



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

January 10, 2020

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
INSPECTION REPORT NO. 05000284/2020201

Dear Dr. Dunzik-Gougar:

From December 3-4, 2019, the U.S. Nuclear Regulatory Commission (NRC) conducted an inspection at the Idaho State University Aerojet-General Nucleonics-201M Research Reactor Facility. The enclosed report documents the inspection results, which were discussed on December 4, 2019, with you, and members of your staff.

The inspection examined activities conducted under your license as they relate to public health and safety, compliance with the Commission's rules and regulations, and compliance 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 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 Mr. Kevin Roche at (301) 415-1554 or by electronic mail at Kevin.Roche@nrc.gov.

Sincerely,

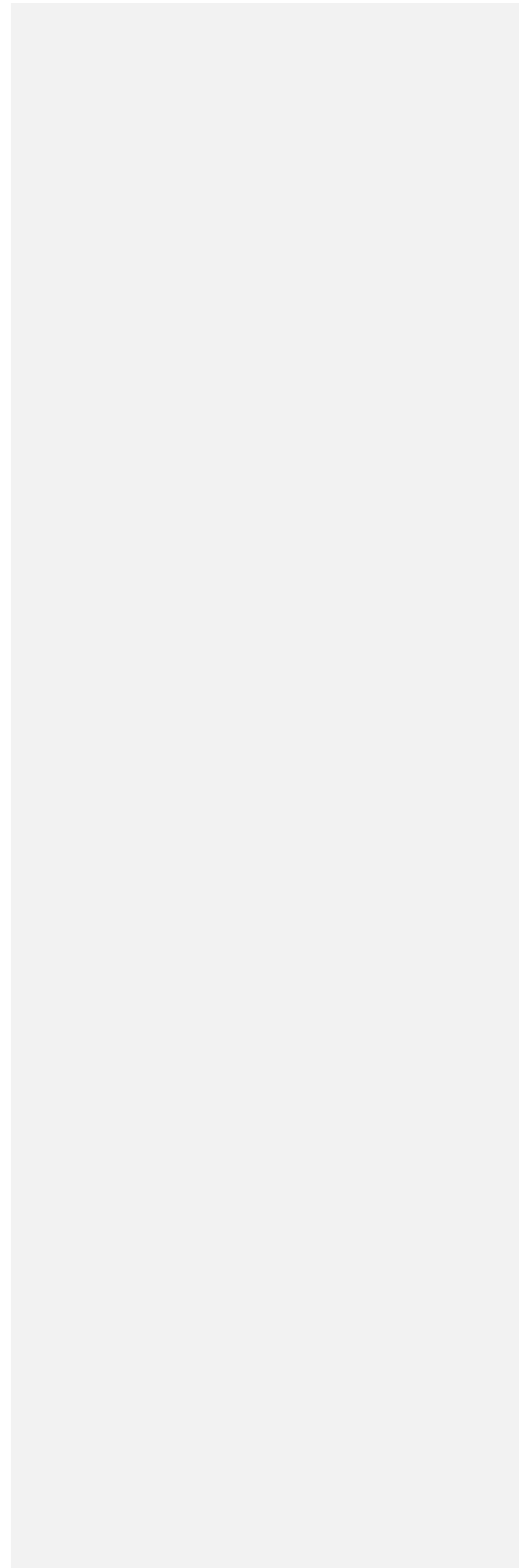
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Elizabeth Reed, Acting Chief
Non-Power Production and Utilization Facility
Oversight Branch
Division of Advanced Reactors and Non-Power
Production and Utilization Facilities
Office of Nuclear Reactor Regulation

Docket No. 50-284
License No. R-110

Enclosure:
As stated

cc: See next page



Idaho State University

Docket No. 50-284

cc:

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Idaho State University
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John Longley, Radiation Safety Officer
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Director
Idaho Dept. of Environmental Quality
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Boise, ID 83606

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

M. Dunzik-Gougar

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SUBJECT: IDAHO STATE UNIVERSITY – U.S. NUCLEAR REGULATORY COMMISSION
INSPECTION REPORT NO. 05000284/2020201, DATE: JANUARY 10, 2020

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

Docket No. 50-284

License No. R-110

Report No. 50-284/2020-201

Licensee: Idaho State University

Facility: Aerojet-General Nucleonics-201M Research Reactor Facility

Location: Pocatello, Idaho

Dates: December 3-4, 2019

Inspector: Kevin Roche

Project Manager: Duane Hardesty

Approved by: Elizabeth Reed, Acting 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-201M Research Reactor Facility
Inspection Report No. 05000284/2020201

The primary focus of this routine, announced inspection included onsite review of selected aspects of Idaho State University's (the licensee's) Class II research reactor safety program design changes. The licensee's program was acceptably directed toward the protection of public health and safety and was generally in compliance with the U.S. Nuclear Regulatory Commission (NRC) requirements.

Design Changes

- The Aerojet-General Nucleonics (AGN) console upgrade that had been initiated is following the Title 10 of the *Code of Federal Regulations* (10 CFR) 50.59, "Changes, tests and experiments," regulation with additional effort required on the part of the licensee to be completed successfully.

REPORT DETAILS

Summary of Facility Status

The Idaho State University (ISU) AGN-201M Research Reactor Facility, licensed to operate at a maximum steady-state thermal power of 5 watts, continued to be operated in support of operator training, surveillance, experiments, and laboratory work. During the inspection the reactor was not operated due to on-going console replacement testing.

1. Design Changes

a. Inspection Scope (IP 92701, 69001-Section 02.08)

In order to verify whether console upgrade project was consistent with the licensee's 10 CFR 50.59 processes and procedures, the inspector reviewed:

- "Appendix A to Facility Operating License No. R-110 Technical Specifications for Idaho State University AGN-201 M Reactor (Serial No. 103) Docket No. 50-284," Amendment No. 7, February 2011
- "Safety Analysis Report Idaho State University AGN-201M Research Reactor License No. R-110 Docket No. 50-284," ISU January 2003
- "Hazards Summary Report for the AGN-201 Reactor Aerojet-General Nucleonics" by the AGN staff, August 1956
- Daniels, Maxwell James, 2017, "Design and Implementation of Safety Channels for the Idaho State University AGN-201M Nuclear Reactor Modern Control Console," M.S. Thesis: ISU, Pocatello, Idaho
- Nagarajan, Ashoak Niranch, unpublished, "Design and Construction of the Control Console for the AGN-201 Reactor," Project Report: ISU, Pocatello, Idaho
- SCH-ISU-NEL-001, 2018, "AGN 201: Test Frequency Generator Module," Revision 1, October 2018
- SCH-ISU-NEL-002, 2018, "AGN 201: Channel 1 Module," Revision 1, October 2018
- SCH-ISU-NEL-003, 2018, "AGN 201: Channel 2 Module," Revision 1, October 2018
- SCH-ISU-NEL-004, 2018, "AGN 201: Channel 3 Linear Amp Module," Revision 1, October 2018.
- SCH-ISU-NEL-005, 2018, "AGN 201: Channel 3 Integrator Module," Revision 1, October 2018
- SCH-ISU-NEL-006, 2018, "AGN 201: Channel 1 Module," Revision 1, October 2018
- SCH-ISU-NEL-007, 2018, "AGN 201: Interlock Bus & Magnet Module," Revision 0, October 2018
- SCH-ISU-NEL-008, 2018, "AGN 201: Channel 1 Block Diagram," Revision 0, October 2018
- SCH-ISU-NEL-009, 2018, "AGN 201: Channel 2 Block Diagram," Revision 0, October 2018
- SCH-ISU-NEL-010, 2018, "AGN 201: Channel 3 Block Diagram," Revision 0, October 2018

- SCH-ISU-NEL-011, 2018, "AGN 201: Interlock & Magnet Block Diagram," Revision 0, October 2018
- SCH-ISU-NEL-013, 2018, "AGN 201: Period Calculator," Revision 0, October 2018
- AP-ISU-NEL-001, 2018, "10 CFR 50.59 Evaluations," ISU Nuclear Engineering Laboratory Administrative Procedure, Revision 0, July 2018

b. Observations and Findings

The inspector noted that the licensee had completed a significant amount of work replacing the reactor control console. However, the licensee has substantial amount of technical work to complete including integrated systems testing, a complete 10 CFR 50.59 evaluation and supporting documentation submittal for the Reactor Safety Committee review, operating procedure updates, and development of a start-up plan. It appeared reasonable to the inspectors that licensee followed their procedures up to the date of the inspection for modifications under 10 CFR 50.59 for this specific application. The inspector did identify minor issues, mostly administrative in nature, that were communicated to the licensee. Since the 10 CFR 50.59 evaluation for the console replacement project was not complete, the licensee was informed that completion will be tracked by the NRC using an inspector follow-up item (IFI) and reviewed during a future inspection (IFI 05000284/2020201-1).

c. Conclusion

Various changes had been initiated and/or completed at the facility during the past two years but none required a license amendment.

2. **Exit Interview**

The inspection scope and results were summarized on December 4, 2019, with licensee representatives. The inspector discussed the findings for each area reviewed. The licensee acknowledged the results of the inspection and did not identify as proprietary any of the material provided to or reviewed by the inspector during the inspection.

PARTIAL LIST OF PERSONS CONTACTED

Licensee

M. Dunzik-Gougar Reactor Administrator and Interim Reactor Supervisor
J. Kunze Professor Emeritus, Idaho State University and member of the RSC

Other Personnel

William Phoenix Console Project Consultant
Stuart Bondurant Console Project Consultant

INSPECTION PROCEDURES USED

IP 69001 Class II Research and Test Reactors
IP 92701 Follow-up on Previously Identified Issues

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened:

IFI 5000284/2020201-01 Follow-up on the licensee's actions to ensure that the console replacement is completed in accordance with the licensee's program and 10 CFR 50.59.

Closed:

None

LIST OF ACRONYMS USED

10 CFR Title 10 of the *Code of Federal Regulations*
AGN-201M Aerojet General Nucleonics-201M
IFI Inspector Follow-up Item
IP Inspection Procedure
ISU Idaho State University
NRC Nuclear Regulatory Commission