

August 9, 2001

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

SUBJECT: NRC INSPECTION REPORT NO. 50-284/2001-201

Dear Dr. Kunze:

This refers to the inspection conducted on July 23-25, 2001, at your Idaho State University AGN-201 M Reactor Facility. The inspection included a review of activities authorized for your facility. The enclosed report presents the results of that inspection.

Various aspects of your safety program were inspected including selective examinations of procedures and representative records, and interviews with personnel. Based on the results of this inspection, no significant safety issues were identified.

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/NRC/ADAMS/index.html>.

Should you have any questions concerning this inspection, please contact Craig Bassett at (404) 562-4712.

Sincerely,

***/RA by Patrick M. Madden Acting for/***

John R. Tappert, Acting Chief  
Operational Experience and  
Non-Power Reactors Branch  
Division of Regulatory Improvement Programs  
Office of Nuclear Reactor Regulation

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

Enclosure: NRC Inspection Report No. 50-284/2001-201

cc w/encl: Please see next page

Idaho State University

Docket No. 50-284

cc:

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U. S. NUCLEAR REGULATORY COMMISSION

Docket No: 50-284

License No: R-110

Report No: 50-284/2001-201

Licensee: Idaho State University (ISU)

Facility: Idaho State University AGN-201 M Reactor Facility

Location: Lillibridge Engineering Building  
Pocatello, Idaho

Dates: July 23-25, 2001

Inspector: Craig Bassett

Approved by: John R. Tappert, Acting Chief  
Operational Experience and  
Non-Power Reactors Branch  
Division of Regulatory Improvement Programs  
Office of Nuclear Reactor Regulation

## EXECUTIVE SUMMARY

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 (AGN) AGN-201 M non-power reactor (NPR). The licensee's programs were directed toward the protection of public health and safety and were in compliance with NRC requirements. No safety concerns or violations of regulatory requirements were identified.

### Conduct of Operations

- The staffing and organization met requirements specified in Technical Specifications (TS) Sections 6.1.
- Review and oversight functions required by TS Section 6.4 were acceptably completed by the Reactor Safety Committee.
- Changes made at the facility had been reviewed and approved as required and none were determined to constitute a safety question.
- The requalification/training program was up-to-date. Documentation of program status was an area for improvement. Medical examinations were being completed as required.
- Facility procedures and document reviews satisfied TS Sections 6.5 and 6.6 requirements. Procedural compliance was acceptable.
- No fuel movements or inspections were required or completed.
- The program for surveillance and Limiting Conditions for Operation verifications was being implemented in accordance with TS requirements.
- Reactor operations and maintenance were being completed as required.
- The program for the control of experiments satisfied regulatory and TS Section 6.7 requirements.

### Emergency Preparedness

- The current Emergency Plan used at the facility was dated November 1995. Implementing Procedures were being updated as needed and implemented the provisions of the Emergency Plan acceptably.
- Emergency response facilities and equipment were being maintained as required and responders were knowledgeable of proper actions to take in case of an emergency.

- Memoranda of Understanding with various support organizations were being maintained and updated as required.
- Annual drills were being conducted and critiques were being held as required by the Emergency Plan.
- Emergency preparedness training for off-site and staff personnel was being completed as required.

## Report Details

### Summary of Plant Status

The licensee's five watt Aerojet-General Nucleonics (AGN) AGN-201 M non-power research reactor was not operational during this inspection. However, a review of the applicable records indicated that the reactor was typically operated in support of 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 were being met:

- organization and staffing for the facility
- administrative controls and management responsibilities
- ISU AGN-201 M Reactor Facility Master Facility Log No. 1

#### b. Observations and Findings

Through discussions with licensee representatives the inspector determined that management responsibilities and the organization at the Idaho State University AGN-201 M Reactor Facility had not changed since the previous NRC inspection on organization and staffing in March 1999 (Inspection Report No. 50-284/99-201). The inspector determined that the Reactor Administrator retained direct control and overall responsibility for management of the facility as specified in the TS. The Reactor Administrator reported to the designated University Officer at Idaho State University who is currently the Dean of the College of Engineering.

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 (SROs). There currently are no licensed Reactor Operators (RO) at the facility. The Reactor Administrator and the Reactor Supervisor fill full-time positions at the facility. Students and others are sometimes employed on a part-time basis. This organization was consistent with that specified in the TS.

#### c. Conclusions

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

## 2. Review and Audit Functions

### a. Inspection Scope (IP 69001)

In order 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
- the ISU Reactor Safety Committee Charter
- completed audits and reviews

### b. Observations and Findings

The inspector reviewed the Reactor Safety Committee's (RSC's) meeting minutes from 1999 to the present. These meeting minutes showed that the RSC had met at the required frequency and had considered the types of topics outlined by the TS.

The inspector noted that members of the safety committee completed audits of various aspects of the reactor facility operations, programs, and procedures. The inspector noted that, since the last NRC inspection, audits had been completed by the RSC in those areas outlined in the TS. The audits were structured so that the various aspects of the licensee's operations and safety programs were reviewed annually. Major facility documents and plans, including the Emergency Plan and the Security Plan, were reviewed biennially. The inspector noted that the audits' findings were acceptable and that the licensee responded and took corrective actions as needed.

### c. Conclusions

Review and oversight functions required by TS Section 6.4 were acceptably completed by the RSC.

## 3. Design Change Functions

### a. Inspection Scope (IP 69001)

In order to verify that any modifications to the facility were consistent with 10 CFR 50.59 and TS Section 6.2, the inspector reviewed:

- Reactor Safety Committee meeting minutes
- completed audits
- reviews of changes made under 10 CFR 50.59

### b. Observations and Findings

Through review of applicable records and interviews with licensee personnel, the inspector determined that all proposed changes that had been initiated and/or completed at the facility since the last NRC operations inspection had undergone a

review as required. It was noted that the changes were minor in nature and there were no safety issues identified.

c. Conclusions

Changes made at the facility had been reviewed and approved as required and none were determined to constitute a safety question.

**4. Operator Licenses, Requalification, and Medical Activities**

a. Inspection Scope (IP 69001)

To determine that operator requalification activities and training were conducted as required and that medical requirements were met, the inspector reviewed:

- active license status
- logs and records of reactivity manipulations
- written examinations
- training lectures and records
- medical examination records

b. Observations and Findings

As noted above, there are currently two qualified SROs employed at the facility and their licenses were current. From discussions with the licensee the inspector noted that one operator had been removed from active status because he had not been able to complete four hours per quarter of reactor operation or related duties. The inspector verified that this individual had completed the required requalification training and had demonstrated competence as required by the program before being reinstated and resuming licensed activities.

A review of the logs and records showed that training was being conducted and examinations were being administered in accordance with the licensee's requalification and training program. Lectures had been given as stipulated and training reviews had been documented. It was noted that records of quarterly reactor operations, reactivity manipulations, and other operations activities were generally being maintained. However, records indicating the completion of annual written and console examinations and supervisory evaluations were not maintained as required. This problem had been identified in an RSC audit and the licensee committed to keep the records current. As a result, the licensee was informed that this licensee-identified and corrected violation will be treated as a Non-Cited Violation (NCV), consistent with Section VI.A of the NRC Enforcement Policy (NCV 50-284/2001-201-01). This item is considered closed.

The inspector also noted that operators were receiving the required medical examinations at the frequency specified by the program.

c. Conclusions

The requalification/training program was up-to-date and medical examinations were being completed as required. Documentation of program status was an area for improvement.

**5. Procedures and Procedural Compliance**

a. Inspection Scope (IP 69001)

To determine whether facility procedures met the requirements outlined in TS Sections 6.5 and 6.6, the inspector reviewed:

- ISU AGN-201 M Reactor Facility Master Facility Log No. 1
- the General Operating Rules and Operating Procedures Manual
- selected maintenance and surveillance procedures
- selected forms and checklists

b. Observations and Findings

The licensee's procedures were found to be acceptable for the current facility status and staffing level. It was noted that the procedures specified the responsibilities of the various members of the staff. The inspector determined that the procedures were being updated as needed and that substantive revisions to procedures, checklists, and forms were presented to the RSC for review and approval as required by TS.

The inspector did not observe reactor operations during this inspection. However, the results recorded on the ISU AGN-201 M Reactor Facility ROL-100 Check Sheets, and on other facility logs, indicated that operations were completed in accordance with the applicable procedures.

c. Conclusions

Facility procedures and document reviews satisfied TS Sections 6.5 and 6.6 requirements. Procedural compliance was acceptable.

**6. Surveillance Activities**

a. Inspection Scope (IP 69001)

To determine that surveillance and Limiting Conditions for Operation (LCO) activities and verifications were being completed as required by TS Sections 3 & 4, the inspector reviewed:

- the previously used Surveillance Log
- selected Surveillance Procedures
- selected surveillance data sheets

- calibration procedures and records
- ISU AGN-201 M Reactor Facility Master Facility Log No. 1

b. Observations and Findings

The inspector determined that selected daily, semiannual, annual, and biennial checks, tests, and/or calibrations for TS-required surveillance and LCO activities and verifications were completed as stipulated. Surveillance and LCO verifications reviewed were completed on schedule and in accordance with licensee procedures. All the recorded results were within the TS and procedurally prescribed parameters. The records and logs reviewed were generally complete and were being maintained as required.

c. Conclusions

The program for surveillance and LCO verifications was being carried out in accordance with TS requirements.

## 7. Fuel Movement

a. Inspection Scope (IP 69001)

No fuel inspection is required by TS.

b. Observations and Findings

The inspector determined that no reactor fuel inspection or movement had been completed in the period since the last inspection. The control and safety rods are inspected periodically but the contained fuel is not routinely inspected.

c. Conclusions

No fuel movements or inspections were required or conducted.

## 8. Operations and Maintenance

a. Inspection Scope (IP 69001)

The inspector reviewed selected aspects of:

- ISU AGN-201 M Reactor Facility Master Facility Log No. 1
- selected ISU AGN-201 M Reactor Facility ROL-100 Check Sheets
- maintenance forms, records, and procedures

b. Observations and Findings

A review of operations logs and records indicated that staffing during reactor operations was acceptable and consistent with TS requirements. Reactor operations were conducted safely and in accordance with procedures. Logs also indicated that preventive maintenance activities were conducted as scheduled or as needed. Any problems found were addressed in accordance with the Technical Specifications, applicable procedures, or equipment manuals. Maintenance activities ensured that equipment remained consistent with the Safety Analysis Report and Technical Specification requirements.

c. Conclusions

Reactor operations were conducted in accordance with TS requirements and applicable procedures. The maintenance program satisfied NRC requirements.

**9. Experiments**

a. Inspection Scope (IP 69001)

In order to verify that experiments were being conducted in accordance with the guidelines stipulated in TS Section 6.7, the inspector reviewed:

- ISU AGN-201 M Experiment Procedures and Plans
- ISU AGN-201 M Reactor Facility ROL-100 Check Sheets
- Rules and Procedures Governing Isotope Production and Disposition
- selected Isotope Production and Disposition (IPD) Forms

b. Observations and Findings

The inspector noted that all the experiments being conducted at the facility were well-established, "routine" procedures that had been in place for several years. No new experiments had been initiated, reviewed, or approved since the last inspection. Two experiment plans had been revised recently. These revisions had been reviewed and approved by the RSC as required. The experiments that were conducted at the facility were completed under the cognizance of the Reactor Supervisor and/or the Reactor Administrator. The results of the experiments were documented in the operating log and on the applicable IPD forms.

It was noted in NRC Inspection Report No. 50-284/2000-201 that the IPD log was not being reviewed monthly by the Reactor Supervisor and that the various forms were not filed/maintained as required by the "Instructions for Maintaining the Isotope Production and Disposition (IPD) Log," dated April 26, 1994. Beginning in November 2000 through the present, the monthly supervisor reviews had been completed. However, as of the start of this inspection, the forms were still not being filed/maintained as stipulated. Once the licensee was made aware of this, the forms were reviewed and filed properly in the applicable portions of the log.

c. Conclusions

The license's program for the control of experiments satisfied regulatory and TS Section 6.7 requirements. Maintenance of the IPD log sheets was an area for improvement.

## 10. Emergency Preparedness

### a. Inspection Scope (IP 69001)

The inspector reviewed selected aspects of:

- Emergency Plan and implementing procedures
- emergency response supplies, equipment, and instrumentation
- training records
- Memoranda of Understanding and offsite support
- 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 (Rev) 6 dated November 1995. The plan and implementing procedures were being audited and reviewed biennially as required. Supplies, instrumentation, and equipment were being maintained, controlled, and inventoried as required in the E-Plan. Through records review and interviews with various personnel, emergency responders were determined to be knowledgeable of the proper actions to take in case of an emergency. 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 updated as required. Emergency drills had been conducted annually as required by the E-Plan. Critiques were written 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. Training for the reactor staff and for response organization personnel was conducted and documented as required.

### c. Conclusions

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

## 11. Follow-up on Previously Identified Items

### a. Inspection Scope (IP 69001)

The inspector reviewed the licensee's actions taken in response to previously identified Inspector Follow-up Items.

### b. Observation and Findings

- (1) (Closed) Inspector Follow-up Item (IFI) 50-284/97-201-01 - Follow-up on the licensee's actions to replace all the dashpots, perform aggressive inspection of the control rods annually, and modify the safety rod drive logic circuits to allow manual scrambling of the reactor.

In September 1997, the licensee reported a problem concerning the failure of the Safety Rod 2 (SR-2) dashpot. The licensee took immediate corrective actions and committed to take further actions in the future. These additional corrective actions were to include: 1) replacing all existing dashpots with new units, 2) performing annual inspections of the control elements with particular emphasis on the end region of the capsule for any evidence of weld cracking or other signs of deterioration, and 3) modifying the safety rod drive logic circuits to allow the safety rods to be manually withdrawn at the conclusion of reactor operation instead of scrambling the reactor.

During this inspection, the inspector noted that progress had been made concerning the above noted corrective actions. More intensive inspections were being performed of the control rods to check for weld cracking or other signs of deterioration. The licensee had replaced the older dashpots and had fabricated new dashpots following a design that was developed for the AGNs at Texas A&M University and the University of New Mexico. Because the issue with the dashpots has basically been resolved, this item is considered closed.

The safety rod drive logic circuits have not been modified in the existing control console because this action is awaiting implementation of the console upgrade project that is still pending. Therefore, a new Inspector Follow-up Item (IFI) is being established to follow this issue (IFI 50-284/2001-201-02).

- (2) (Closed) Inspector Follow-up Item (IFI) 50-284/97-201-05 - Follow-up on the Reactor Safety Committee review of an anticipated upgrade to the reactor console and on the modification itself.

During the September 1997 inspection, it was also noted that an upgrade to the reactor console was being considered by the RSC. At that time it was thought that the upgrade would not constitute a unreviewed safety question. The inspector determined that the console upgrade has been reviewed extensively by the RSC and questions about its installation have been resolved. This item is considered closed. However, the reactor console upgrade project is still ongoing. A new IFI will be established to follow the completion of this project and review the installation, testing, and approval of the new console (IFI 50-284/2001-201-03).

c. Conclusions

Two open items identified during a previous inspection were closed; two new Inspector Follow-up items were opened.

## 12. Exit Interview

The inspection scope and results were summarized on July 25, 2001, with licensee representatives. The inspector discussed the findings for each area reviewed. The licensee acknowledged the findings 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 Personnel

J. Bennion, Reactor Administrator  
T. Gansauge, Reactor Supervisor  
J. Kunze, Dean, College of Engineering

### Other Personnel

T. Gesell, Campus Radiation Safety Officer  
F. Just, Chairman, Reactor Safety Committee  
G. Roberts, Director, Emergency and Outpatient Services, Bannock Regional Medical Center

## **INSPECTION PROCEDURE USED**

IP 69001 Class II Non-Power Reactors

## **ITEMS OPENED, CLOSED, AND DISCUSSED**

### Opened

50-284/2001-201-01	NCV	Records documenting the status of the Operator Training and Requalification Program were not being maintained as required by the program.
50-284/2001-201-02	IFI	Follow-up on the licensee's actions to modify the safety rod drive logic circuits to allow manual scrambling of the reactor.
50-284/2001-201-03	IFI	Follow-up on completion of the reactor console upgrade project.

### Closed

50-284/2001-201-01	NCV	Records documenting the status of the Operator Training and Requalification Program were not being maintained as required by the program.
50-284/97-201-01	IFI	Follow-up on the licensee's actions to replace all the dashpots, perform aggressive inspection of the control rods annually, and modify the safety rod drive logic circuits to allow manual scrambling of the reactor.
50-284/97-201-05	IFI	Follow-up on the Reactor Safety Committee's review of an anticipated upgrade to the reactor console and on the modification itself.

## **LIST OF ACRONYMS USED**

AGN	Aerojet-General Nucleonics
CFR	Code of Federal Regulations
E-Plan	Emergency Plan
IFI	Inspector Follow-up Item
IP	Inspection Procedure
IPD	Isotope Production and Disposition
ISU	Idaho State University
LCO	Limiting Conditions for Operation
MOU	Memorandum of Understanding
NCV	Non-Cited Violation
NPR	Non-Power Reactor
NRC	Nuclear Regulatory Commission
RO	Reactor operator
RSC	Reactor Safety Committee
SRO	Senior reactor operator
TS	Technical Specifications