

August 25, 2016

Dr. Mary-Lou Dunzik-Gougar
Reactor Administrator
Idaho State University
P.O. Box 8060
Pocatello, ID 83209-8060

SUBJECT: IDAHO STATE UNIVERSITY - NRC SAFETY INSPECTION REPORT
NO. 50-284/2016-202

Dear Dr. Dunzik-Gougar:

On July 25-27, 2016, the U.S. Nuclear Regulatory Commission (NRC or Commission) completed an inspection at the Idaho State University AGN-201M Research Reactor Facility. The enclosed report documents the inspection results, which were discussed on July 27, 2016, with you, members of your staff, and members of the Reactor Safety Committee.

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 activities, and interviewed personnel. Based on the results of this inspection, no findings of significance were identified.

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 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

- 2 -

Should you have any questions concerning this inspection, please contact Ossy Font at 301-415-2490 or by electronic mail at Ossy.Font@nrc.gov.

Sincerely,

(RA by Gary M. Morlang for)

Anthony J. Mendiola, Chief
Research and Test Reactors Oversight Branch
Division of Policy and Rulemaking
Office of Nuclear Reactor Regulation

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

Enclosure:
As stated

cc w/encl.: See next page

M. Dunzik-Gougar

- 2 -

Should you have any questions concerning this inspection, please contact Ossy Font at 301-415-2490 or by electronic mail at Ossy.Font@nrc.gov.

Sincerely,

(RA by Gary M. Morlang for)

Anthony J. Mendiola, Chief
Research and Test Reactors Oversight Branch
Division of Policy and Rulemaking
Office of Nuclear Reactor Regulation

Docket No. 50-284

License No. R-110

Enclosure:

As stated

cc w/encl.: See next page

DISTRIBUTION:

PUBLIC

PRTB Reading File

RidsNrrDprPrtb

RidsOgcMailCenter

OFont, NRR

XYin, NRR

RidsNrrDprPrta

DHardesty, NRR

ADAMS Accession No: ML16235A062

***concurrence via e-mail**

NRC-002

OFFICE	NRR/DPR/PROB/RI*	NRR/DPR/PROB/LA*	NRR/DPR/PROB/BC
NAME	OFont	NParker (ELee for)	AMendiola (GMorlang for)
DATE	08/25/2016	08/23/2016	08/25/2016

OFFICIAL RECORD COPY

Idaho State University

Docket No. 50-284

cc:

Dr. Cornelis J. Van der Schyf
Idaho State University
Vice President for Research and
Dean of the Graduate School
Mail Stop 8130
Pocatello, ID 83209-8060

Dr. Wendland Beezhold
Idaho State University
Department Chair of Physics, Nuclear and
Electrical Engineering
Physics Department
Campus Box 8060
Pocatello, ID 83209-8106

Dr. Richard Brey
Idaho State University
Radiation Safety Officer
Technical Safety Office
Idaho State University
P.O. Box 8106
Pocatello, ID 83209-8106

Director
Idaho Dept. of Environmental Quality
1410 North Hilton
Boise, ID 83606

Test, Research and Training
Reactor Newsletter
202 Nuclear Sciences Center
University of Florida
Gainesville, FL 32611

Maxwell Daniels, Reactor Supervisor
Idaho State University
Campus Box 8060
Pocatello, ID 83209-8060

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

Docket No: 50-284

License No: R-110

Report No: 50-284/2016-202

Licensee: Idaho State University

Facility: AGN-201M Reactor Facility

Location: Pocatello, Idaho

Dates: July 25-27, 2016

Inspector: Ossy Font

Approved by: Anthony J. Mendiola, Chief
Research and Test Reactors Oversight Branch
Division of Policy and Rulemaking
Office of Nuclear Reactor Regulation

Enclosure

EXECUTIVE SUMMARY

Idaho State University
AGN-201M Research Reactor Facility
NRC Inspection Report No.: 50-284/2016-202

The primary focus of this routine, announced inspection included onsite review of selected aspects of Idaho State University (the licensee's) Class II research reactor safety program including: (1) procedures; (2) experiments; (3) health physics; (4) design changes; (5) committees, audits, and reviews; and (6) transportation of radioactive materials since the last U.S. Nuclear Regulatory Commission (NRC) inspection of these areas. The licensee's programs were acceptably directed toward the protection of public health and safety and in compliance with NRC requirements.

Procedures

- Facility procedural review, revision, control, and implementation satisfied technical specification (TS) requirements.

Experiments

- Experiments were being implemented in accordance with procedures and standard practice.

Health Physics

- Radiation safety is being observed at the facility.

Design Changes

- Licensee's design change program was being implemented as required.

Committees, Audits and Reviews

- The review and audit program was being conducted acceptably by the Reactor Safety Committee (RSC).

Transportation of Radioactive Materials

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

REPORT DETAILS

Summary of Plant Status

The Idaho State University (ISU, the licensee) Aerojet General Nucleonics-201M (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 operational.

1. Procedures

a. Inspection Scope (IP 69001)

To ensure that the requirements of TS Section 6.6, "Procedures," was being met, the inspector reviewed the following:

- AGN-201 Operating Procedure (OP) #1, Rev. 4, dated April 30, 2014
- ISU AGN-201M Reactor Facility Master Log
- Form, "ROL-101"
- Form, "Isotope Production and Disposition"
- Selected AGN-201 Experimental Procedures (EP), Maintenance and Surveillance Procedures (MP and SP), and Radiation Protection Procedures
- ISU AGN-201M General Rules, Rev. 4, dated September 19, 1994

b. Observations and Findings

The licensee's procedures were generally found to be acceptable for current facility operations and the current staffing level. The inspector noted that one new procedure is being developed. This will be an administrative procedure on creating and updating procedures. Additionally, updates to surveillance procedures and the 50.59 procedure are in draft form and will be presented to the Reactor Safety Committee for review and approval as required by TS. In order to track this progress, the inspector opened Inspector Follow-Up Item (IFI) 50-284/2016-201-01. Additionally, the inspector noted that the OP-1 procedure referenced logbooks and log forms interchangeably and had some ambiguity as to when the reactor supervisor was required to sign the log forms. In order to track this progress, the inspector opened IFI 50-284/2016-201-02.

c. Conclusion

Procedural review, revision, control, and implementation satisfied TS requirements.

2. Experiments

a. Inspection Scope (IP 69001)

To ensure that the requirements of TS Section 6.7, "Experiments," was being met, the inspector reviewed the following:

- Selected AGN-201 EP
- AGN-201 OP #1, Rev. 4, dated April 30, 2014
- ISU AGN-201M Reactor Facility Master Log
- Form, "ROL-101"
- Form, "Isotope Production and Disposition"

b. Observations and Findings

Experiments are typically used for classwork and training. During the inspection, the inspector noted no new experiments since the last inspection. The inspector reviewed the experimental procedures and found no issues. The operations logs appropriately record experiments performed.

The facility performs a gold foil experiment to determine power level. The technical safety office (TSO) follows with a reactor full power survey. The most recent survey resulted in unexpected readings. Both the experiment and the survey, will be redone in order to verify that the determined power level is correct or needs to be adjusted. Currently, there is no concern that the licensed power level (5 watts) was exceeded since most experiments operate at low power levels, with only the full power survey coming close to 5 watts. In order to track this issue, the inspector opened IFI 50-284/2016-201-03.

c. Conclusion

Experiments were being implemented in accordance with licensee procedures and standard practice.

3. Health Physics

a. Inspection Scope (IP 69001)

To ensure the requirements of Title 10 of the *Code of Federal Regulations* (10 CFR) Part 20, "Standards for Protection Against Radiation," and TSs 3.4, "Radiation Monitoring, Control, and Shielding," 4.4, "Radiation Monitoring and Control," requirements were being met, the inspector reviewed the following:

- "ISU Radiation Safety Policy Manual," Rev. 9, dated January 2013
- "Radiation Laboratory Evaluation Checklist"
- "Radlab Contamination and Radiation Survey-RPR 11"
- "Reactor Full Power Survey"
- "Direct Reading Dosimetry Calibration"

- Dosimetry records for the past two years
- Records documenting the maintenance and calibration of radiation monitoring equipment for the past two years
- Contamination and radiation survey records for reactor for the past two years
- Radiological signs and postings
- ISU AGN-201M Reactor Facility Master Log
- Operations Logs for the past two years documenting Pre-Start checks, surveys, and reactor operations
- Annual Report for the past two years
- RSO Annual Report for the past two years

b. Observations and Findings

The inspector toured the facility and interviewed licensee personnel, observing practices regarding the use of dosimetry, radiation monitoring equipment, and placement of radiological postings and barriers and determined that they were appropriate.

The licensee currently has an interim RSO, but is in search of a permanent replacement. The previous RSO completed the annual audit, as required.

The licensee used a National Voluntary Laboratory Accreditation Program accredited vendor to process personnel dosimetry. The inspector noted that doses to facility personnel were below detectable levels. Environmental dosimetry were well within the 10 CFR Part 20 limits. Additionally, environmental radiation surveys, performed at the facility boundary at 100 percent power, were below the limit to the public.

The only gaseous waste of concern is Ar-41, calculated based on the reactor operation time for the year and a conservative power level approximation. The inspector found that for the past two years release was well below the 10 CFR Part 20 limit. The inspector confirmed that there had been no liquid or solid radioactive waste releases from the reactor facility during the past two years. Through observation of the facility, the inspector found no new potential release paths.

Initial and annual radiation safety refresher training were being completed, as required. Email reminders are sent to personnel and dosimetry badges are not issued if training is not completed.

The inspector reviewed the semi-annual calibration records and completed survey records and found them acceptable and completed within the required period. An IFI regarding the reactor full power survey was opened and discussed previously in the experiments section.

c. Conclusion

Radiation safety is being observed at the facility.

4. Design Changes

a. Inspection Scope (IP 69001)

To ensure that the requirements of TS Section 6.4.2, "Reviews," and 6.5, "Approvals," were being met, the inspector reviewed the following:

- Annual Report for the past two years
- RSC meeting minutes for the past two years

b. Observations and Findings

The facility had no changes since the last inspection. The licensee is developing and updating procedures and will perform a 10 CFR 50.59 review and submit them to the RSC for approval. The inspector discussed change approvals with the licensee, an area previously identified IFI 50-284/2014-201-01. The licensee's proposed path forward of identifying changes as major or minor seems acceptable. The IFI remained opened until approval by the RSC.

The screening process and administrative process that the facility uses to review and approve changes in accordance with 10 CFR 50.59 is acceptable.

c. Conclusion

Licensee's design change program was being implemented as required.

5. Committees, Audits and Reviews

a. Inspection Scope (IP 69001)

To ensure that the requirements of TS Section 6.4, "Reactor Safety Committee," was being met, the inspector reviewed the following:

- RSC meeting minutes for the past two years
- Completed audits and reviews
- Annual Report for the past two years

b. Observations and Findings

The inspector reviewed the RSC meeting minutes for the past two years. The minutes showed the committee met at least once per calendar year and that a quorum was present, as required by TS. The topics considered during the meetings were appropriate.

The inspector noted that members of the safety committee had completed the audits required by TS at the required periodicity. The inspector noted that the audit findings were acceptable and that the licensee generally responded and took corrective actions as needed.

c. Conclusion

The review and audit program was being conducted acceptably by the RSC.

6. Transportation

a. Inspection Scope (IP 86740)

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

- Annual Report for the past two years
- Shipper Certification

b. Observations and Findings

Through records review and discussions with licensee personnel, the inspector determined that the licensee has not shipped any radioactive material from the facility under the reactor license in recent years. It was noted that radioactive material produced in the reactor was either transferred to the campus broadscope license and shipped under that license, or 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 staff authorized to ship material had been certified within the past three years.

c. Conclusion

No radioactive material had been shipped from the reactor facility under the reactor license during the past several years.

7. Exit Meeting Summary

The inspection scope and results were summarized on July 27, 2016, 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

M. Daniels	Reactor Supervisor
R. Brey	Interim Radiation Safety Officer, TSO, ISU

INSPECTION PROCEDURES USED

IP 69001	Class II Research and Test Reactors
IP 86740	Inspection of Transportation Activities

ITEMS OPENED, CLOSED, AND DISCUSSED

OPENED:

IFI 50-284/2016-201-01	Follow-up on the new administrative procedure and the updated surveillance and 50.59 procedures.
IFI 50-284/2016-201-02	Follow-up on the update to the OP-1 procedure to clarify log references and reactor supervisor signature requirements.
IFI 50-284/2016-201-03	Follow-up on the results of the gold foil experiment and the full power survey used to determine reactor power level.

CLOSED:

DISCUSSED:

IFI 50-284/2012-201-01	Follow-up on the licensee's commitment of performing a new 10 CFR 50.59 review of the proposed digital reactor console.
IFI 50-284/2014-201-01	Follow-up on the licensee's 50.59 approval process.

LIST OF ACRONYMS USED

10 CFR	Title 10 of the <i>Code of Federal Regulations</i>
ADAMS	Agencywide Documents Access and Management System
AGN-201M	Aerojet General Nucleonics-201M
EP	Experimental Procedures
IFI	Inspection Follow-up Item
IP	Inspection Procedure
ISU	Idaho State University
MP	Maintenance Procedures
NRC	U.S. Nuclear Regulatory Commission
OP	Operating Procedure
Rev.	Revision
RSC	Reactor Safety Committee
RSO	Radiation Safety Officer
SP	Surveillance Procedures
TS	Technical Specification
TSO	Technical Safety Office