July 24, 2003

Dr. Jay Kunze, Dean
College of Engineering
Idaho State University Box 8063
Pocatello, ID 83209

SUBJECT: NRC INSPECTION REPORT NO. 50-284/2003-201

Dear Dr. Kunze:

This letter refers to the inspection conducted on May 28 to 29, 2003, at your Idaho State University Aerojet-General Nucleonics-201 M Reactor Facility. The inspection included a review of activities authorized for your facility. The enclosed report presents the results of that inspection.

Areas examined during the inspection are identified in the report. Within these areas, the inspection consisted of selective examinations of procedures and representative records, interviews with personnel, and observations of activities in progress. Based on the results of this inspection, no safety concerns or noncompliances of NRC requirements were identified. No response to this letter is required.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at (the Public Electronic Reading Room) http://www.nrc.gov/reading-rm/adams.html.

Should you have any questions concerning this inspection, please contact Stephen Holmes at 301-415-8583.

Sincerely,

/RA/

Patrick M. Madden, Section Chief
Research and Test Reactors Section
New, Research and Test Reactors Program
Division of Regulatory Improvement Programs
Office of Nuclear Reactor Regulation

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

Enclosure: NRC Inspection Report No. 50-284/2003-201

cc w/encl.: Please see next page

cc:

State Planning and Community
Affairs Agency
State of Idaho
Boise, ID 83720

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

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U. S. NUCLEAR REGULATORY COMMISSION

Docket No:	50-284
License No:	R-110
Report No:	50-284/2003-201
Licensee:	Idaho State University
Facility:	Idaho State University Aerojet-General Nucleonics-201 M Reactor Facility
Location:	Lillibridge Engineering Building Pocatello, Idaho
Dates:	May 28 to 29, 2003
Inspector:	Stephen W. Holmes
Approved by:	Patrick M. Madden, Section Chief Research and Test Reactors Section New, Research and Test Reactors Program Division of Regulatory Improvement Programs Office of Nuclear Reactor Regulation

EXECUTIVE SUMMARY
Idaho State University Aerojet-General Nucleonics-201 M Reactor Facility
Inspection Report No. 50-284/2003/201

This routine, announced inspection included onsite review of various aspects of the licensee's programs concerning the conduct of operations and emergency preparedness as they relate to the licensee's Class 2 Aerojet-General Nucleonics-201 M research reactor. The licensee's programs were directed toward the protection of public health and safety and were in compliance with Nuclear Regulatory Commission requirements. No safety concerns or violations of regulatory requirements were identified.

Organization and Staffing

- The licensee's organization and staffing remain in compliance with the requirements specified in the Technical Specifications Sections 6.1 and 6.2.

Review and Audit Functions

- Reviews, audits, and oversight functions required by Technical Specifications Sections 6.1 and 6.4 were acceptably completed by the Reactor Safety Committee.

Radiation Protection Program

- The Radiation Protection and ALARA Programs being implemented by the licensee satisfied regulatory requirements.

- Postings met the regulatory requirements.

- Portable survey meters, radiation monitoring, and counting lab instruments were being maintained and calibrated as required.

- Personnel dosimetry was being worn as required and doses were well within the licensee's procedural action levels and Nuclear Regulatory Commission's regulatory limits.

- Surveys were being completed and documented as required by 10 CFR Part 20.1501(a), Technical Specifications, and licensee procedures.

Effluents

- Effluent monitoring satisfied license and regulatory requirements and releases were within 10 CFR 20.1101(d), 10 CFR 20.2003, and 10 CFR Part 20, Appendix B limits.

Transportation of Radioactive Materials

- The licensee did not ship any radioactive material under the reactor license.

Physical Security

- The licensee had implemented and was maintaining an adequate physical security program.

Emergency Preparedness

- The emergency preparedness program was being carried out in accordance with the Emergency Plan.

REPORT DETAILS

Summary of Plant Status

The licensee's five watt Aerojet-General Nucleonics (AGN) 201 M research reactor was not operational during this inspection. However, a review of the applicable records showed that the reactor was typically operated in support of classes, laboratory experiments, reactor system testing, reactor surveillances, and operator training.

1. Organization and Staffing

a. Inspection Scope (Inspection Procedure (IP) 69001)

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

- organization and staffing for the facility
- administrative controls and management responsibilities
- ANS 15.4 "Standards for Selection and Training of Personnel for Research Reactors"
- TS for Idaho State University (ISU) AGN-201 M Reactor, Amendment No. 5, dated August 18, 1997
- ISU AGN-201 M General Rules, dated September 19, 1994
- ISU AGN-201 M Operational Procedures No. 1, dated April 26, 1994
- ISU AGN-201 M Operational Procedures No. 2, dated April 26, 1994
- ISU AGN-201 M Reactor Facility Master Facility Log No. 2

b. Observations and Findings

Through discussions with licensee representatives the inspector determined that management responsibilities and the organization at the ISU AGN-201 M Reactor Facility had not changed since the previous NRC inspection (Inspection Report No. 50-284/2001-201). The inspector determined that the Reactor Administrator retained direct control and overall responsibility for management of the facility as specified in TS Section 6.1. The Reactor Administrator, currently the Dean of the College of Engineering, reported to the designated University Officer at ISU who is the University Vice President.

The licensee's current operational organization consisted of the Reactor Administrator and the Reactor Supervisor. These individuals were licensed to operate the reactor and were both Senior Reactor Operators as required by TS Section 6.1. There currently are no licensed Reactor Operators at the facility. The inspector confirmed that the Reactor Administrator and Supervisor also met the qualifications in TS Section 6.2. Students and others are sometimes employed on a part-time basis. This organization was consistent with that specified in Figure 1 of TS Section 6.1.

c. Conclusions

The licensee's staffing and organization met the requirements specified in TS Sections 6.1 and 6.2.

2. Review and Audit Functions

a. Inspection Scope (IP 69001)

To verify that the licensee had established and conducted reviews and audits as required in TS Section 6.4, the inspector reviewed:

- Reactor Safety Committee meeting minutes since April 2000
- the ISU Reactor Safety Committee Charter
- completed audits and reviews since April 2000
- TS for ISU AGN-201 M Reactor, Amendment No. 5, dated August 18, 1997

b. Observations and Findings

The inspector reviewed the Reactor Safety Committee (RSC) meeting minutes from April 2000 to the present. These meeting minutes showed that, as required by TS Section 6.4.1, the committee met at least once per calendar year and that a quorum was present. The topics considered during the meetings were appropriate and as stipulated in TS Section 6.1.6.

Through review of the RSC minutes the inspector confirmed that the RSC reviewed proposed changes in the license, violations, and audit reports as required by TS Section 6.4.2. The inspector also noted that, since the last NRC inspection, members of the safety committee had completed audits of various aspects of the reactor facility operations, programs, and procedures as required by TS Section 6.4.3. The audits were structured so that the various aspects of the licensee's operations and safety programs were reviewed annually. The inspector noted that the audits' findings were acceptable and that the licensee responded and took corrective actions as needed.

c. Conclusions

Reviews, audits, and oversight functions required by TS Sections 6.1 and 6.4 were acceptably completed by the RSC.

3. Radiation Protection Program

a. Inspection Scope (IP 69001)

The inspector reviewed the following to verify compliance with 10 CFR Part 20 and the applicable licensee TS requirements and procedures:

- health physics survey records for ISU AGN-201 M Reactor, April 2000 to present

- radiological signs and posting
- facility and equipment during tours
- dosimetry records April 2000 to present
- contamination and area radiation survey procedures April 2000 to present
- maintenance and calibration of radiation monitoring equipment April 2000 to present
- source certification documentation
- the Radiation Protection Program (RPP)
- ISU Radiation Safety Policy Manual (RSM), Revision 3, dated August 2000
- the ALARA Policy (RSM Section 3.5)
- the 2001 and 2002 Annual Reports
- TS for ISU AGN-201 M Reactor, Amendment No. 5, dated August 18, 1997
- ISU AGN-201 M General Rules, dated September 19, 1994
- ISU AGN-201 M Operational Procedures No. 1, dated April 26, 1994
- ISU AGN-201 M Operational Procedures No. 2, dated April 26, 1994
- ISU AGN-201 M Visitor Log and Register for Organized Groups and Tours
- ISU Environmental Laboratory Procedure "EML-96-09.1 Gamma Spectroscopy System Analyzer Procount 2000," Revision 2, dated June 22, 1999
- ISU Environmental Laboratory Procedure "EML-95-07 Operation and Calibration of the Beckman LS7500 and Wallac 1415 Liquid Scintillation Counters," dated July 24, 1999
- ISU Environmental Laboratory Procedure "EML-95-07 Operation and Calibration of Protean, SSI, and NMC Proportional Counters," Revision 3, dated May 11, 1999
- ISU Environmental Assessment Laboratory Procedure "EAL-2002-09 Operation and Calibration of the Beckman LS7500 Liquid Scintillation Counter," Revision 1, dated December 5, 2002
- ISU Environmental Assessment Laboratory Procedure "EAL-2002-05 Operation and Calibration of Protean Proportional Counter," Revision 0, dated July 30, 2002
- ISU Environmental Assessment Laboratory Procedure "EAL-2002-12 Calibration of Gamma Spectroscopy System," Revision 0, dated July 22, 2002

The inspector also toured the licensee's facility and observed the use of dosimetry and radiation monitoring equipment. Licensee personnel were interviewed as well.

b. Observations and Findings

(1) Radiation Protection Program

The licensee's RPP is established in the ISU RSM Section 1.0. Since inspected last (Inspection Report No. 50-284/2000-201) the RSM had been reviewed, revised, and reissued by the RSC as required by RSM Section 4.2. The licensee reviewed the RPP at least annually in accordance with 10 CFR 20.1101(c). This review and oversight was provided by the RSC as required by RSM Section 4.3.

The program included requirements that all personnel who had unescorted access to the facility receive initial and annual refresher training in radiation protection, policies, procedures, requirements, and facilities. The training is to be commensurate with the potential risk of exposure to the specific individual. The inspector verified that initial and annual refresher training had been provided to the

reactor staff. The training satisfied RSM 5.0 and 10 CFR Part 19 requirements. The inspector also confirmed that completion of the training was verified by each person's supervisor and by the Radiation Safety Office staff as required by RSM Section 5.0.

(2) ALARA Program

The ALARA Program was also outlined and established in RSM Section 3.5. The ALARA program provided guidance for keeping doses as low as reasonably achievable and was consistent with the guidance in 10 CFR Part 20.

(3) Postings and Notices

The inspector observed and determined that caution signs, postings and controls to radiation and controlled areas, including the Reactor Room, were acceptable for the hazards present and satisfied 10 CFR Part 20 Subparts G, I, and J requirements. The facility's radioactive material storage areas were properly posted as required by 10 CFR Part 20 Subparts I and J. No unmarked radioactive material was noted. The inspector observed licensee and visitor personnel and verified that they complied with the indicated precautions for access to the areas. The inspector confirmed that current copies of NRC Form-3 and notices to workers were posted in appropriate areas in the facility as required by 10 CFR Part 19.

(4) Radiation Monitoring Equipment

The calibration of the portable survey meters, radiation monitoring, and counting lab instruments were done at least annually by the Radiation Safety Office staff, contractor lab staffs, or certified contractors. The inspector confirmed that, with one exception, the licensee's calibration procedures and frequencies satisfied TS Section 4.4.a, RSM 9.0, and 10 CFR 20.1501(b) requirements, and the American National Standards Institute N323 "Radiation Protection Instrumentation Test and Calibration" or the instrument's manufacturers' recommendations. The inspector verified that the calibration sources used were traceable to the National Institute of Standards and Technology and that the sources' geometry and energies matched those used in actual detection/analyses. Records were maintained as required.

All instruments checked by the inspector had current calibrations appropriate for the types and energies of radiation they were used to detect and/or measure.

The Technical Safety Office staff indicated to the inspector that they believed they were doing a response check rather than an actual calibration of their neutron meters. The inspector reviewed their "response check" procedure, the manufacturers' recommendations for calibration, and the "response check" results since 1997. The inspector determined that, provided an adequate initial cross calibration had been performed between the factory calibrated meters and their neutron source, they were doing an acceptable secondary calibration of the meters.

Although they had found some documentation indicating such was the case, it was insufficient for the inspector to determine if an adequate initial cross calibration had been performed. The assistant radiation safety officer stated they were attempting to locate more documentation of the indicated cross calibrations. Aside, they were going to have the meters calibrated by a certified laboratory/contractor and perform and document a new cross calibration to insure the meters will be fully calibrated in the future. This will be followed up in a subsequent inspection as an unresolved item. (URI 50-284/2003-201-01)

(5) Dosimetry

The dosimetry program requirements and procedures had not changed since the last inspection. A National Voluntary Laboratory Accreditation Program-accredited vendor was used to provide dosimetry for personnel and area monitoring. The inspector confirmed that dosimetry was being issued to staff and visitors as required by RSM Sections 4.6 and 6.4, ISU AGN-201 M rules and procedures, and in accordance with 10 CFR 20.1502 requirements for individual monitoring. The licensee's program for declared pregnancies outlined in RSM Section 6.4 satisfied 10 CFR 20.1502 requirements. Dosimetry results were reviewed by the radiation safety officer and doses above the facility's ALARA limits (100 mRem) were investigated as required. The inspector's review of the licensee's radiological exposure records from 2000 to 2003 verified that occupational doses were within 10 CFR Part 20 and ISU RSM Section 3.4 limits. Most records showed no exposure above background.

The licensee did not require a respiratory protection program or planned special exposure program.

(6) Surveys

The various periodic contamination and annual radiation surveys were completed by the Radiation Safety Department and reactor staffs. Through records reviews and interviews with both staffs, the inspector determined that the contamination and annual radiation surveys were performed as required by TS Section 4.4.c, RSM Sections 6.3 and 7.2, and individual procedures. The inspector also verified that results were evaluated and corrective actions taken and documented as required when contamination levels exceeded Radiation Safety Procedure RPR 10B limits. Radiation survey results were used to verify the location of radiation and high radiation areas and ensure 10 CFR 20.1902 postings were accurate as noted in the Basis explanation for TS Section 4.4 requirements.

(7) Facility Tours

The inspector toured the Reactor Room, selected laboratories, and support areas. Control of radioactive material and control of access to radiation areas were acceptable. The inspector also determined that there were no measurable releases of gaseous or liquid radioactive material from the research reactor facility.

c. Conclusions

The inspector determined that, because; 1) postings met regulatory requirements, 2) portable survey meters, radiation monitoring, and counting lab instruments were being maintained and calibrated as required, 3) the personnel dosimetry program was acceptably implemented and doses were in conformance with licensee and 10 CFR Part 20 limits, 4) surveys were being completed and documented as required by 10 CFR Part 20.1501(a), TS, and licensee procedures, the RPP being implemented by the licensee satisfied regulatory requirements.

4. Effluent Monitoring

a. Inspection Scope (IP 69001)

The inspector reviewed selected aspects of:

- RSM, Revision 3, dated August 2000
- gaseous release calculations
- ISU TS Section 6.9.1 Annual Reports
- environmental dosimetry records
- ISU AGN-201 M Reactor Safety Analysis Report, dated November 1995

b. Observations and Findings

The inspector verified that radioactive liquid releases were infrequent and when done they were analyzed to ensure they were below 10 CFR 20.2003 and 10 CFR Part 20, Appendix B limits. There were no liquid releases since the last NRC inspection.

Gaseous discharges were not directly monitored due to the low reactor power levels. Estimates of the annual dose to the public from air emissions were calculated as outlined in Section 5 of the Facility's Safety Analysis Report. Releases meet 10 CFR Part 20, Appendix B limits and doses were well below the constraint limit specified in 10 CFR 20.1101(d).

c. Conclusions

Effluent monitoring satisfied license and regulatory requirements and releases were within 10 CFR 20.1101(d), 10 CFR 20.2003, and 10 CFR Part 20, Appendix B limits.

5. Transportation

a. Inspection Scope (IP 86740)

The inspector reviewed selected aspects of:

- RSM, Revision 3, dated August 2000
- radioactive materials shipping procedures

- radioactive material transportation and transfer records

b. Observations and Findings

Through records reviews and discussions with licensee personnel, the inspector determined that the licensee had not shipped any radioactive material from the reactor facility under the reactor license. Such material typically would be transferred to the ISU Broad Scope license and handled, shipped, and disposed as required by RSM Section 12.0.

c. Conclusions

No radioactive material was shipped from the reactor facility under the reactor license.

6. Physical Safeguards and Security

a. Inspection Scope (IPs 81401, 81402, and 81431)

The inspector reviewed selected aspects of:

- the Physical Security Plan (PSP) for Lillibridge Lab ISU, Rev. 3, dated February 23, 1990
- ISU Department of Public Safety Operations Procedure "Nuclear Reactor Security Checks and Response," Chapter III, Section 2.5, Revision 1, dated August 21, 2001
- security systems, equipment and instrumentations
- implementation of the Physical Security Plan

b. Observations and Findings

The inspector reviewed the implementation of the licensee's PSP. The inspector toured the facility and confirmed that the physical protection systems (barriers and alarms), equipment, and instrumentation were as required by the PSP. Keys to access doors were held and controlled only by designated personnel. Access and key control was implemented in accordance with licensee implementing procedures and as required by the plan. The facility was patrolled by Campus Public Safety personnel as required. The inspector also confirmed that the security checks, tests, verifications, and the biennial audits were performed and tracked as required by the PSP. Corrective actions were taken when required. The inspector verified that there had been no safeguards events since the last security inspection.

The inspector interviewed the Department of Public Safety Director, a dispatcher, and several officers. The Director, dispatcher, and officers were knowledgeable of their response responsibilities.

c. Conclusion

The licensee had implemented and was maintaining an adequate physical security program.

7. Emergency Preparedness

a. Inspection Scope (IP 69001)

The inspector reviewed selected aspects of:

- Emergency Plan for the Nuclear Facility at Lillibridge Engineering Lab at ISU, Revision 5, dated April 26, 1994
- Emergency Plan training records
- emergency response supplies, equipment, and instrumentation
- emergency locker inventory sheets, October 2001 to present
- Memoranda of Understanding and offsite support agreements
- emergency drills and critiques

b. Observations and Findings

The current version of the Emergency Plan (E-Plan) approved for use at the facility was Revision 6 dated November 1995. The plan and implementing procedures were being audited and reviewed biennially by the RSC as required. Through random checks of the emergency supplies, decontamination facilities, and portable detection instrumentation, the inspector determined they were being maintained, controlled, and inventoried as required by Section 6 of the E-Plan. Through reviews of training and drill records and interviews with ISU personnel, the inspector confirmed that annual emergency response training was given as required by the E-Plan and that emergency responders were knowledgeable of the proper actions to take in case of an emergency. The notification procedures and phone numbers in use by the Public Safety dispatch were current. Agreements with off-site response organizations (i.e., the Bannock Regional Medical Center, the Pocatello Fire Department, and Pocatello Police Department) were being maintained and up dated as required. Emergency drills had been conducted annually as required. Critiques were held following the drills to identify any strengths and weaknesses noted during the exercise and to develop possible solutions to any problems identified. The results of these critiques were documented and filed.

The last drill, January 26, 2002, involved an injury with radiological contamination and resulted in interaction with off-site police, ambulance and fire services, and hospital. The drill provided a practical, reasonable, and an effective test of the participants. A critique was held following the drill to discuss the strengths and weaknesses identified during the exercise and to develop possible solutions to any problems identified.

Through interviews with ISU Public Safety Officers and a dispatcher, the inspector verified that two training recommendations from the critique of this drill had been acceptably addressed.

c. Conclusions

The emergency preparedness program was being carried out in accordance with the Emergency Plan.

8. Exit Meeting Summary

The inspector presented the inspection results to members of licensee management at the conclusion of the inspection on May 29, 2003. The licensee acknowledged the findings presented.

PARTIAL LIST OF PERSONS CONTACTED

Licensee Personnel

*M. Balzer	Assistant Radiation Safety Officer
*J. Bennion	Reactor Supervisor
S. Chatterton	Director, Department of Public Safety
R. Dunker	Environmental Monitoring Laboratory Supervisor
T. Gesell	Campus Radiation Safety Officer
*F. Just	Chairman, Reactor Safety Committee
*J. Kunze	Dean, College of Engineering and Reactor Administrator

* Attended outbriefing on May 29, 2003.

INSPECTION PROCEDURE USED

IP 69001	Class II Non-Power Reactors
IP 81401	Plans, Procedures, and Reviews
IP 81402	Reports of Safeguards Events
IP 81431	Fixed Site Physical Protection of Special Nuclear Material of Low Strategic Significance
IP 86740	Inspection of Transportation Activities

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

50-284/2003-201-01	URI	The inspector could not determined if ISU was performing an acceptable secondary calibration of their neutron meters.

Closed

NONE

LIST OF ACRONYMS USED

AGN	Aerojet-General Nucleonics
CFR	Code of Federal Regulations
E-Plan	Emergency Plan
URI	Unresolved Item
IP	Inspection Procedure
ISU	Idaho State University
NRC	Nuclear Regulatory Commission
PSP	Physical Security Plan
RPP	Radiation Protection Program
RSC	Reactor Safety Committee
RSM	ISU Radiation Safety Policy Manual
TS	Technical Specifications