



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

October 22, 2021

Dr. Sean McDeavitt, Director  
Nuclear Science Center  
Texas Engineering Experiment Station  
Texas A&M University  
1095 Nuclear Science Road, MS 3575  
College Station, TX 77843

SUBJECT: TEXAS A&M UNIVERSITY - U.S. NUCLEAR REGULATORY COMMISSION  
ROUTINE INSPECTION REPORT NO. 05000059/2021201

Dear Dr. McDeavitt:

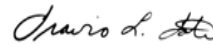
From August 30 – September 1, 2021, the U.S. Nuclear Regulatory Commission (NRC) staff conducted an inspection of the Aerojet General Nucleonics-Model 201 Modified Research Reactor located at your Texas A&M University Nuclear Science Center facility. The enclosed report documents the inspection results which were discussed on September 1, 2021, with you and Jere Jenkins, Associate Director, Nuclear Science Center.

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 facilities, and interviewed various 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* (10 CFR) 2.390, "Public inspections, exemptions, requests for withholding," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from the 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 240-535-1842, or by electronic mail at [Craig.Bassett@nrc.gov](mailto:Craig.Bassett@nrc.gov).

Sincerely,



Signed by Tate, Travis  
on 10/22/21

Travis L. Tate, Chief  
Non-Power Production and Utilization  
Facility Oversight Branch  
Division of Advanced Reactors and Non-Power  
Production and Utilization Facilities  
Office of Nuclear Reactor Regulation

Docket No. 50-059  
License No. R-23

Enclosure:  
As stated

cc: See next page

Texas A&M University

Docket No. 50-059

cc:

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Test, Research and Training  
Reactor Newsletter  
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University of Maryland  
4418 Stadium Drive  
College Park, MD 20742-2115

SUBJECT: TEXAS A&M UNIVERSITY - U.S. NUCLEAR REGULATORY COMMISSION  
ROUTINE INSPECTION REPORT NO. 05000059/2021201  
DATE: OCTOBER 22, 2021

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<b>NAME</b>	CBassett	NParker	TTate
<b>DATE</b>	10/19/2021	10/19/2021	10/22/2021

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

Docket No.: 50-059

License No.: R-23

Report No.: 05000059/2021201

Licensee: Texas A&M University

Facility: AGN-201M Research Reactor

Location: College Station, TX

Dates: August 30 – September 1, 2021

Inspector: Craig Bassett

Accompanied by: Juan Arellano, Nuclear Regulator Apprenticeship Network

Approved by: Travis L. Tate, Chief  
Non-Power Production and Utilization  
Facility Oversight Branch  
Division of Advanced Reactors and Non-Power  
Production and Utilization Facilities  
Office of Nuclear Reactor Regulation

Enclosure

## EXECUTIVE SUMMARY

Texas A&M University  
AGN-201M Research Reactor  
Inspection Report No: 05000059/2021201

The primary focus of this routine, announced inspection was on-site review of selected aspects of the Texas A&M University (TAMU, the licensee) Class III Aerojet General Nucleonics - Model 201 Modified (AGN-201M) research reactor safety program, including: (1) staffing and audits; (2) operator requalification and active license status; (3) radiological surveys; (4) surveillance; and, (5) emergency preparedness since the last U.S. Nuclear Regulatory Commission (NRC) inspection of these areas. The NRC staff determined that the licensee's program was acceptably directed toward the protection of public health and safety.

### Staffing and Audits

- The AGN-201M research reactor was shut down for various reasons on June 21, 2013, and there were no staff permanently assigned to the reactor.
- No biennial audit of the current emergency plan (E-Plan) was conducted as required by the technical specifications (TSs).

### Operator Requalification and Active License Status

- The operator requalification program was inactive and there were no facility staff who were licensed to operator the AGN-201M research reactor.

### Radiological Surveys

- The radiation protection program implemented at the facility was in accordance with the regulations and licensee procedures.

### Surveillance

- Required surveillance activities were completed as required by the TSs.

### Emergency Preparedness

- The AGN-201M research reactor E-Plan was implemented through procedures.

## REPORT DETAILS

### Summary of Facility Status

The TAMU 5 watt AGN-201M research reactor was shut down by the licensee for various reasons on June 21, 2013. The reactor, all related components, and fuel were subsequently removed from the Zachry Engineering Complex (ZEC) on the main TAMU campus and moved to the Texas Engineering Experiment Station (TEES) Nuclear Science Center (NSC). The reactor, related components, and fuel are stored and maintained in a possession-only status at the NSC.

### 1. Staffing and Audits

#### a. Inspection Scope (Inspection Procedure (IP) 69002, Section 02.01)

To verify compliance with the facility TSs (which were included as Appendix A to the TAMU AGN-201M Facility Operating License No. R-23), the inspector reviewed selected portions and/or aspects of:

- Reactor Safety Board (RSB) meeting minutes from March 23, 2018, to the present
- Annual Operating Reports of the TAMU AGN-201M Training Reactor, NRC License No. R-23, for the periods from June 1, 2019 – May 31, 2020, and from June 1, 2020 – May 31, 2021

#### b. Observations and Findings

##### (1) Staffing

The inspector verified that there were no permanently assigned reactor staff for the AGN-201M research reactor.

##### (2) Audits

###### (a) Audit of Conformance of the Facility Operation to the TSs

The inspector noted that the TSs required an audit of conformance of the facility operation to the TSs. The inspector also noted that there was no operation since the last NRC inspection, therefore no audits were conducted (or needed) in this area.

###### (b) Audit of the Emergency Plan

Section 6.4.3 of the TS required that the (AGN-201M) Facility E-Plan, as well as the implementing procedures, be audited by the RSB every 2 years. The AGN-201M E-Plan stipulated in Section 10 that the RSB was required to examine the plan to ensure that it was updated as needed.

The inspector interviewed licensee personnel and reviewed applicable records concerning audits performed by the RSB. The inspector found that the AGN-201M E-Plan was not audited by the RSB for the past 5 years. The inspector noted that failure of the RSB to audit the AGN-201M E-Plan every 2

years was a violation of TS Section 6.4.3. However, the inspector also noted that the AGN-201M reactor was disassembled and was not operational for 5 years. Further, the inspector confirmed that the licensee is currently working to revise the Training, Research, Isotopes, General Atomics (TRIGA) E-Plan to cover the AGN-201M reactor as well. Therefore, the NRC determined that this issue will be considered an Inspector Follow-up Item (IFI). The licensee was informed that the issue of revising the TRIGA E-Plan to include the AGN-201M reactor will be deemed an IFI which will be reviewed at a future date (05000059/2021201-01).

c. Conclusion

The inspector determined that there were no staff personnel permanently assigned to the AGN-201M research reactor, no operations of the reactor, and no biennial audit of the current E-was conducted.

## 2. Operator Requalification and Active License Status

a. Inspection Scope (IP 69002, Section 02.02)

- RSB meeting minutes from March 23, 2018, to the present
- discussions with the NSC Director and the NSC Associate Director

b. Observations and Findings

The inspector confirmed that there were no SROs or reactor operators at the NSC who were licensed to operate the AGN-201M research reactor. The inspector noted that the AGN-201M operator requalification program was inactive.

c. Conclusion

The inspector determined that there were no staff members at the facility who were licensed to operate the AGN-201M research reactor and the operator requalification program was inactive.

## 3. Radiological Surveys

a. Inspection Scope (IP 69002, Section 02.03)

The inspector reviewed the following to verify compliance with Title 10 of the *Code of Federal Regulations* (10 CFR) Part 19, "Notices, Instructions and Reports To Workers: Inspection and Investigations," and 10 CFR Part 20, "Standards for Protection Against Radiation," as well as Section 4.5 of the TSs:

- radiological signs and postings in various areas of the facility
- calibration records of selected radiation monitoring equipment
- NSC personnel dosimetry results for 2019 through the date of this inspection
- "NSC Health Physics AGN Storage" survey forms documenting quarterly contamination and radiation surveys of the designated storage areas of the AGN-201M research reactor components and fuel storage containers for the period from 2019 through the date of this inspection



b. Observations and Findings

(1) Surveys

The inspector reviewed quarterly radiation and contamination surveys of the areas where components of the AGN-201M reactor were stored. The surveys of these areas were completed by NSC staff personnel. The inspector verified the results were documented on the appropriate forms and evaluated. The inspector also verified that no elevated contamination or radiation levels were noted during the surveys.

(2) Postings and Notices

During tours of the NSC, the inspector reviewed the postings around the various storage areas and at the entrances to various controlled areas. The postings indicated the radiation hazards that were present. The inspector verified that other postings also showed the industrial hygiene hazards present in the areas. The inspector noted that copies of the notice to workers required by 10 CFR Part 19 were posted in various areas of the facility including on the door outside the hallway leading to the TRIGA reactor area.

(3) Dosimetry

The inspector verified that the licensee used a National Voluntary Laboratory Accreditation Program-accredited vendor to process personnel and area dosimetry. Because the AGN-201M research reactor fuel and components were stored at various locations around the NSC, the inspector reviewed the dosimetry records of all NSC personnel. The inspector confirmed that dosimetry records for the past 3 years showed monitoring was accomplished by using whole body and finger ring dosimeters. The inspector verified that occupational doses of facility personnel were within 10 CFR Part 20 limitations.

(4) Radiation Monitoring Equipment

The inspector confirmed that calibration of portable survey meters and friskers was completed by an outside contractor. The inspector noted that calibration records of the portable survey meters used to conduct the AGN-201M storage area surveys were reviewed. The inspector verified that calibration frequency met the requirements established in the applicable procedures and records were maintained.

(5) Facility Tours

The inspector toured the storage areas in the NSC Accelerator Building and the Cargo Container. The fuel storage area was also entered and observed. The inspector confirmed that access to these areas and access to radiation areas was controlled as required by the regulations, and control of radioactive material was acceptable. No anomalies were observed.

c. Conclusion

The inspector determined that the radiation protection program implemented at the facility was in accordance with the regulations and licensee procedures.

**4. Surveillance**

a. Inspection Scope (IP 69002, Section 02.04)

To determine whether the surveillance activities required by TS Sections 3.5, 4.5, and 5.2 were completed, the inspector reviewed:

- RSB meeting minutes from March 23, 2018, to the present
- “NSC Health Physics AGN Storage” survey forms documenting quarterly contamination and radiation surveys of the designated storage areas

b. Observations and Findings

(1) Storage of Reactor Components

As noted previously, the inspector toured the NSC Accelerator Building and the Cargo Container which housed the AGN-201M reactor components. The inspector verified that the AGN-201M Shield tank, Reactor Tank, Core Tank, associated internal components, and the reactor control panel and associated electronic equipment were stored inside the Accelerator Building within a fenced area secured with a padlock and a tamper proof seal attached. The inspector also verified other uncontaminated reactor components not stored in the Accelerator Building were stored in a secured Cargo Container with a lock and tamper proof seal affixed. The inspector verified that stored items, locks, and tamper proof seals were checked by the licensee each time a survey of the storage locations were conducted.

(2) Quarterly Inspections and Verifications

The inspector verified that the requirements in TS Section 4.5.a.1 (which required a quarterly inspection of the fenced area in the Accelerator Building) were completed. The inspector confirmed that the requirements in TS Section 4.5.b.1 (which required a quarterly survey of the cargo container) were completed to verify that the tamper proof seal were not broken.

(3) Fuel Storage

The inspector noted that the AGN-201M reactor fuel was transferred from AGN Facility Operating License, No. R-23, in the ZEC on the TAMU campus to the TRIGA Facility Operating License, No. R-83, at the NSC. The inspector verified that the material was thereafter stored in a special nuclear material (SNM) storage location using criticality controls. The inspector also verified that a criticality monitor was installed to monitor the area as required by the regulations.

As noted above, the inspector toured various areas at the NSC including the fuel/SNM storage area. The inspector noted that the area was locked and posted. Upon entry, the inspector noted that the SNM was stored in two drums. The

inspector verified that the AGN-201M reactor fuel, as well as the fueled control rods, and Pu-Be [Plutonium-Beryllium] start-up source, were stored there as required by TS Section 5.2. The inspector reviewed the serial numbers of the seals on the storage drums and verified that the numbers matched the numbers documented in the licensee records.

#### (4) Annual Operating Reports

The inspector reviewed the Annual Operating Reports for the AGN-201M research reactor. TS Section 6.9.1 requires that an operating report be submitted annually to the NRC. The inspector confirmed that the licensee submitted annual reports as required for the past two years. However, an Inspector Follow-up Item (IFI) had been opened during an inspection in 2018 concerning annual reports to review the submission of annual reports in the past. This issue is discussed further in Paragraph 6 below.

#### c. Conclusion

The inspector determined that the various AGN-201M reactor-related surveillances were completed as required by the TSs.

### 5. Emergency Preparedness

#### a. Inspection Scope (IP 69002, Section 02.05)

The inspector reviewed the following to verify the implementation of the E-Plan:

- RSB meeting minutes from March 23, 2018, to the present
- postings of emergency information and phone numbers for the NSC
- offsite support and letters of emergency support agreement between NSC and the Baylor Scott & White Medical Center College Station and between NSC and the College Station Fire Department
- TAMU AGN-201M Research Reactor Facility E-Plan, Revision 4, dated October 11, 2016, and various implementing procedures

#### b. Observations and Findings

##### (1) E-Plan for the AGN-201M Research Reactor

The inspector verified that the revised E-Plan was reviewed and approved by the RSB on October 11, 2016. The inspector noted that the licensee is currently working to revise the TRIGA E-Plan to include provisions to cover the AGN-201M reactor. These actions can only take place after various documents related to the AGN-201M reactor, including the safety analysis report, the TSs, and the E-Plan, are revised and submitted to the NRC for review and approval.

##### (2) Offsite Support

Through records review, and interviews with licensee personnel, the inspector confirmed that no training was completed recently with College Station Fire

Department personnel or with the Baylor Scott and White Medical Center staff. The inspector noted that no training with support agencies was required by the E-Plan. However, the inspector confirmed that training was held for individuals in the TAMU Police Department. The inspector confirmed that agreements with the Fire Department and the Medical Center staff were in place and maintained.

(3) Emergency Notification

To ensure emergency response personnel were notified in the event of an emergency, the inspector reviewed the Emergency Notification Roster. The inspector verified that the roster was updated and verified quarterly. The inspector checked various phones at the facility and verified that an Emergency Notification Roster was located at or near each phone as required by E-Plan Section 7.1.

(4) Emergency Preparedness Exercises and Drills

The inspector reviewed the AGN-201M E-Plan and confirmed that annual exercises and drills were not required by the plan.

c. Conclusion

The inspector determined that emergency support required by the E-Plan was in place and would be available if needed.

**6. Follow-up On Previously Identified Items**

a. Inspection Scope (IP 92701)

The inspector reviewed the licensee's actions taken in response to previously identified items.

b. Observation and Findings

- (1) IFI 50-059/2018-201-01 – (Open) – Follow-up to ensure that the licensee submits the annual operating reports for the AGN-201M research reactor for the period from June 2015 to the present as required.

In September 2018, the inspector reviewed the annual operating reports for the AGN-201M research reactor. It was noted that no reports were submitted to the NRC since July 2015. TS Section 6.9.1 requires that an operating report be submitted annually to the NRC. The inspector indicated that, even though no reactor operations occurred since that time, it was a requirement to submit a report annually. The licensee indicated that they would meet the requirement and submit the reports. The inspector informed the licensee that the issue of submitting the annual operating reports for the AGN-201M research reactor would be identified as an Inspector Follow-up Item (IFI) and would be reviewed during a future inspection.

During this inspection, the inspector reviewed the annual operating reports submitted to the NRC pertaining to the AGN-201M reactor. As noted above, the inspector verified that the licensee submitted annual operating reports to the NRC as required by the TSs for June 2019 – May 2020, and June 2020 – May 2021. However, the

inspector noted that there were no annual reports for the period from June 2015 to May 2019. The licensee was informed that they were required to issue the annual reports for the period from June 2015 through May 2019. This issue remains open.

- (2) IFI – 50-059/2018-201-02 – (Open) – Follow-up to ensure that the licensee submits a current version of the AGN-201M research reactor E-Plan to the NRC.

During an inspection in September 2018, the inspector noted the E-Plan in use by the licensee concerning the AGN-201M research reactor was not the same as the version on file with the NRC. The inspector informed the licensee that a copy of the current E-Plan for the AGN-201M research reactor should be submitted to the NRC. The licensee agreed that this should be done. The inspector informed the licensee that the issue of submitting a current version of the AGN-201M E-Plan to the NRC would be identified as an IFI and would be reviewed during a future inspection.

During the current inspection, the inspector reviewed the actions of the licensee regarding the AGN-201M E-Plan. As noted above, the licensee is currently working to revise the TRIGA E-Plan to include provisions to cover the AGN-201M reactor as well. These actions can only take place after various documents related to the AGN-201M reactor are revised and submitted to the NRC for review and approval. This issue remains open.

c. Conclusion

The inspector determined that two IFIs remained open.

**7. Exit Interview**

The inspection scope and results were summarized on September 1, 2021, with members of licensee management. The inspector described the areas inspected and discussed in detail the inspection findings. The licensee acknowledged the results of the inspection and did not identify any information to be withheld from public disclosure.

## **PARTIAL LIST OF PERSONS CONTACTED**

### Licensee

S. McDeavitt	Director, NSC
J. Jenkins	Associate Director, NSC
S. Miller	TRIGA Reactor Operations Manager
R. Hernandez	TRIGA Reactor Supervisor
D. Rios	Radiation Safety Officer
V. Vlassov	Research Engineer I

## **INSPECTION PROCEDURES USED**

IP 69002	Class III Research and Test Reactors
IP 92701	Follow-up

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

### Opened

50-059/2021201-01	IFI	Follow-up to ensure that the licensee revises the TRIGA E-Plan to include coverage for the AGN-201M reactor.
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### Discussed

50-059/2018201-01	IFI	Follow-up to ensure that the licensee submits a current version of the AGN-201M research reactor E-Plan to the NRC.
50-059/2018201-01	IFI	Follow-up to ensure that the licensee submits the annual operating reports for the AGN-201M research reactor for the period from June 2015 to the present as required.

### Closed

None

## **LIST OF ACRONYMS USED**

10 CFR	Title 10 of the <i>Code of Federal Regulations</i>
AGN-201M	Aerojet General Nucleonics-201 Modified
E-Plan	Emergency Plan
IFI	Inspector Follow-up Item
IP	Inspection Procedure
NRC	Nuclear Regulatory Commission
NSC	Nuclear Science Center
RSB	Reactor Safety Board
SNM	Special Nuclear Material
SRO	Senior Reactor Operator
TAMU	Texas A&M University

TEES  
TSs  
ZEC

Texas Engineering Experiment Station  
Technical Specifications  
Zachry Engineering Complex