April 23, 2009

Dr. Raymond Juzaitis
Head of Nuclear Engineering
Texas A&M University
Zachry Bldg. Room 129
College Station, TX 77843-3133

SUBJECT: TEXAS A&M UNIVERSITY AGN-201M RESEARCH REACTOR - NRC INSPECTION REPORT NO. 50-059/2009-201

Dear Dr. Juzaitis:

On March 23-25, 2009, the U.S. Nuclear Regulatory Commission (NRC, the Commission) completed an inspection at your Texas A&M University AGN-201M Research Reactor facility (Inspection Report No. 50-059/2009-201). The enclosed inspection report documents the inspection results, which were discussed on March 25, 2009, with you and Dr. W. D. Reece, Interim Reactor Supervisor.

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, observation of activities, and interviews with 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, and 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).

Should you have any questions concerning this inspection, please contact Craig Bassett at (404) 358-6515 or by electronic mail at Craig.Bassett@nrc.gov.

Sincerely,

/RA/

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

Docket No. 50-059
License No. R-023

Enclosure: NRC Inspection Report No. 50-059/2009-201
cc w/encl: Please see next page

cc:

Mayor of the City of College Station
College Station, TX 77843-3575

Governor's Budget and
Planning Office
P.O. Box 13561
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Bureau of Radiation Control
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Dr. W. D. Reece
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Test, Research, and Training
Reactor Newsletter
University of Florida
202 Nuclear Sciences Center
Gainesville, FL 32611

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

Docket No.:	50-059
License No.:	R-23
Report No.:	50-059/2009-201
Licensee:	Texas A&M University
Facility:	AGN-201M Research Reactor
Location:	College Station, TX
Dates:	March 23-25, 2009
Inspector:	Craig Bassett
Accompanied by:	Mike Morlang
Approved by:	Johnny H. Eads, Chief Research and Test Reactors Branch B Division of Policy and Rulemaking Office of Nuclear Reactor Regulation

EXECUTIVE SUMMARY

Texas A&M University
AGN-201M Research Reactor
Report No: 50-059/2009-201

The primary focus of this routine, announced inspection included on-site review of selected aspects of the Texas A & M the licensee's Class II research reactor safety program including: 1) organizational structure and staffing; 2) review and audit and design change functions; 3) procedures, 4) radiation protection and environmental monitoring; 5) transportation of radioactive material, and 6) surveillances since the last NRC inspection of these areas. The licensee's program was acceptably directed toward the protection of public health and safety, and in compliance with NRC requirements. No deviations or violations were identified.

Organization and Staffing

- The licensee's organization and staffing were in compliance with the requirements specified in the Technical Specifications given the condition of the reactor.

Review and Audit and Design Change Functions

- The review and audit program was being conducted acceptably by the Reactor Safety Board as stipulated in Section 6.4 of the TS.

- The licensee was committed to following the program outlined in the Technical Specifications which required a 10 CFR 50.59 evaluation and Reactor Safety Board review and approval of any changes made to the facility structures, systems, or components.

Procedures

- Facility operations procedures were being revised to reflect the changes made to the Control Console.

Radiation Protection Program

- Surveys were being completed and documented acceptably.

- Postings met the regulatory requirements specified in 10 CFR Parts 19 and 20.

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

- Radiation monitoring equipment was being maintained and calibrated as required.

- The Radiation Protection Program being implemented by the licensee satisfied regulatory requirements.

- Effluent monitoring satisfied license and regulatory requirements and there had been no releases of radioactive effluents.

Transportation of Radioactive Materials

- The licensee had not shipped any radioactive material from the facility using the reactor license.

Surveillances and Limiting Conditions for Operation

- The licensee's reactor Restart Plan was still being drafted but will include steps to complete all Technical Specification-required surveillance items prior to restarting the reactor.

REPORT DETAILS

Summary of Plant Status

The Texas A&M University (TAMU, the licensee) 5 watt Aerojet General Nucleonics-201 Modified (AGN-201M) training reactor continued to be maintained in an extended shutdown condition. The licensee had recently completed an upgrade to the control system to utilize current digital technology. During the inspection, the reactor was not operated because needed procedure revisions and systems checkouts had not yet been completed. Records showed that the reactor had not been operated since August 25, 1999.

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 authorized by License Amendment Number (No.) 12 to License R-023 dated April 25, 1979, and stipulated in Sections 6.1 and 6.2 of the Technical Specifications (TS), latest revision (Rev.) dated May 14, 1997, were being met:

- Qualification of staff members
- Organizational structure and staffing
- Administrative controls and management responsibilities
- Qualification requirements stipulated in ANSI/ANS 15.4 – 1977, "Standards for the Selection and Training of Personnel for Research Reactors"
- Annual Reports for the Texas A&M University AGN-201M Training Reactor for the periods from June 1, 2005 to May 31, 2006 and from June 1, 2006 to May 31, 2007, dated April 3, 2008

b. Observations and Findings

As noted above, the reactor had not been operated since August 25, 1999. This was due to the licensee's efforts to complete upgrades to the reactor Control Console and ongoing work to place the reactor in an operable condition. The inspector determined that the organizational structure at the facility had not changed since the previous NRC inspection in 2008 (NRC Inspection Report 50-059/2008-201). The inspector discussed the status of the TAMU AGN-201M with the Reactor Administrator (who was also the Head of the Department of Nuclear Engineering). The Reactor Administrator indicated that TAMU was committed to restarting the reactor as quickly as possible.

It was noted that the person who had been the TAMU AGN-201M reactor supervisor (RS) for many years had left the facility. At the time of this inspection, the RS position was being filled by the TAMU Director of the Nuclear Science Center (NSC) and he was occupying the position only on an interim basis. The Interim RS was responsible for maintaining the administrative requirements of the facility and for helping to ensure that the restart of the reactor was accomplished as soon as possible.

The inspector reviewed the qualifications of the Reactor Administrator and Interim RS and verified that they were qualified to hold their respective positions.

c. Conclusions

The licensee's organization and staffing were in compliance with the requirements specified in the TS given the condition of the reactor Control Console.

2. Review and Audit, and Design Change Functions

a. Inspection Scope (IP 69001)

In order to verify that the licensee had established and conducted reviews and audits as required by TS Section 6.4 and to determine whether modifications to the facility were consistent with 10 CFR 50.59 and TS Section 6.4.2, the inspector reviewed:

- Reactor Safety Board meeting minutes for August 2006 to the present
- Modification Authorization Number (No.) 2008-1, "AGN Reactor Console Instrumentation and Electronics Upgrade," dated January 22, 2008
- Annual Reports for the Texas A&M University AGN-201M Training Reactor for the periods from June 1, 2005 to May 31, 2006 and from June 1, 2006 to May 31, 2007, dated April 3, 2008

b. Observations and Findings

(1) Review and Audit Functions

The composition and meeting frequency of the Reactor Safety Board (RSB) satisfied the TS requirements. It was noted that the RSB was responsible for the oversight of the Texas A&M TRIGA Research Reactor (Docket No. 50-128) located in the NSC, as well as the Texas A&M AGN-201M Research Reactor which is located in the Zachry Engineering Center. The meeting minutes indicated that most of the RSB meeting time was typically spent reviewing the TRIGA reactor activities since upgrades to the AGN had been progressing slowly in the past. However, the inspector verified that matters dealing with the AGN reactor were reviewed by the RSB during the annual meeting and documented in meeting minutes. Also, review and oversight functions required by the Technical Specifications were acceptably completed by the RSB.

The inspector reviewed the audits that had been conducted by the RSB. Various audits of the AGN-201M Research Reactor had been completed by the RSB during the past two years. These were documented as required but, because the AGN was not operational, no comments or deficiencies were noted.

(2) Design Control

The inspector verified that administrative controls existed in the TS that required the appropriate review and approval of changes to equipment, experiments, and procedures prior to implementation. The inspector reviewed the 10 CFR 50.59 evaluation of the reactor Control Console that had been completed to ensure that the design change was acceptable prior to the restart of the AGN-201M reactor. The evaluation, dated January 22, 2008, had been completed by the licensee and reviewed and approved by the RSB as required. The licensee indicated that this process would be followed for all future changes and major revisions as well.

c. Conclusions

The review and audit program was being conducted acceptably by the RSB as stipulated in Section 6.4 of the TS. The licensee was committed to following the program outlined in the Technical Specifications which required a 10 CFR 50.59 evaluation and RSB review and approval of changes made to the facility structures, systems, or components.

3. Procedures

a. Inspection Scope (IP 69001)

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

- Selected health physics procedures
- Selected operating and maintenance procedures

b. Observations and Findings

The inspector verified that the licensee was in the process of reviewing and revising the operating and maintenance procedures for the reactor to reflect the numerous changes necessitated by the recent upgrades to the reactor Control Console. The licensee was aware that substantive changes to procedures, checklists, and forms were required to undergo a 50.59 Evaluation. The licensee planned to present the revised procedures to the RSB for review and approval as required by TS.

c. Conclusions

Facility operations procedures were being revised to reflect the changes made to the Control Console.

4. Radiation Protection and Environmental Monitoring

a. Inspection Scope (IP 69001)

The inspector reviewed the following to verify compliance with 10 CFR Parts 19 and 20:

- Signs, postings, and radiological controls
- Personnel and area dosimetry results for 2007 to present
- Contamination Survey Forms for the AGN Complex, dated from 2008 to present
- Annual Reports for the Texas A&M University AGN-201M Training Reactor for the periods from June 1, 2005 to May 31, 2006 and from June 1, 2006 to May 31, 2007, dated April 3, 2008

b. Observations and Findings

(1) Surveys

The inspector reviewed periodic wipe/contamination and radiation surveys of the AGN-201M reactor facility completed by the TAMU Environmental Health and Safety (EH&S) Department health physics (HP) personnel. (It was noted that the reactor staff personnel had initiated radiation surveys of the AGN reactor room in September 2008.) The inspector observed that there were no timeliness requirements specified for the EH&S HP personnel to conduct these surveys (i.e., the surveys could be conducted at anytime during the month). The surveys had generally been completed each month as required and the results were documented on the appropriate forms and evaluated by management. No elevated contamination levels were noted on any of the surveys that had been completed during the past year.

During the inspection, the inspector conducted an independent radiation survey of the Reactor Room. No readings above those noted by the licensee or by EH&S personnel were detected and no anomalies were noted.

(2) Postings and Notices

The inspector reviewed the postings at the entrances to the facility controlled areas. The postings were acceptable and indicated the radiation hazards present. Other postings also showed the industrial hygiene hazards present in the areas. The facility's radioactive material storage areas were noted to be properly posted. No unmarked radioactive material was detected in the facility. Copies of current notices to workers required by 10 CFR Part 19 were posted on the bulletin board in the hallway leading to the reactor room.

(3) Dosimetry

The licensee used a National Voluntary Laboratory Accreditation program-accredited vendor, Landauer, to process personnel and area dosimetry. Through direct observation, the inspector determined that the dosimetry was acceptably used by facility personnel. For visitors to the facility, no dosimetry was issued for monitoring due to low background readings and no direct exposures to sources.

An examination of the records for the inspection period showed that all exposures were well within NRC limits and within licensee action levels. There were three people at the facility that are being monitored. Monitoring was accomplished by using an optically stimulated luminescence (OSL) dosimeter. All of the personnel associated with the facility received exposures that were less that 20 millirem (mr) per year.

(4) Radiation Monitoring Equipment

The calibration of portable survey meters and friskers was typically completed by an outside contractor. There was one fixed radiation detector installed at the facility. According to the licensee, this was for criticality detection purposes. The calibration stickers on portable survey meters and friskers in use at the facility were reviewed. Calibration frequency met the requirements established in the applicable procedures while records were being maintained as required.

(5) Radiation Protection Program

The licensee's Radiation Protection Program was established in an online document. The program required that all personnel who had unescorted access to work in a radiation area or with radioactive material receive training in radiation protection, policies, procedures, requirements, and facilities prior to entry. The inspector verified that licensee staff had received the required radiation worker ("rad worker") training given by EH&S Department personnel. In addition, staff members with unescorted access to the AGN facility were required to supervise and/or escort all new employees or visitors.

(6) Facility Tours

The inspector toured the Reactor Room and the accompanying office areas. Control of radioactive material and control of access to radiation and high radiation areas were acceptable. The postings and signs for these areas were appropriate.

(7) Environmental Monitoring

An OSL dosimeter was placed in the AGN Complex several feet from the reactor. A dosimeter was also placed directly outside of the reactor room in a controlled area. Annual dosimetry records for 2008 showed that there

was an exposure of approximately 300 mr to the AGN room and less than 75mr to the room directly outside of the AGN facility. The inspector verified that there were no liquid or gaseous effluents discharged from the facility during the past two years.

c. Conclusions

The radiation protection program was adequate in that: (1) surveys were being completed and documented acceptably, (2) postings met the regulatory requirements specified in 10 CFR Parts 19 and 20, (3) personnel dosimetry was being worn as required and doses were well within the licensee's procedural action levels and NRC's regulatory limits, (4) radiation monitoring equipment was being maintained and calibrated as required, (5) the Radiation Protection Program being implemented by the licensee satisfied regulatory requirements, and (6) effluent monitoring satisfied license and regulatory requirements and no releases had occurred.

5. Transportation

a. Inspection Scope (IP 86740)

The inspector interviewed licensee personnel and reviewed various records to verify compliance with procedural requirements for shipping radioactive material.

b. Observations and Findings

Through records review and discussions with licensee personnel, the inspector determined that the licensee had not shipped any radioactive material from the AGN reactor facility under the auspices of that license. If the licensee needed to ship radioactive material, it would be transferred to the Texas A&M's Broad Scope license and shipped or disposed of under that license.

c. Conclusions

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

6. 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 specified in TS Section 4.0 were met:

- Rod Drop Curves dated October 30, 1997
- List of Activities Associated with Readying the AGN for Startup
- Maintenance Log dated November 3, 1983 to January 19, 1999
- Rod Drop Data Sheet dated October 21, 1997, form revised July 1982
- Calculation of Shutdown Margin and Excess Reactivity dated October 30, 1997

- Power Calibration AGN-201M dated October 3, 1997, form revised January 1979
- Control Rod Worth Data Sheet dated October 30, 1997, form revised August 1982
- Channel 1, 2, & 3 Instrumentation High Voltage Check dated November 3, 1997, form revised October 1979
- Control Rod Reactivity Insertion Rate dated October 30, 1997, form revised January 1980
- Annual Reports for the Texas A&M University AGN-201M Training Reactor for the periods from June 1, 2005 to May 31, 2006 and from June 1, 2006 to May 31, 2007, dated April 3, 2008

b. Observations and Findings

The inspector reviewed the last surveillance items that had been completed while the reactor was operational. It was noted that daily, monthly, semi-annual and annual checks, tests, and/or calibrations for TS-required surveillance items were last completed in October 1997. When the inspector questioned the licensee about this the licensee indicated that this was correct and that a Restart Plan was being formulated to incorporate all the items that needed to be accomplished prior to restarting the reactor. Although the Restart Plan was still being drafted, the licensee indicated that all TS-required surveillance items would be included and would need to be completed prior to restart. The inspector agreed with this assessment.

c. Conclusions

The licensee's reactor Restart Plan is still in draft form but will include steps to complete all TS-required surveillance items prior to restarting the reactor.

7. Follow-up on Previous Open Items

a. Inspection Scope (IP 69001)

The inspectors reviewed the actions taken by the licensee following identification of an Inspector Follow-up Item (IFI) during a previous inspection.

b. Observations and Findings

IFI - 50-059/2006-201-03 - Follow-up to verify the licensee sends a plan to the NRC describing how the operator will become proficient in the operation of the AGN.

During the inspection in 2006, the inspector noted that 10 CFR 55.59(a) states, “Requalification requirements. Each licensee shall – (1) Successfully complete a requalification program developed by the facility licensee that has been approved by the Commission. This program shall be conducted for a continuous period not to exceed 24 months in duration. (2) Pass a comprehensive requalification written examination and an annual operating test.”

According to 10 CFR 55.59(b), "Additional training, If the requirements of paragraphs (a) (1) and (2) of this section are not met, the Commission may require the licensee to complete additional training and to submit evidence to the Commission of successful completion of this training before returning to licensed duties." Subsequently, the licensee committed to submitting a letter to the NRC summarizing their plans to requalify the only licensed operator at the facility. In this letter, the licensee was to provide a description of how the operator will become proficient in the operation of the AGN-201M reactor. In 2006, the only operator at the facility was not considered to have a valid license due to a lack of participation in the requalification program. This issue was noted as an IFI.

During this inspection, the inspector confirmed that the licensee had developed a plan that described how new operators would be trained and become qualified to operate the AGN-201M. This plan was followed and, since that time, one operator was trained and received a license from the NRC to operate the AGN reactor. The operator license was issued on September 4, 2008, to the Interim Reactor Supervisor. However, the licensee still needs to submit a letter summarizing the Operator Qualification/ Requalification Plan to the NRC. This item is considered open.

c. Conclusions

One previously identified IFI was reviewed during this inspection but remains open.

8. Exit Interview

The inspection scope and results were summarized on March 25, 2009, with members of licensee management. The inspector described the areas inspected and discussed in detail the inspection findings. No dissenting comments were received from the license.

PARTIAL LIST OF PERSONS CONTACTED

Licensee

R. Juzaitis	Head, Nuclear Engineering Department and Reactor Administrator
D. Reece	Interim Reactor Supervisor

Other Personnel

E. McCormick	Health Physicist, Environmental Health and Safety Department, Texas A&M University
D. Menchaca	Manager and Radiological Safety Officer, Environmental Health and Safety Department, Texas A&M University
E. Schneider, Jr.	Chief of Police, Texas A&M University Police Department

INSPECTION PROCEDURES USED

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

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

50-059/2006-201-03	IFI	Follow-up to verify the licensee sends a plan to the NRC describing how the operator will become proficient in the operation of the AGN.

Closed

None

LIST OF ACRONYMS USED

ADAMS	Agencywide Documents Access and Management System
AGN	Aerojet General Nucleonics
CFR	*Code of Federal Regulations*
EHS	Environmental Health and Safety Department
HP	Health Physics
IFI	Inspector Follow-up Item
IP	Inspection Procedure
mr	millirem
NRC	Nuclear Regulatory Commission
NSC	Nuclear Science Center
OSL	Optically Stimulated Luminescent
RS	Reactor Supervisor
RSB	Reactor Safety Board
SRO	Senior Reactor Operator
TS	Technical Specifications