reactor facility annual operating report for CY 2020, dated July 28, 2021

b. Observations and Findings

Through document review and licensee interviews, the inspector found that no changes occurred in the organizational structure since the last NRC inspection in July 2021 and that the organization was as stipulated in TS Section 6.1. The inspector verified that individuals occupying the various management, operations, and safety committee positions met the qualifications specified in the TS.

c. Conclusion

The inspector determined that the organization and staffing at the facility met the requirements specified in the TSs.

2. Procedures

a. Inspection Scope (IP 69001, Section 02.03)

To ensure the requirements of TS Section 6.6 were met, the inspector reviewed the following:

- various ISU AGN-201M operations, maintenance, and surveillance procedures
- ISU Nuclear Engineering Laboratory Administrative Procedure, AP-ISU-NEL-001, "10 CFR 50.59 Evaluations," Revision 1

b. Observations and Findings

The inspector found that the required procedures were in place for the current facility operations. The inspector noted that the licensee developed a procedure for completing 10 CFR 50.59 reviews and evaluations and confirmed that the various existing procedures were revised, updated, and rewritten. The inspector verified that the revised procedures were submitted to the RSC for review and approval as required by the TSs.

c. Conclusion

The inspector determined the procedural review, revision, control, and implementation program satisfied the TS requirements.

3. Health Physics

a. Inspection Scope (IP 69001, Section 02.07)

To ensure the requirements of 10 CFR Part 19, "Notices, Instructions and Reports to Workers: Inspection and Investigations," and 10 CFR Part 20, "Standards for Protection against Radiation," and TS Sections 3.4, 4.4, and 6.9 were met, the inspector observed and reviewed selected aspects of the following:

- radiological signs and postings in and around the reactor facility
- reactor facility personnel dosimetry records for the past 3 years
- radiation safety officer (RSO) annual reports for the past 2 years
- "Idaho State University Radiation Safety Manual," Revision 13
- "Radiation Safety – Refresher Training Study Guide," Revision 08/07
- maintenance and calibration records of facility radiation monitoring equipment
- ISU AGN-201M reactor facility annual operating reports for the past 2 years
- various checklist forms completed by ISU Environmental Health and Safety (EH&S) department technicians documenting radiation and contamination surveys of the reactor and associated labs for the past 2 years
- "Idaho State University's Determination of Exposure to Individual Members of the Public," for CYs 2020 and 2021

b. Observations and Findings

(1) Surveys, Postings, and Notices

The inspector noted that the monthly surveys were completed by the campus EH&S department personnel and daily surveys were completed by licensee personnel. The inspector verified that the results of the surveys were documented and evaluated and met the requirements of 10 CFR Part 20 and TS 4.4.

During tours of the facility, the inspector verified that the caution signs and postings were in place and that the controls established for the controlled areas were as required by 10 CFR Part 20. The inspector confirmed that copies of NRC Form 3, "Notice to Employees," were posted at the facility as required by 10 CFR 19.11, "Posting of notices to workers," and were the current version.

(2) Dosimetry and Radiation Monitoring Equipment Calibration

The inspector noted that the licensee used optically stimulated luminescence dosimeters for whole body exposure monitoring and thermoluminescent dosimeter (TLD) finger rings for monitoring radiation exposure of the extremities. The inspector confirmed that the exposures at the facility for the past 3 years were well within 10 CFR Part 20 limitations.

The inspector confirmed that the portable survey meters and fixed radiation monitors were calibrated annually as required by TS 4.4. The inspector verified that the records were maintained and reviewed and that the calibration frequencies also met the requirements established in the applicable EH&S procedures.

(3) Radiation Protection Program and ALARA Policy

The inspector noted that the licensee's Radiation Protection Program and as low as reasonably achievable (ALARA) Policy were established in various ISU EH&S documents including: (1) the Radiation Procedures Manual and associated procedures, and (2) the "ISU Radiation Safety Manual." The inspector confirmed that the facility radiation protection program was reviewed annually, as required by 10 CFR 20.1101, "Radiation protection programs," paragraph (c). The inspector verified that the ALARA program provided guidance for keeping doses low and was consistent with the regulation in 10 CFR Part 20.

(4) Radiation Worker Training

The inspector confirmed that all university employees and students who might receive a dose greater than ten percent of the annual occupational dose limits, including licensee staff, were required to receive training in radiation protection. The inspector reviewed documentation of the training provided to licensee staff members and verified that the current staff members received the required initial and annual refresher training. The inspector verified that the personnel training program satisfied requirements in 10 CFR 19.12, "Instruction to workers."

(5) Environmental Monitoring and Effluents

The inspector noted that the airborne concentrations of gaseous releases were calculated by the licensee. The inspector confirmed that the calculations demonstrated gaseous releases were well within the concentrations stipulated in 10 CFR Part 20, Appendix B, Table 2. The results were acceptably documented in the facility annual reports, as required by the TSs. The inspector verified that the calculated dose rate to the public, as a result of the gaseous releases, was below the dose constraint established in 10 CFR 20.1101(d). The inspector confirmed that there were no radioactive liquid releases from the facility to the sanitary sewer within the past 2 years; solid waste was transferred from the facility to the campus EH&S department during that period in accordance with procedure.

The inspector confirmed that on-site and off-site gamma radiation monitoring was completed using environmental TLDs in accordance with the applicable university procedures. The data indicated that there were no unusual dose rates in the areas surrounding the facility and that there were no measurable doses above any

regulatory limits. The inspector verified these results were also reported in the facility annual reports.

c. Conclusion

The inspector determined that the Radiation Protection Program implemented by the licensee satisfied regulatory and TS requirements.

4. Design Changes

a. Inspection Scope (IP 69001, Section 02.08)

To ensure that the requirements of TS Sections 6.4.2 and 6.5 were met, the inspector reviewed the following:

- RSC meeting minutes for meetings held for the past 3 years
- ISU AGN-201M reactor facility master logs for the period from December 2019 to the present
- ISU AGN-201M reactor facility annual operating reports for the past 2 years
- 10 CFR 50.59 screen and evaluation forms for 2020 through 2022

b. Observations and Findings

The inspector confirmed that the licensee initiated facility changes since the last inspection and screened and evaluated them according to their 10 CFR 50.59 procedure. The inspector found that the licensee's screening and evaluation process to be in accordance with 10 CFR 50.59 regulation.

c. Conclusion

The inspector determined that the design change program developed by the licensee was in accordance with 10 CFR 50.59 regulation.

5. Committees, Audits and Reviews

a. Inspection Scope (IP 69001, Section 02.09)

To ensure that the requirements of TS Section 6.4 were met, the inspector reviewed the following:

- completed audits and reviews documented in RSC meeting minutes
- RSC meeting minutes for meetings held on January 21, 2020, February 17, 2021, and May 25, 2022
- ISU AGN-201M reactor facility annual operating reports for the past 2 years

b. Observations and Findings

The inspector verified that the RSC met at least once per CY and that a quorum was present, as required by TSs. The inspector confirmed that the topics considered during the meetings were appropriate and that members of the RSC completed the audits and reviews required by TS 6.4.

c. Conclusion

The inspector determined that the RSC met at least annually and conducted the audits and reviews required by the TSs.

6. Emergency Planning

a. Inspection Scope (IP 69001, Section 02.10)

To ensure that the licensee was implementing the various aspects of their emergency preparedness program, as stipulated in the E-Plan for ISU dated August 5, 2016, the inspector reviewed selected aspects of:

- documentation of emergency drills and critiques
- E-Plan implementing procedures, audits, and audit responses
- emergency locker inventory sheets documenting maintenance of emergency response supplies, equipment, and instrumentation
- reactor facility emergency notification roster dated July 13, 2020
- memorandum of understanding (MOU) with offsite support agencies including: Portneuf Medical Center dated September 8, 2021, City of Pocatello (for Fire and Police support) dated August 8, 2021, and Idaho State Police dated August 6, 2021

b. Observations and Findings

The inspector verified that the current version of the E-Plan approved for use at the facility was Revision 7, dated August 5, 2016, and that the plan and implementing procedures were audited and reviewed biennially as required by the TS. The inspector noted that the audits were conducted, and the licensee addressed any problems identified. The inspector confirmed that the MOU agreements with off-site response organizations were maintained and updated biennially.

The inspector confirmed that the emergency supplies, instrumentation, and equipment were maintained and controlled as required in the E-Plan. Annual inspections and inventories of the equipment were completed and documented as well.

The inspector verified that emergency drills were conducted annually as required by the E-Plan and critiques were held following the drills. The inspector noted that the drills often included participants from the reactor staff, City of Pocatello Fire Department, Portneuf Medical Center staff, and ISU Public Safety officers.

The inspector confirmed that the emergency training for the reactor staff and for response organization personnel (including ISU Public Safety staff) was conducted. This was typically done in conjunction with the annual drills. Through records review and interviews with various personnel, the inspector confirmed that the emergency responders were knowledgeable of the actions to take in case of an emergency.

The inspector, accompanied by the Reactor Supervisor, met with the Trauma and Emergency Medical Services Manager of the Portneuf Medical Center and other staff members. Various topics were discussed including training, participation in drills, support provided by the Idaho National Laboratory, and support of the ISU research reactor

facility. The inspector noted that hospital personnel were well trained, properly equipped, and knowledgeable of the actions to take in case of an emergency at the ISU AGN-201 reactor facility. From the visit, the inspector found that there was a good working relationship between reactor staff and hospital personnel.

c. Conclusion

The inspector determined that the emergency preparedness program was carried out in accordance with the E-Plan.

7. Transportation Activities

a. Inspection Scope (IP 86740)

To ensure compliance with the NRC regulatory and licensee procedural requirements for shipping or transferring licensed material were met, the inspector reviewed the following:

- radioactive material transfer records
- shipper training and certification records
- ISU AGN-201M reactor facility master logs for the period from December 2019 to the present
- ISU AGN-201M reactor facility annual operating reports for the past 2 years

b. Observations and Findings

Through records review and discussions with licensee personnel and the campus RSO, the inspector verified that the licensee did not ship any radioactive material from the facility under the reactor license in recent years. The inspector confirmed that any reactor-produced radioactive material was transferred to the campus broadscope license and shipped under that license, transferred to other authorized users on campus, or maintained at the reactor facility for use in laboratories in accordance with procedure.

The inspector also verified that no reactor staff members were authorized to ship radioactive material. If material needed to be shipped, a qualified EH&S designated shipper would process the shipment. The inspector noted that the EH&S personnel who were qualified shippers were certified within the past 3 years.

c. Conclusion

The inspector determined no radioactive material was shipped from the reactor facility under the reactor license during the past several years.

8. Follow-up on Previously Identified Items

a. Inspection Scope (IP 92702)

The inspector reviewed the licensee's actions taken in response to a previously identified Inspector Follow-up Item (IFI).

b. Observation and Findings

During an inspection in July 2021, the inspector noted that the annual inspections and inventories of the equipment were required by the E-Plan. The campus RSO indicated that he was developing an inventory list but it was not yet available. The licensee was informed that the completion of an inventory list and documentation of the completed inventories would be considered by the NRC as an IFI and would be reviewed during a future inspection (IFI 05000284/2021201-02).

During this inspection, the inspector found that, as noted in Paragraph 6 above, annual inspections and inventories of emergency equipment were completed and documented as required by the E-Plan. This issue is considered closed.

c. Conclusion

One IFI was reviewed and is considered closed.

9. Exit Meeting Summary

The inspection scope and results were summarized by the inspector on June 16, 2022, with licensee representatives. The inspector discussed the findings for each area reviewed. The licensee acknowledged the results of the inspection and did not identify any information as proprietary.

PARTIAL LIST OF PERSONS CONTACTED

Licensee Personnel

M. Dunzik-Gougar	Reactor Administrator (by Zoom)
J. Kunze	Member, RSC, and Former Reactor Administrator (by Zoom)
T. Pollock	Senior Reactor Operator
J. Scott	Reactor Supervisor

Other Personnel

M. Jaussi	Radiation Safety Officer, Radiation Safety Department, ISU
G. Vickers	Manager, Trauma and Emergency Medical Services, Portneuf Medical Center, City of Pocatello

INSPECTION PROCEDURES USED

IP 69001	Class II Research and Test Reactors
IP 86740	Inspection of Transportation Activities
92702	Follow-up

ITEMS OPENED, CLOSED, AND DISCUSSED

OPENED:

None

CLOSED:

05000284/2021201-02	IFI	Follow-up to ensure the licensee completes an annual inventory of emergency supplies and documents the completion of those inventories.
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