

August 28, 2007

Dr. Jay F. Kunze
Reactor Administrator
Idaho State University
P.O. Box 8060
Pocatello, ID 83209-8060

SUBJECT: IDAHO STATE UNIVERSITY - NRC ROUTINE INSPECTION REPORT NO.
50-284/2007-201

Dear Dr. Kunze:

On August 14-15, 2007, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at the Idaho State University AGN-201M Reactor Facility. The inspection included a review of activities authorized for your facility. The enclosed inspection report presents the results of that inspection.

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, the NRC has determined that a violation of NRC requirements occurred. This violation is being treated as a Non-Cited Violation (NCV), consistent with Section VI.A of the Enforcement Policy. The NCV is described in the subject inspection report. If you contest the violation or significance of the NCV, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington DC 20555-0001, with a copy to the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001 and the inspector.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's document system (ADAMS), accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>.

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Dr. Kunze

Should you have any questions concerning this inspection, please contact Mr. Kevin M. Witt at 301-415-4075.

Sincerely,

/RA/

Johnny Eads, Branch Chief
Research and Test Reactors Branch B
Division of Policy and Rulemaking
Office of Nuclear Reactor Regulation

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

Enclosure: NRC Inspection Report No. 50-284/2007-201

cc w/enclosure: See next page

Idaho State University

Docket No. 50-284

cc:

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Dr. Kunze

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

Docket No: 50-284

License No: R-110

Report No: 50-284/2007-201

Licensee: Idaho State University (ISU)

Facility: AGN-201M Reactor Facility

Location: Pocatello, Idaho

Dates: August 14-15, 2007

Inspector: Kevin M. Witt

Approved by: Johnny H. Eads, Jr., Branch Chief
Research and Test Reactors Branch B
Division of Policy and Rulemaking
Office of Nuclear Reactor Regulation

EXECUTIVE SUMMARY

Idaho State University AGN-201M Reactor Facility NRC Inspection Report No.: 50-284/2007-201

The primary focus of this routine, announced inspection was the on-site review of selected aspects and activities since the last NRC inspection of the licensee's Class II non-power reactor safety programs including: operations logs and records, requalification training, surveillance and limiting conditions for operation, design changes, emergency planning, maintenance logs and records, fuel handling logs and records, and follow-up on previous open items.

The licensee's programs were acceptably directed toward the protection of public health and safety, and in compliance with NRC requirements.

Operations Logs and Records

- Operational activities were consistent with applicable Technical Specification and procedural requirements.

Requalification Training

- The licensee was generally meeting the requalification program requirements to ensure the effectiveness of all licensed operators.

Surveillance and Limiting Conditions for Operation

- The licensee's program for completing surveillance inspections satisfied Technical Specification and licensee administrative controls.

Design Changes

- Based on the records reviewed, the inspector determined that the licensee's design change program was being implemented as required.

Emergency Planning

- The emergency preparedness program was conducted in accordance with the approved Emergency Plan.

Maintenance Logs and Records

- Maintenance logs, records, and performance satisfied Technical Specification and procedure requirements.

Fuel Handling Logs and Records

- Fuel handling and control rod handling activities were completed and documented as required by Technical Specification and facility procedures.

Follow-up on Previous Open Items

- The Inspection Follow-up Item identified in a previous inspection report was closed.

REPORT DETAILS

Summary of Plant Status

The licensee's Idaho State University (ISU) Aerojet General Nucleonics-201M (AGN-201M) Reactor Facility, licensed to operate at a maximum steady-state thermal power of 5 Watts (W), continues to be operated in support of operator training, surveillance, and minor utilization. During the inspection the reactor was not operated.

1. Operation Logs and Records

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

The inspector reviewed the following to ensure that selected records were maintained as required by Technical Specification (TS) Section 6.10:

- TSs for the ISU AGN-201M Reactor, Amendment Number 6, dated August 14, 2006
- ISU AGN-201M Procedure, "General Operating Rules," Revision (Rev.) 4, dated October 7, 1994
- ISU AGN-201M OP-1, "AGN-201 Operating Procedure No. 1," Rev. 3, dated April 26, 1994
- ISU AGN-201M OP-2, "AGN-201 Operating Procedure No. 2," Rev. 3, dated April 26, 1994
- Form ROL-101 Page 1, "Check Out," Rev. 3, dated April 26, 1994
- Form ROL-101 Page 2, "Prestart Data," Rev. 3, dated April 26, 1994
- Form ROL-101 Page 3, "Operational Data," Rev. 3, dated April 26, 1994
- Table of Reactivity Changes for the AGN-201 Reactor Experimental Facilities, dated August 15, 2007
- List of Qualified Observers For AGN-201 Operations, undated
- ISU AGN-201 Reactor Facility Master Log #3, dated from April 20, 2005 to November 27, 2006
- ISU AGN-201 Reactor Facility Master Log #4, dated from November 28, 2006 to present
- Annual Operating Report for 2006, dated August 12, 2007
- Completed ISU ROL-101 Forms, dated from July 26, 2006 to present

b. Observations and Findings

Reactor operations were carried out following written procedures and TS requirements. The inspector verified that reactor operating characteristics, and other TS and procedure required entries, were recorded on the appropriate forms and logs. A review of the forms and logs indicated that TS operational limits had not been exceeded. Operations records confirmed that shift staffing met the minimum requirements for duty personnel. The inspector determined that reactor operations were carried out following written procedures. During review of the operations logs, the inspector noted that there were minimal unintentional scrams. Most causes of unintentional scrams were low level electrical fluctuations in the power channels. When a scram occurs, the root cause analysis is completed by the Reactor Supervisor (RS) before the resumption of operations.

c. Conclusions

Operational activities were consistent with applicable TS and procedural requirements.

2. Operator Requalification

a. Inspection Scope (IP 69001)

The inspector reviewed the following to verify compliance with the requirements in 10 CFR Part 55 and the Requalification Program:

- operator active license status
- operator physical examination records
- reactivity manipulation records
- Reactor Operator Requalification Program for the ISU Reactor, Rev. 2, dated August 17, 1995
- requalification training records for the requalification cycle from July 1, 2005 to June 30, 2007
- ISU Nuclear Engineering Laboratory Requalification Program Progress Checklist, Rev 2, dated August 17, 1995
- ISU AGN-201M Experimental Plan (EP)-2, "Operator Training," Rev. 1, dated January 31, 1990
- ISU AGN-201 Reactor Facility Master Log #3, dated from April 20, 2005 to November 27, 2006
- ISU AGN-201 Reactor Facility Master Log #4, dated from November 28, 2006 to present

b. Observations and Findings

Current licensed operators consisted of two Senior Reactor Operators (SROs). The licensee recently terminated the licenses of one SRO and one Reactor Operator (RO). The licensee's requalification program is described in the program submitted to the NRC. The RS is responsible for the implementation of the requalification program. The inspector reviewed the requalification program records for all of the licensed operators at the facility. The inspector verified that physical examinations of the operators were conducted biennially as required. The inspector confirmed that the requalification program was generally being administered in a manner that sufficiently maintains the effectiveness of all licensed operators.

Through the review of operating logs, the inspector found that one SRO failed to perform licensed functions for the required time of four hours during the first quarter of 2007. The licensee had recorded the SROs time as performing licensed functions at 2.75 hours and noted that the SRO had participated in discussions regarding the new control console to fulfill the rest of the required time, however, there was no written documentation of this activity. The requalification program specifies that each operator shall perform licensed functions for at least four hours per quarter to satisfy 10 CFR 55.53(e). The requalification program and 10 CFR 55.53(f) specifies that if an operator has not

performed the functions of an operator, the operator must perform six hours of licensed functions under the direction of a licensed operator. The inspector observed that the SRO continued to perform licensed functions the second quarter of 2007 without direct supervision by a licensed operator. To prevent future recurrences of this type of incident, the licensee committed to requiring all operators to log their hours of conducting licensed activities. The licensee also committed to routinely review these records to ensure that the operators are meeting the requalification program requirements. The licensee was informed that allowing an operator to continue licensed activities without following the NRC approved requalification program was an apparent violation of 10 CFR 55.53. However, since the reason for the violation is understood and the licensee has committed to corrective actions, it is being treated as a Non-Cited Violation (NCV), consistent with Section VI.A.8 of the NRC Enforcement Policy (NCV 50-284/2007-201-01).

c. Conclusions

The licensee was generally meeting the requalification program requirements to ensure the effectiveness of all licensed operators.

3. Surveillance and Limiting Conditions for Operation

a. Inspection Scope (IP 69001)

The inspector reviewed the following to ensure that the surveillance requirements and limiting conditions for operation (LCOs) specified in TS Section 4.0 were met:

- surveillance, calibration, and test data sheets and records
- ISU AGN-201M Maintenance Procedure (MP)-1, "AGN-201 Rod Maintenance Procedure," Rev. 5, dated June 15, 1994
- ISU AGN-201M Surveillance Procedure (SP)-1, "Channel 1 Calibration," Rev. 0, dated December 13, 1988
- ISU AGN-201M Procedure SP-2, "Channel 2 Calibration," Rev. 0, dated December 13, 1988
- ISU AGN-201M Procedure SP-3, "Channel 3 Calibration," Rev. 0, dated December 13, 1988
- ISU AGN-201M Procedure SP-4, "Shield Water Level Calibration," Rev. 0, dated June 23, 1998
- ISU AGN-201M Procedure SP-5, "Shield Water Temperature Calibration," Rev. 0, dated June 23, 1998
- ISU AGN-201M Procedure SP-6, "Seismic Displacement Interlock Calibration," Rev. 0, dated June 23, 1998
- Completed ISU MP-1 forms, "AGN-201 Rod Maintenance Procedure," dated September 5, 2006
- Completed ISU forms, "AGN-201 Control Element Reactivity Calibration," dated June 11, 2006 and February 11, 2007
- Completed ISU SP-1A forms, "SP-1 Checkoff Sheet," dated August 13, 2007

- Completed ISU SP-2A forms, "SP-2 Checkoff Sheet," dated May 30, July 28 and August 23, 2006
- Completed ISU SP-3A forms, "SP-3 Checkoff Sheet," dated May 30 and August 22, 2006
- ISU AGN-201 Reactor Facility Master Log #3, dated from April 20, 2005 to November 27, 2006
- ISU AGN-201 Reactor Facility Master Log #4, dated from November 28, 2006 to present

b. Observations and Findings

The inspector noted that daily, semiannual, and annual checks, tests, and/or calibrations for TS-required surveillance items were completed as required. The LCO verifications were completed on schedule and in accordance with licensee procedures. All of the recorded results were within the TS and procedurally prescribed parameters. The records and logs were noted to be complete and were being maintained as required. The procedures for the surveillances provided clear and concise direction and control of reactor operational tests and surveillances.

c. Conclusions

The licensee's program for completing surveillance inspections satisfied TS and licensee administrative controls.

4. Design Changes

a. Inspection Scope (IP 69001)

In order to verify that any modifications to the facility were consistent with 10 CFR 50.59, the inspector reviewed selected aspects of:

- facility design changes and records
- facility configuration and associated records
- Annual Operating Report for 2006, dated August 12, 2007

b. Observations and Findings

Through review of applicable records and interviews with licensee personnel, the inspector determined that no changes had been initiated and/or completed at the facility since the last NRC operations inspection. The licensee is currently in the process of constructing and implementing a new control console. The licensee has conducted initial testing and is still working on resolving minor issues. The licensee plans to complete a 10 CFR 50.59 review before the changes are implemented to ensure that the change will not require prior NRC approval. The licensee has stated that the new console will be fully operational within a one year period. The inspector verified that changes or modifications to the facility would be analyzed by the staff, presented to and reviewed by the Reactor Safety Committee (RSC), determined to be acceptable, and approved as required.

c. Conclusions

Based on the records reviewed, the inspector determined that the licensee's design change program was being implemented as required.

5. Emergency Planning

a. Inspection Scope (IP 69001)

The inspector reviewed selected aspects of:

- emergency response facilities, supplies, equipment, and instrumentation
- Emergency Plan (E-Plan) for the Nuclear Facility at Lillibridge Engineering Lab at ISU, Rev 6, dated August 14, 2006
- ISU AGN-201 Reactor Facility Emergency Notification Roster, dated August 12, 2007
- Test/Inventory of Emergency Equipment dated May 31, 2007
- Memorandum of Understanding (MOU) by and between the City of Pocatello and Idaho State University Concerning Response to Emergencies at ISU Involving Radiation, dated May 17, 2007
- MOU by and between the Idaho State Police and Idaho State University Concerning Response to Emergencies at ISU Involving Radiation, dated May 1, 2007
- MOU by and between Portneuf Medical Center and Idaho State University Concerning Response to Emergencies at ISU Involving Radiation, dated April 30, 2007

b. Observations and Findings

The licensee's E-Plan was verified to be the same as the version most recently approved by the NRC. Emergency Procedures were also reviewed and revised as needed to effectively execute the E-Plan. The inspector verified that a list of emergency personnel, management, and offsite agencies was in the Control Room.

Supplies, instrumentation, and equipment maintained at the facility were being controlled and inventoried as required in the E-Plan. This included monthly checks of the fire extinguishers at the facility. The inspector verified that several MOUs had been established with the appropriate agencies.

Emergency preparedness and response training for licensee staff was being completed on an annual basis. Through drill scenario and record reviews, emergency responders were determined to be knowledgeable of the proper actions to take in case of an emergency. Emergency drills had been conducted annually as required by the E-Plan. Communications capabilities with support groups were acceptable and had been tested as required. Critiques were written following the drills to document the strengths and weaknesses identified during the exercise. Action items were developed to correct the problems identified.

The inspector visited the City of Pocatello Fire Department (PFD) on August 15, 2007, and met with several division chiefs concerning the response of the PFD to any type of event at the reactor facility. The PFD expressed confidence in their ability to handle emergency events at the reactor facility. One item that was discussed was the familiarization of the firefighters with the reactor facility. The RS stated that the last tour was completed approximately three years ago. The RS and the PFD agreed that a tour for firefighters would improve the emergency response skills of the first responders. This issue will be considered by the NRC as an Inspection Follow-up Item (IFI) and will be reviewed during the next inspection at the facility (IFI 50-284/2007-201-02).

c. Conclusions

The emergency preparedness program was conducted in accordance with the approved E-Plan.

6. Maintenance Logs and Records

a. Inspection Scope (IP 69001)

To verify that the licensee was complying with the applicable regulations, the inspector reviewed selected aspects of:

- ISU AGN-201M Procedure MP-1, "AGN-201 Rod Maintenance Procedure," Rev. 5, dated June 15, 1994
- ISU AGN-201 Reactor Facility Master Log #3, dated from April 20, 2005 to November 27, 2006
- ISU AGN-201 Reactor Facility Master Log #4, dated from November 28, 2006 to present
- Annual Operating Report for 2006, dated August 12, 2007

b. Observations and Findings

The inspector reviewed the maintenance records related to scheduled and unscheduled preventive and corrective maintenance activities that had occurred during the inspection period. Routine and preventive maintenance was controlled and documented in the operation logs. These documents indicated that all maintenance activities were controlled and documented in accordance with the requirements in 10 CFR 50.59. All maintenance of reactor systems were reviewed and approved by the RS. After all maintenance items are completed, system operational checks are performed to ensure the affected systems function before returning them to service.

c. Conclusions

Maintenance logs, records, and performance satisfied TS and procedure requirements.

7. Fuel Handling Logs and Records

a. Inspection Scope (IP 69001)

To verify that TS and procedural requirements were being met, the inspector reviewed selected aspects of:

- fuel handling equipment and instrumentation
- fuel movement records
- ISU AGN-201M Procedure MP-1, "AGN-201 Rod Maintenance Procedure," Rev. 5, dated June 15, 1994
- ISU AGN-201 Reactor Facility Master Log #3, dated from April 20, 2005 to November 27, 2006
- ISU AGN-201 Reactor Facility Master Log #4, dated from November 28, 2006 to present

b. Observations and Findings

The licensee conducts control rod fuel movements for annual routine maintenance. The inspector determined that the licensee was maintaining the records of the control rod fuel movements that had been completed and verified that the movements were conducted and recorded in compliance with procedure. The inspector determined that the procedures and the controls specified for these operations were acceptable. During the inspection, the licensee conducted an annual visual inspection of the control rods. The inspector noted that the operation was conducted in a cautious manner and in accordance with the established safety procedures. Observation of fuel handling activities also confirmed that they were carried out in accordance with written procedures and TS requirements. The results of the fuel inspection indicated that there were no visible blemishes on the fuel cladding.

c. Conclusions

Fuel handling and control rod inspection activities were completed and documented as required by TS and facility procedures.

8. Follow-up on Previous Open Items

a. Inspection Scope (IP 92701)

The inspector reviewed the actions taken by the licensee following identification of one IFI during a previous inspection.

b. Observations and Findings

- (1) IFI 50-284/2006-201-01 - Follow-up on the licensee's actions to requalify the SRO who has not participated in the requalification program.

NRC Inspection Report No. 50-284/2006-201, dated June 29, 2006, outlined the situation. During that inspection, the licensee indicated that one of the SROs has not participated in the requalification program recently and has not completed the most recent requalification cycle. The individual also did not complete the required biennial medical examination. The most recent medical examination was completed on July 8, 2003, which is a period of almost 36 months. The most recent written examination for the SRO was completed on June 20, 2003. The most recent operating examination for the SRO was completed on May 22, 2003. The RS has sent a letter to the individual stating that until certain actions are completed, the individual is classified as decertified. Due to the lack of participation of the other SRO in the requalification program, the RS has not been able to take or write the required annual written and operations examinations.

While reviewing this issue, the inspector noted that the licensee has submitted a letter to the NRC, dated August 10, 2007, requesting termination of this operator's license. This issue is considered closed.

c. Conclusions

The IFI identified in a previous inspection report was closed.

9. Exit Meeting

The inspector presented the inspection results to licensee management at the conclusion of the inspection on August 15, 2007. 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

J. Bennion, Reactor Supervisor
R. Brey, Radiation Safety Officer
K. Hart, Test Engineer
J. Richardson, Dean, College of Engineering
M. Vaughn, Reactor Safety Committee Member

Other Personnel

D. Gates, Division Chief, Pocatello Fire Department
T. Sanford, Division Chief, Pocatello Fire Department

INSPECTION PROCEDURES USED

IP 69001	CLASS II NON-POWER REACTORS
IP 92701	FOLLOW-UP

ITEMS OPENED, CLOSED, AND DISCUSSED

OPENED:

50-284/2007-201-01	NCV	Failure to follow the NRC approved requalification program.
50-284/2007-201-02	IFI	Followup to verify the licensee conducts a tour for firefighters.

CLOSED:

50-284/2006-201-01	IFI	Follow-up on the licensee's actions to requalify the SRO who has not participated in the requalification program.
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DISCUSSED:

None

LIST OF ACRONYMS USED

ADAMS	Agencywide Documents Access and Management System
AGN-201M	Aerojet General Nucleonics-201M
CFR	Code of Federal Regulations
EP	Experimental Plan
E-Plan	Emergency Plan
IFI	Inspection Follow-up Item
IP	Inspection Procedure
ISU	Idaho State University

LCO	Limiting Conditions for Operation
MOU	Memorandum of Understanding
MP	Maintenance Procedure
NCV	Non-Cited Violation
NRC	Nuclear Regulatory Commission
PFD	Pocatello Fire Department
Rev	Revision
RO	Reactor Operator
RS	Reactor Supervisor
RSC	Reactor Safety Committee
SP	Surveillance Procedure
SRO	Senior Reactor Operator
TS	Technical Specification
W	Watt