



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

December 23, 2020

Mr. Carl Willis, Chief Reactor Supervisor  
Nuclear Engineering Department  
1 University of New Mexico, MSC-01-1120  
Albuquerque, NM 87131-0001

SUBJECT: UNIVERSITY OF NEW MEXICO – U.S. NUCLEAR REGULATORY  
COMMISSION ROUTINE INSPECTION REPORT NO. 05000252/2020201

Dear Mr. Willis:

From September 21-23, 2020, the U.S. Nuclear Regulatory Commission (NRC) staff conducted an inspection at the University of New Mexico AGN-201M Reactor facility. The enclosed report presents the inspection results which were discussed on September 23, 2020, with you and Ken Carpenter, 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, observed activities, and interviewed 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, 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 electronic mail at [Craig.Bassett@nrc.gov](mailto:Craig.Bassett@nrc.gov).

Sincerely,

***/RA BReed for/***

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

Docket No. 50-252  
License No. R-102

Enclosure:  
As stated

cc: See next page

University of New Mexico

Docket No. 50-252

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SUBJECT: UNIVERSITY OF NEW MEXICO – U.S. NUCLEAR REGULATORY  
COMMISSION ROUTINE INSPECTION REPORT NO. 05000252/2020201  
DATED: December 23, 2020

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

Docket No.: 50-252

License No.: R-102

Report No.: 05000252/2020201

Licensee: University of New Mexico

Facility: University of New Mexico AGN-201M Reactor

Location: Albuquerque, New Mexico

Dates: September 21-23, 2020

Inspector: Craig Bassett

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

University of New Mexico  
University of New Mexico AGN-201M Reactor Facility  
Nuclear Regulatory Commission  
Inspection Report No. 05000252/2020201

The primary focus of this routine, announced inspection included onsite review of selected aspects of the University of New Mexico (UNM, the licensee) Class II nuclear reactor safety program including: (1) organization and staffing; (2) procedures; (3) health physics; (4) design changes; (5) committees, audits and reviews; and, (6) transportation activities. The U.S. Nuclear Regulatory Commission (NRC) staff determined the licensee's programs were acceptably directed toward the protection of public health and safety, and in compliance with the NRC requirements.

### Organization and Staffing

- Organizational structure and staffing satisfied requirements outlined in the facility technical specifications (TSs).

### Procedures

- Procedural control and implementation satisfied TS requirements.

### Health Physics

- The radiation protection program was maintained and implemented as required by TS and satisfied regulations.

### Design Changes

- The licensee's design change program was implemented as required by TS and satisfied regulations.

### Committees, Audits and Reviews

- Audit, review, and oversight functions required by the TSs were acceptably completed by the Reactor Safety Advisory Committee (RSAC).

### Transportation Activities

- The licensee did not ship any radioactive material from the facility using the reactor license.

## REPORT DETAILS

### Summary of Facility Status

The UNM Aerojet General Nucleonics-201 Modified (AGN-201M) nuclear reactor continued to operate in support of teaching, classroom experiments/demonstrations, surveillances, and operator training. During the inspection, the reactor was shut down for maintenance and was not operated.

### 1. Organization and Staffing

#### a. Inspection Scope (Inspection Procedure [IP] 69001, Section 02.01)

The inspector reviewed the following to ensure that the requirements of TS Section 6.0 (revised May 2018) were met:

- organization chart
- qualifications of facility personnel
- management responsibilities
- selected portions of the reactor operations logs
- "2019 Annual Report for the AGN-201M reactor located at the University of New Mexico - Docket 50-252"

#### b. Observations and Findings

The inspector determined that the licensee's organization was consistent with that specified in the TSs. The organizational structure and the responsibilities of the reactor staff had not changed since the last inspection. The inspector verified the staff qualifications met or exceeded those specified in the TSs.

The inspector confirmed that staffing levels remained consistent with those noted during the last inspection of the facility. Through the review of selected records, during operations when the reactor was not secured, the inspector verified that the facility met the minimum operating staff requirements specified in TS Section 6.1.12.

#### c. Conclusion

The inspector determined that organizational structure and staffing satisfied TS requirements.

### 2. Procedures

#### a. Inspection Scope (IP 69001, Section 02.03)

The inspector reviewed the following to ensure that the procedural control requirements of TS Section 6.6 were met:

- records of changes to procedures
- RSAC meeting minutes from June 22, 2018, to the present

- selected procedures from the Reactor Operation and Training Manual, revised March 2019

b. Observations and Findings

The inspector reviewed the licensee's written procedures and revisions to procedures. The procedures were organized to address the full scope of activities conducted at the reactor facility. The inspector noted that procedural changes were reviewed and approved as required by TSs. The inspector noted training of personnel on procedures and changes was completed. Through observation of various activities at the facility, the inspector determined that licensee personnel conducted activities in accordance with applicable procedures.

c. Conclusion

The inspector determined the procedural control and implementation satisfied TS requirements.

### 3. Health Physics

a. Inspection Scope (IP 69001, Section 02.07)

The inspector reviewed the following to verify compliance with TS Section 4.4 as well as 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," requirements:

- radiological signs, postings, and area control
- quarterly dosimetry records for the reactor room from 2018 to the present
- quarterly dosimetry records for reactor staff and students from 2018 to the present
- records of maintenance and calibration of portable radiation survey instruments from 2018 to the present
- monthly "Nuclear Engineering AGN-201M Reactor/Source Storage Radiation Dose Survey" forms for periods of non-operation
- annual "Nuclear Engineering AGN-201M Reactor Operational Radiation Survey" forms for the last 3 years
- "2019 Annual Report for the AGN-201M reactor located at the University of New Mexico - Docket 50-252"

b. Observations and Findings

The inspector toured the Nuclear Engineering Laboratory (NE Lab) and observed the use of dosimetry and radiation monitoring equipment. Licensee personnel were interviewed as well. The inspector also discussed the subjects of surveys, dosimetry, training, and radioactive effluents with the UNM Health Sciences Center Office of Research, Radiation Safety Office representative.

(1) Surveys

The inspector reviewed monthly and annual radiation and contamination surveys of the NE Lab controlled areas completed by Radiation Safety Office personnel. The inspector verified that surveys were completed in accordance with procedure and the results were documented on the appropriate forms and evaluated as required by procedure. The inspector noted that the surveys included the date, survey instrument used with calibration date, reactor power level, and the type of survey as required by Radiation Safety Office procedure.

The inspector determined that Radiation Safety Office personnel also completed an annual radiation survey of the facility while the reactor was at power in accordance with TSs. The inspector determined that the readings detected during these annual surveys were comparable from year to year and there were no readings in excess of those noted in the past.

(2) Postings and Notices

The inspector toured the NE Lab and reviewed the postings required by 10 CFR Parts 19 and 20 at the entrances to various controlled areas including the Reactor facility, the Reactor Room, and radioactive material storage areas. The inspector determined that postings were acceptable and satisfied regulations and indicated the radiation and contamination hazards present. The facility radioactive material storage areas were noted by the inspector to be properly posted in accordance with regulations. No unmarked radioactive material was found by the inspector in the facility. The inspector verified that control of radioactive material and control of access to radiation and high radiation areas were in compliance with the regulations.

(3) Dosimetry

The inspector determined that the licensee used thermoluminescent dosimeters (TLD) for whole body monitoring of beta and gamma radiation exposure. The TLDs also contained a component to measure neutron radiation. The dosimetry was supplied and processed by a National Voluntary Laboratory Accreditation Program accredited vendor, i.e., Landauer. The inspector examined the TLD results indicating radiation exposures at the facility for the past 2 years and verified that the highest occupational doses, as well as doses to the public, were well within 10 CFR Part 20 limitations.

(4) Radiation Monitoring Equipment

The inspector determined that calibration of portable survey meters and friskers was completed by Radiation Safety Office personnel or by companies that specialize in calibrating instruments. Fixed area radiation monitors were calibrated at the facility by reactor staff personnel using a portable source. The inspector reviewed calibration records of portable

survey meters and fixed radiation detectors in use at the facility. The inspector verified that calibration frequencies of the various instruments examined met the requirements established in TS Section 4.4.a., and records were maintained as required by regulations. The inspector noted that instruments that exceeded the calibration period were tagged out of service.

(5) Radiation Protection Program

The inspector verified that the licensee's Radiation Protection Program (RPP) was established through the UNM Radiation Safety Manual, revised September 17, 2018, and various Radiation Safety Office procedures. The inspector verified that the RPP was reviewed annually as required by the regulations. The most recent review of the program did not identify any issues related to radiation protection at the NE Lab.

(6) Training

The Radiation Safety Manual required that all personnel who worked with radioactive materials receive training in radiation protection, policies, procedures, requirements, and the facilities prior to having unescorted access at the facility. Radiation Safety Office personnel were responsible for conducting the training. A test was administered at the end of the training to ensure that the individuals understood the material presented. The inspector verified that the training covered the topics required to be taught in 10 CFR Part 19 and a review of training materials and tests indicated that reactor staff and student personnel were instructed on, and understood, the appropriate subjects.

(7) Environmental Monitoring

The inspector determined that the licensee complied with NRC regulations for environmental monitoring by ensuring that all doses at the site boundary were less than the dose limits specified in 10 CFR 20.1301, "Dose limits for individual members of the public." The licensee accomplished this by placing several TLDs in strategic locations around the inside perimeter of the facility. The inspector reviewed the TLD results and noted that there were no doses above the regulatory limits. The inspector also verified that there were no liquid or gaseous effluents discharged from the facility since the last inspection.

c. Conclusion

The inspector determined the RPP was maintained and implemented as required.

#### 4. Design Changes

a. Inspection Scope (IP 69001, Section 02.08)

To verify compliance with the licensee's procedures, TSs, and 10 CFR 50.59, "Changes, tests and experiments," the inspector reviewed selected aspects of:

- selected "Request for Use" forms from January 2018 to the present
- completed "Reactor Maintenance Log Sheet – The University of New Mexico AGN-201M Reactor Facility," forms for the period from 2018 to the present
- "2019 Annual Report for the AGN-201M reactor located at the University of New Mexico - Docket 50-252"

b. Observations and Findings

The inspector reviewed the records related to experiments and requested maintenance since the last inspection. The inspector determined that there were no new experiments (i.e., design changes) since the last NRC inspection. The inspector reviewed the Requests for Use forms and maintenance log sheets to determine if they conformed to the screening and vetting process as described under 10 CFR 50.59. The inspector found that the licensee determined none of the changes required a change to the TSs or met any of the criteria in 10 CFR 50.59(c)(2). The inspector did note that there was one maintenance request form (design change review) that was still pending. The inspector verified the licensee was in the process of reviewing the issue and preparing a written 10 CFR 50.59 evaluation of the proposed change to be implemented.

c. Conclusion

The inspector determined the licensee's design change program was implemented as required by procedures and regulations.

#### 5. Committees, Audits and Reviews

a. Inspection Scope (IP 69001, Section 02.09)

To verify that the audit and review TS requirements were completed, the inspector reviewed selected aspects of:

- RSAC meeting minutes from June 22, 2018, to the present
- results of audits and reviews contained in the RSAC meeting minutes
- "2019 Annual Report for the AGN-201M reactor located at the University of New Mexico - Docket 50-252"

b. Observations and Findings

The inspector noted that the functions and responsibilities of the RSAC were defined in the TSs. The inspector verified that the RSAC held semiannual meetings and a quorum was present as required. The inspector verified that the reviews required by TS Section 6.4.2 were conducted.

The inspector reviewed the RSAC audits required under TS Section 6.4.3 and determined that the RSAC performed audits within the periodicity outlined in the TSs. Audit results and comments were captured within the meeting minutes and during this inspection it was noted by the inspector that there were no incomplete corrective action items that needed to be addressed. The inspector also noted that there were no safety significant issues recorded during the audits.

c. Conclusion

The inspector determined the review and oversight functions required by the TSs were acceptably completed by the RSAC.

**6. Transportation Activities**

a. Inspection Scope (IP 86740)

To verify compliance with regulatory and procedural requirements for shipping radioactive material, the inspector interviewed licensee personnel, Radiation Safety Office personnel, and reviewed operational logs and records.

b. Observations and Findings

Through records review and discussions with licensee and Radiation Safety Office personnel, the inspector determined that the licensee did not ship any radioactive material from the reactor facility under the auspices of the reactor license. The inspector verified that if the licensee needed to ship radioactive material, it would be transferred to the UNM's Broad Scope license and shipped or disposed of under that license.

c. Conclusion

The inspector determined that no radioactive material was shipped from the reactor facility under the reactor license.

**7. Exit Meeting**

The inspection scope and results were summarized on September 23, 2020, by the inspector with members of licensee management. The inspector described the areas inspected and discussed in detail the inspection findings. The licensee acknowledged the findings presented 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

K. Carpenter	Reactor Supervisor
R. Davis	Senior Reactor Operator
C. Willis	Chief Reactor Supervisor

### Other Personnel

M. Eden	Health Physicist, Radiation Safety Office, UNM Health Sciences Center, Office of Research
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## INSPECTION PROCEDURES USED

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

## ITEMS OPENED, CLOSED, AND DISCUSSED

### OPENED:

None

### CLOSED:

None

### DISCUSSED:

None

## LIST OF ACRONYMS USED

10 CFR	Title 10 of the <i>Code of Federal Regulations</i>
AGN-201M	Aerojet General Nucleonics-201 Modified
IP	Inspection Procedure
NE Lab	Nuclear Engineering Laboratory
NRC	U.S. Nuclear Regulatory Commission
RPP	Radiation Protection Program
RSAC	Reactor Safety Advisory Committee
TLD	Thermoluminescent Dosimeter
TSs	Technical Specifications
UNM	University of New Mexico