

August 22, 2013

Robert D. Busch, Ph.D, P.E.  
Chief Reactor Supervisor  
Chemical and Nuclear Engineering Dept., FEC 209  
MSC01 1120  
University of New Mexico  
Albuquerque, NM 87131-0001

SUBJECT: UNIVERSITY OF NEW MEXICO - NRC ROUTINE INSPECTION REPORT NO.  
50-252/2013-201 AND NOTICE OF VIOLATION

Dear Dr. Busch:

On July 29 – August 1, 2013, the U.S. Nuclear Regulatory Commission (NRC, the Commission) conducted an inspection at the University of New Mexico (UNM) AGN-201M Research Reactor facility (Inspection Report No. 50-252/2013-201). The enclosed report documents the inspection results, which were discussed on August 1, 2013, with you, Mr. Kenneth Carpenter, Reactor Supervisor, and representatives of the UNM's Department of Safety & Risk Services (SRS), Radiation Safety Division.

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 Severity Level IV violation of NRC requirements occurred. The violation was evaluated in accordance with the NRC Enforcement Policy included on the NRC's Web site at [www.nrc.gov](http://www.nrc.gov); select **What We Do, Enforcement**, then **Enforcement Policy**. The violation is cited in the enclosed Notice of Violation (Notice) and the circumstances surrounding it are described in detail in the subject inspection report. The violation is being cited in the Notice because it constitutes a failure to meet regulatory requirements that has more than minor safety significance and the licensee failed to identify the violation.

The NRC has concluded that information regarding the reason for the violation, the corrective actions planned and taken to correct the violation and prevent recurrence were adequately addressed during the inspection and documented in this inspection report. Therefore, you are not required to respond to this letter unless the description herein does not accurately reflect your corrective actions or your position. In that case, or if you choose to provide additional information, you should follow the instructions specified in the enclosed Notice. In accordance with 10 CFR 2.390, "Public inspections, exemptions, and requests for withholding" a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the NRC's document system (Agencywide Document Access Management System (ADAMS)). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (Public Electronic Reading Room).

Should you have any questions concerning this inspection, please contact Johnny Eads at (919) 219-9128 or by electronic mail at [Johnny.Eads@nrc.gov](mailto:Johnny.Eads@nrc.gov).

Sincerely,

***/RA/***

Gregory T. Bowman, Chief  
Research and Test Reactors Oversight Branch  
Division of Policy and Rulemaking  
Office of Nuclear Reactor Regulation

Docket No.: 50-252

License No.: R-102

Enclosures:

1. Notice of Violation
2. NRC Inspection Report No. 50-252/2013-201

cc: Please see next page

R. Busch

- 3 -

University of New Mexico

Docket No. 50-252

cc:

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202 Nuclear Sciences Center  
Gainesville, FL 32611

Should you have any questions concerning this inspection, please contact Johnny Eads at (919) 219-9128 or by electronic mail at [Johnny.Eads@nrc.gov](mailto:Johnny.Eads@nrc.gov).

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**ACCESSION NO.: ML13233A367      \* via e-mail      NRC-002**

OFFICE	NRR/DPR/PROB	NRR/DPR/PROB
NAME	JEads	GBowman
DATE	08/21/2013	8/ 22 /13

**OFFICIAL RECORD COPY**

## NOTICE OF VIOLATION

University of New Mexico  
AGN-201M Reactor Facility

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

During a U.S. Nuclear Regulatory Commission (NRC) inspection conducted July 29 – August 1, 2013, a violation of NRC requirements was identified. In accordance with the NRC Enforcement Policy, the violation is listed below:

Technical Specification (TS) 4.2.i requires that the power level measuring channels be calibrated and set points verified annually.

Contrary to the above requirements, on July 31, 2013, the NRC inspector found that the TS required channel calibration had not been conducted for power channel #2 within the required periodicity. The channel calibration and set point verification for power channel #2 was last completed more than 15 months ago on April 16, 2012.

This has been determined to be a Severity Level IV violation (Section 6.1).

The NRC has concluded that information regarding the reason for the violation, the corrective actions planned and taken to correct the violation and prevent recurrence were adequately addressed during the inspection and documented in this inspection report. Therefore, you are not required to respond to this letter unless the description herein does not accurately reflect your corrective actions or your position. In that case, or if you choose to respond, clearly mark your response as a "Reply to a Notice of Violation," include the violation number, and send it to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001 with a copy to the Director, Office of Nuclear Reactor Regulation within 30 days of the date of the letter transmitting this Notice of Violation (Notice).

If you contest this enforcement action, you should also provide a copy of your response, with the basis for your denial, to the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555-0001. Because your response will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's Agencywide Documents Access and Management System (ADAMS), to the extent possible, it should not include any personal privacy, proprietary, or safeguards information so that it can be made available to the public without redaction. ADAMS is accessible from the NRC Web site at (the Public Electronic Reading Room) <http://www.nrc.gov/reading-rm/adams.html>. If personal privacy or proprietary information is necessary to provide an acceptable response, then please provide a bracketed copy of your response that identifies the information that should be protected and a redacted copy of your response that deletes such information.

If you request withholding of such material, you must specifically identify the portions of your response that you seek to have withheld and provide in detail the bases for your claim of withholding (e.g., explain why the disclosure of information will create an unwarranted invasion of personal privacy or provide the information required by 10 CFR 2.390(b) to support a request for withholding confidential commercial or financial information). If safeguards information is necessary to provide an acceptable response, please provide the level of protection described in 10 CFR 73.21.

In accordance with 10 CFR 19.11, you may be required to post this Notice within two working days.

Dated this 22 the day of August 2013

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

Docket No.: 50-252

License No.: R-102

Report No.: 50-252/2013-201

Licensee: University of New Mexico

Facility: AGN-201M Reactor Facility

Location: Albuquerque, New Mexico

Dates: July 29 – August 1, 2013

Inspector: Johnny Eads

Approved by: Gregory T. Bowman, Chief  
Research and Test Reactors Oversight Branch  
Division of Policy and Rulemaking  
Office of Nuclear Reactor Regulation

## EXECUTIVE SUMMARY

University of New Mexico  
AGN-201M Research Reactor Facility  
NRC Inspection Report No.: 50-252/2013-201

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 research reactor safety program including: 1) Organization and Staffing; 2) Operations Logs and Records; 3) Surveillance and Limiting Conditions for Operations (LCOs); 4) Emergency Planning, 5) Maintenance Logs and Records; and 6) Fuel Handling Logs and Records since the last U.S. Nuclear Regulatory Commission (NRC) inspection. The licensee's program was acceptably directed toward the protection of public health and safety and in compliance with NRC requirements. One cited violation was identified.

### Organization and Staffing

- Organizational structure and staffing satisfied Technical Specification (TS) requirements.

### Operations Logs and Records

- The facility was maintaining and retaining records in accordance with the TS.

### Surveillance and LCOs

- Surveillances and LCOs were being performed and observed in accordance with facility TS. One cited violation was identified.

### Emergency Planning

- The facilities' emergency preparedness program is consistent with the approved Emergency Plan.

### Maintenance Logs and Records

- Maintenance activities were performed in accordance with facility procedures. Maintenance records were retained in accordance with TS required periodicity.

### Fuel Handling Logs and Records

- Fuel Handling operations were performed in accordance with facility procedures, protocol, and adhered to TS reactivity specifications for storage in a secured location outside the reactor.

## REPORT DETAILS

### Summary of Facility Status

The University of New Mexico (UNM, the licensee) Aerojet General Nucleonics-201 Modified (AGN-201M) research reactor was licensed to operate at a maximum steady-state thermal power of 5 Watt (W). The licensee continued to operate the reactor in support of operator training, surveillances, and teaching and classroom experiments/demonstrations. During the inspection, the reactor was operated for the performance and completion of the monthly surveillance tests.

#### 1. Organizational Staffing

##### a. Inspection Scope (IP 69001)

The inspector reviewed the following to ensure that the requirements of Technical Specifications (TS) Section 6.0 (revised November 2010) were being met:

- Management responsibilities
- Qualifications of facility personnel
- Organization chart
- Selected portions of the Reactor Operations Logs

##### b. Observations and Findings

This organization was consistent with that specified in the TS. The organizational structure and the responsibilities of the reactor staff had not changed since the last inspection.

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 facility met the minimum operating staff requirements specified in Technical Specification (TS) Section 6.1.12.

##### c. Conclusion

Organizational structure and staffing satisfied TS requirements.

#### 2. Operation Logs and Records

##### a. Inspection Scope (IP 69001)

The inspector reviewed administrative procedures and reviewed record retention to verify compliance with TS Section 6.10. This included:

- Reactor Operations Logs, various 2012 and 2013

- Surveillance and LCO Records, various 2012 and 2013
- Maintenance Records, various 2012 and 2013

b. Observations and Findings

Reactor Operations logs are maintained on an Appendix IIIB form, "The University of New Mexico AGN-201M Reactor Operations Log". The logs identify the completion of the pre-critical startup checklist, startup, power changes, and shutdown of the reactor. The logs and records identify the installation or removal of fuel elements, control rods, or experiments that could affect core reactivity. The logs and records identify rod worth measurements and other reactivity measurements.

It was noted that the reactor operators followed the appropriate procedures, were knowledgeable of the required actions, and professional in the conduct of their duties.

The reactor logs were found to be properly completed and maintained.

c. Conclusion

The facility was maintaining and retaining records in accordance with the TS.

**3. Surveillance and Limiting Condition for Operation**

a. Inspection Scope (IP 69001)

The inspector reviewed the following to verify compliance with TS Section 3.0 and 4.0:

- AGN-201 Annual Maintenance form, dated July 24, 2012
- Reactor Operations Logs, various 2012 and 2013
- Monthly Reactor Inspection AGN-201 M, SN-112 Reactor forms, various for 2012 and 2013

b. Observations and Findings

The inspector verified that in general LCOs for reactor core reactivity conditions, reactor control and safety systems, limitations of experiments, and radiation monitoring, control and shielding were met since the last NRC inspection. At the UNM reactor facility, LCOs are verified through monthly and annual surveillances, the results are maintained within the Monthly Maintenance Logbook. Monthly maintenance activities include such determinations as nuclear instrumentation channel checks to verify scram set points and interlocks and rod drop tests. The annual maintenance involves extensive determinations such as power calibration, core excess reactivity, shutdown margin, and rod worth calibrations. During the review, the inspector identified one violation.

Technical Specification 4.2.i requires that the power level measuring channels be calibrated and set points verified annually.

Contrary to the above requirements, on July 31, 2013 the NRC inspector found that the TS required channel calibration had not been conducted for power channel #2 within the required periodicity. The channel calibration and set point verification for power channel #2 was last completed more than 15 months ago on April 16, 2012.

The facility determined that the cause of the violation was a change to the experimental procedure used to perform the power calibration. A preceding step had been added to the procedure and the recorded information no longer matched the conditions for foil irradiation to determine power levels. The corrective action taken is the addition of a procedural step to require that while foils are being irradiated, readings for Power Channels 2, 3, and the Auxiliary Channel will be taken and recorded in the Reactor Operations Log.

Compliance with the TS was re-established on August 1, 2013 when the power calibration was performed and the data recorded.

These corrective actions appeared to be appropriate and will be reviewed during a future NRC inspection.

The licensee was informed that failure to perform TS-required annual calibration of power channel #2 was an violation (VIO) of TS 4.2.i (VIO 50-252/2013-201-01).

c. Conclusion

Surveillances and LCOs were being performed and observed in accordance with facility TS. One cited violation was identified.

**4. Emergency Preparedness**

a. Inspection Scope (IP 69001)

The inspector verified compliance with the facilities Emergency Plan (E-Plan) by reviewing selected aspects of:

- E-plan for the UNM AGN-201M Reactor Facility, dated October 24, 2012
- Emergency Drill Critique, dated May 4, 2012
- Emergency Contact Lists
- Emergency Facilities and Capabilities

b. Observations and Findings

The inspector reviewed the E-Plan, emergency implementing procedures, and toured the facility, noting emergency response capabilities. The E-Plan did not have significant changes and did not appear to change its effectiveness.

The inspector conducted a walkdown of the facility to verify that the equipment specified in E-Plan Section 8.0 "Emergency Facilities and Equipment," was available.

In addition, the inspector reviewed the latest facility drill critique dated May 4, 2012. The drill was conducted on May 4, 2012 and simulated a fire in the reactor room including operator response and facility evacuation and assembly. The drill was found to satisfy the requirements of E-Plan Section 10.2, "Training and Drills."

c. Conclusion

The licensee was maintaining acceptable emergency preparedness in accordance with TS and E-Plan requirements.

**5. Maintenance Logs and Records**

a. Inspection Scope (IP 69001)

To verify that maintenance was being performed in accordance with procedures, the inspector reviewed the following:

- Maintenance Log
- Selected portions of the Reactor Operations Logs

b. Observations and Findings

The inspector reviewed selected portions of the control room and maintenance logbooks governing the interval of time since the previous inspection.

Maintenance during this inspection period included troubleshooting and repair of control rod electrical wiring.

Routine and preventive maintenance was controlled and documented in the appropriate logs. These documents indicated that all maintenance activities were in accordance with the requirements in licensee administrative controls. The inspector verified that all maintenance was conducted in accordance with the requirements of TS Section 4.0, and system operational checks were performed before returning them to service.

c. Conclusion

Maintenance activities were performed in accordance with facility procedures  
Maintenance records were retained in accordance with TS required periodicity.

**6. Fuel Handling Logs and Records**

a. Inspection Scope (IP 86740)

To verify compliance with TS 5.2, the inspector interviewed facility staff and reviewed the following:

- Reactor Operations Log, various 2012 and 2013

b. Observations and Findings

Through discussion with reactor facility staff and record reviews it was determined that the majority of fuel handling is performed during laboratory experiments (e.g., 1/M plots for criticality determination) or annual surveillances (e.g., rod drop tests).

The inspector found that the records of fuel movements completed during the inspection period adequately documented the location of fuel elements at all times.

c. Conclusion

Fuel Handling operations were performed in accordance with facility procedures, protocol, and adhered to TS reactivity specifications for storage in a secured location outside the reactor.

**9. Exit Meeting**

The inspector presented the inspection results to licensee management at the conclusion of the inspection on August 1, 2013. 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

R. Busch	Chief Reactor Supervisor
K. Carpenter	Reactor Supervisor

Other Personnel

C. Anderko	Radiation Safety Officer
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**INSPECTION PROCEDURES USED**

IP 69001	Class II Research and Test Reactors
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**ITEMS OPENED, CLOSED, AND DISCUSSED**

OPENED:

50-252/2013-201-01	VIO	Failure to perform TS-required annual calibration of power channel #2
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CLOSED:

None

DISCUSSED:

None

**LIST OF ACRONYMS USED**

10 CFR	Title 10 of the <i>Code of Federal Regulations</i>
ANSI/ANS	American National Standards Institute/American Nuclear Society
CRS	Chief Reactor Supervisor
E-Plan	Emergency Plan
IFI	Inspector Follow-up Item
IP	Inspection Procedure
NRC	U. S. Nuclear Regulatory Commission
OJT	On-the-job training
ROTM	Reactor Operation and Training Manual
RS	Reactor Supervisor
RSO	Radiation Safety Officer
RSAC	Reactor Safety Advisory Committee
SRO	Senior Reactor Operator
TS	Technical Specifications
UNM	University of New Mexico
U-235	Uranium 235
VIO	Violation