



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

August 24, 2021

Mr. Andrew Cook, Interim Reactor  
Facility Director Chief, Reactor Division  
Radiation Sciences Department  
Armed Forces Radiobiology Research Institute  
4555 South Palmer Road, Building  
Bethesda, MD 20889-5648

SUBJECT: ARMED FORCES RADIOBIOLOGY RESEARCH INSTITUTE – U.S. NUCLEAR  
REGULATORY COMMISSION ROUTINE INSPECTION REPORT  
NO. 05000170/2021202

Dear Mr. Cook:

From July 12 – 14, 2021, the U.S. Nuclear Regulatory Commission (NRC) conducted an inspection at the Armed Forces Radiobiology Research Institute (AFRRI) reactor facility. The enclosed report documents the inspection results which were discussed on July 14, 2021, with you and AFRRI staff.

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 one Severity Level IV, non-cited violation of NRC regulatory requirements occurred. The violation was evaluated in accordance with the NRC Enforcement Policy. The current Enforcement Policy is included on the NRC's Web site at <https://www.nrc.gov/about-nrc/regulatory/enforcement/enforce-pol.html>. The violation is described in detail in the enclosed inspection report.

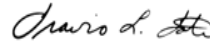
In accordance with Title 10 of the *Code of Federal Regulations*, Section 2.390, "Public inspections, exemptions, requests for withholding," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records component 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).

A. Cook

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If you have any questions concerning this inspection, please contact Mr. Phil O'Bryan at 301-415-0266, or by electronic mail at [Phil.O'Bryan@nrc.gov](mailto:Phil.O'Bryan@nrc.gov).

Sincerely,



Signed by Tate, Travis  
on 08/24/21

Travis 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. 50-170  
License No. R-84

Enclosure:  
As stated

cc: See next page

Armed Forces Radiobiology Research Institute

Docket No. 50-170

cc:

Director, Maryland Office of Planning  
301 West Preston Street  
Baltimore, MD 21201

Montgomery County Executive  
101 Monroe Street, 2<sup>nd</sup> Floor  
Rockville, MD 20850

Environmental Program Manager III  
Radiological Health Program  
Air & Radiation Management Adm.  
Maryland Dept of the Environment  
1800 Washington Blvd., Suite 750  
Baltimore, MD 21230-1724

Director  
Air & Radiation Management Adm.  
Maryland Dept of the Environment  
1800 Washington Blvd., Suite 710  
Baltimore, MD 21230

Test, Research and Training  
Reactor Newsletter  
Attention: Ms. Amber Johnson  
Dept of Materials Science and Engineering  
University of Maryland  
4418 Stadium Drive  
College Park, MD 20742-2115

Manager  
Nuclear Programs  
Maryland Department of Natural Resources  
Tawes B-3  
Annapolis, MD 21401

Colonel Mohammad Naeem, Director  
Armed Forces Radiobiology Research Institute  
4301 Jones Bridge Road  
Bethesda, MD 20814

SUBJECT: ARMED FORCES RADIOBIOLOGY RESEARCH INSTITUTE – U.S. NUCLEAR  
REGULATORY COMMISSION ROUTINE INSPECTION REPORT  
NO. 05000170/2021202 DATED: AUGUST 24, 2021

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**NRC-002**

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<b>NAME</b>	PO'Bryan	NParker	TTate
<b>DATE</b>	07/26/2021	07/28/2021	08/24/2021

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

Docket No.: 50-170  
License No.: R-84  
Report No.: 05000170/2021202  
Licensee: Armed Forces Radiobiology Research Institute  
Facility: Armed Forces Radiobiology Research Institute TRIGA Reactor  
Location: Bethesda, MD  
Dates: July 12 – 14, 2021  
Inspector: Phil O'Bryan  
Approved by: Travis 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

Armed Forces Radiobiology Research Institute  
Research Reactor Facility  
NRC Inspection Report No. 05000170/2021202

The primary focus of this routine, announced inspection included the onsite review of selected aspects of the Armed Forces Radiobiology Research Institute (AFRRI, the licensee) research reactor facility safety programs, including: (1) organization and staffing; (2) operations logs and records; (3) requalification training; (4) surveillance and limiting conditions for operation (LCO); (5) emergency planning; (6) maintenance logs and records; and (7) fuel handling logs and records. The U.S. Nuclear Regulatory Commission (NRC) staff determined that the licensee's programs were acceptably directed toward the protection of public health and safety, and generally in compliance with NRC requirements.

### Organization and Staffing

- As noted in section 1, AFRRI does not have a licensed reactor operator and, therefore, is currently unable to meet Technical Specification (TS) 6.1.3 requirements for organization and staffing. However, AFRRI maintains the reactor shutdown and has submitted a proposal for staff licensing to the NRC and is awaiting approval.

### Operations Logs and Records

- Operational activities were consistent with the applicable TS and facility procedures. However, AFRRI has suspended reactor operations pending licensing of reactor operators.

### Requalification Training

- There are currently no licensed reactor operators at AFRRI. Training for the most recently qualified reactor operator complied with the AFRRI requalification plan.

### Surveillance and Limiting Conditions for Operation

- All surveillances were completed in accordance with TS 4.0 and the licensee complied with LCOs as specified in TS 3.0.

### Emergency Planning

- The emergency preparedness program was conducted in accordance with the AFRRI emergency plan (EP).

### Maintenance Logs and Records

- Maintenance activities were conducted in accordance with the applicable facility procedures.

### Fuel Handling Logs and Records

- Fuel handling and inspection activities were completed and documented as required by the TS and facility procedures.

## REPORT DETAILS

### Summary of Facility Status

The AFRRRI 1.1 megawatt Training, Research, Isotopes, General Atomics (TRIGA) Mark F research reactor, located on the campus of the National Naval Medical Center, normally operates in support of the licensee's mission of research, experiments, education, reactor operator training and periodic equipment surveillance. However, since March of 2018, the reactor has been shut down pending a reactor console modification.

### 1. Organization and Staffing

#### a. Inspection Scope (Inspection Procedure (IP) 69001.02.01)

To verify that the licensee's organization and staffing were in accordance with AFRRRI TS 6.1, the inspector reviewed selected aspects of the following:

- organizational structure
- management responsibilities
- staffing requirements for safe operation of the research reactor facility
- reactor Logbooks

#### b. Observations and Findings

##### (1) Observations.

The inspector found that the licensee maintains the reactor shutdown and has not operated the reactor since March 2018. The inspector found that the licensee currently has sufficient staff to perform routine maintenance while the reactor is shutdown, but, as described below, they do not meet TS requirements (TS 6.1.3) due to there being no current or former licensed reactor operators on the full-time AFRRRI staff.

##### (2) Non-Cited Violation 50-170/2021202-01, "AFRRRI Does Not Meet Staffing Requirements of Technical Specification 6.1.3."

AFRRRI TS 6.1.3.1.b, "Reactor Facility Director," requires that the Reactor Facility Director (RFD) shall have held a USNRC Senior Reactor Operator License on the AFRRRI reactor for at least one year before appointment to this position. TS 6.1.3.1.c, "Reactor Operations Supervisor," requires that the Reactor Operations Supervisor shall have one year of experience as a USNRC licensed Senior Reactor Operator at AFRRRI or at a similar facility before the appointment to this position. Contrary to these requirements, the current interim AFRRRI RFD has not been licensed at AFRRRI and the Reactor Operations Supervisor position is vacant.

The inspector found that the licensee's current organizational structure and assignment responsibilities did not meet the TS requirements (TS 6.1.3) due, in part, to a recent unexpected departure of the facility's RFD and only licensed operator. The departure left AFRRRI with no

licensed, or previously licensed, reactor operators. Thus, AFRRRI is unable to meet the TS requirements for the RFD or Reactor Operations Supervisor. An interim RFD, who has been licensed as Senior Reactor Operator at another research reactor, has been appointed. The Reactor Operations Supervisor position is vacant. However, a retired, previously licensed Senior Reactor Operator at AFFRI has been contracted on a part-time basis to assist in reactor oversight. AFRRRI is also pursuing NRC approval of an alternate qualification plan for several individuals as a permanent corrective action. Therefore, the licensee is credited with identification and formulation of adequate corrective actions for this issue. Since the issue is not repetitive or willful, it is being dispositioned as a non-cited violation in accordance with section 2.3.2.b of the NRC Enforcement Policy. This is a Severity Level IV non-cited violation (Section 6.1) and is designated NCV 50-170/2021202-01.

c. Conclusion

The inspector found that the licensee is in the process of filling TS required positions and is pursuing NRC approval for an alternate licensing plan for personnel.

**2. Operations Logs and Records**

a. Inspection Scope (IP 69001.02.02)

The inspector reviewed selected aspects of the following to verify compliance with TS 2.0, 3.0, and 6.0 and applicable procedure requirements for operation:

- reactor logbooks
- AFRRRI weekly shutdown checklists

b. Observations and Findings

The inspector found that logs and records showed that reactor parameters were consistent with license and TS requirements. The inspector verified that information on the reactor status was recorded in logbooks and on checklists as required by procedure.

c. Conclusion

The inspector found that activities were consistent with the applicable TS and procedural requirements.

**3. Requalification Training**

a. Inspection Scope (IP 69001.02.04)

To verify that the licensee was complying with the requirements of the operator requalification program, the inspector reviewed selected aspects of:

- "Reactor Operator Requalification Program for the Armed Forces



- Radiobiology Research Institute TRIGA Reactor Facility”
- operator training records maintained on “Requalification Program Checklist,” forms in individual folders for former operators
- medical examination records for former operators

b. Observations and Findings

The inspector found that there are currently no licensed operators at AFRRRI. The inspector verified that the most recently licensed former staff member met requalification requirements when he was on staff.

c. Conclusion

The inspector found that operator requalification requirements were met when AFRRRI had at least one licensed operator on staff.

**4. Surveillance and Limiting Conditions for Operation**

a. Inspection Scope (IP 69001.02.05)

To determine that LCOs were met and surveillances were completed as required by TS 3.0 and 4.0, the inspector reviewed selected aspects of the following:

- malfunction log
- reactor logbooks
- weekly shutdown checklists
- calibration procedures for the AFRRRI reactor facility
- maintenance procedures for the AFRRRI reactor facility
- “TRIGA Tracker” TS surveillance reports

b. Observations and Findings

The inspector found that TS required surveillance and LCO requirements were met. The inspector observed the performance of a weekly shutdown checklist, which is used to perform most surveillances while the reactor is in long-term shutdown. The inspector verified that AFRRRI properly deferred most surveillances, as allowed by TS, since the reactor was in long-term shutdown.

The inspector reviewed a random sampling of operational logs and records and determined that they met the required LCOs. The inspector verified that the licensee utilizes a computer database, the TRIGA Tracker, to track completion of the various required surveillance and LCO verifications. The inspector performed a random sampling of the database to ensure that there were no overdue requirements and cross-referenced the applicable TS to ensure all required surveillances were accounted for in the TRIGA Tracker Report.

c. Conclusion

The inspector found that all surveillances were completed in accordance with TS 4.0 and the licensee was in compliance with the LCO requirements in TS 3.0.

## 5. Emergency Planning

### a. Inspection Scope (IP 69001.02.10)

The inspector reviewed the implementation of selected portions of the emergency preparedness program, including:

- AFRRRI EP
- AFRRRI emergency drills since 2019
- AFRRRI emergency supplies
- AFRRRI Emergency Response Guidebook (ERG)

### b. Observations and Findings

The inspector found that EP training was conducted, drills were performed, emergency response call lists were maintained and posted, and emergency equipment was maintained and available as required by the EP and licensee procedures.

The inspector found that the ERG was recently updated and that the concern noted in Inspector Follow-up Item (IFI) 05000170/2019201-01, "AFRRRI ERG, dated April 1996, contains outdated information and needs to be updated," was resolved. This IFI is closed.

The inspector also found that the concern noted in IFI 05000170/2019201-02, "Review the impact of the "N" parking lot construction to AFRRRI's emergency evacuation routes and muster locations as referenced on page A-3 of the AFRRRI ERG," was also properly addressed and adequate evacuation routes and muster locations existed. This IFI is closed.

### c. Conclusion

The inspector found that emergency planning was conducted in accordance with the AFRRRI EP.

## 6. Maintenance Logs and Records

### a. Inspection Scope (IP 69001.02.11)

To determine that maintenance was completed as required by the TS and applicable procedures, the inspector reviewed:

- AFRRRI malfunction log
- reactor logbooks
- maintenance procedures for the AFRRRI reactor facility
- "TRIGA Tracker" report
- shutdown maintenance checklists

### b. Observations and Findings

The inspector verified maintenance requirements were met. The inspector found

that routine and preventive maintenance activities were adequately performed and documented in the TRIGA tracking system. The inspector confirmed that use of maintenance and malfunction logs satisfied procedural requirements.

c. Conclusion

The inspector found that maintenance activities were conducted in accordance with the applicable procedures and were acceptable.

**7. Fuel Handling Logs and Records**

a. Inspection Scope (IP 69001.02.12)

The inspector reviewed the following to verify compliance with the procedural requirements in TS 6.3.e:

- AFRRRI fuel element logbook
- control room reactor fuel inventory map
- reactor logbooks

b. Observations and Findings

The inspector noted that AFRRRI maintains a current inventory record of fuel elements and information such as serial number, core position, and power history are maintained and tracked. The inspector also verified that all fuel element locations, depicted on the control room reactor fuel inventory map, matched the information recorded in the fuel element logbook.

c. Conclusion

The inspector found that fuel handling and inspection activities were completed and documented as required by the TS and facility procedures.

**8. Exit Interview**

The inspector presented the inspection results to licensee management at the conclusion of the inspection on July 14, 2021. The inspector described the areas inspected and discussed the inspection observations. The licensee acknowledged the findings presented and did not identify any of the material provided to or reviewed by the inspector as proprietary.

## **PARTIAL LIST OF PERSONS CONTACTED**

### Licensee Personnel

M. Naeem	Director, AFRRRI (Colonel, U.S. Army)
A. Cook	Interim Reactor Facility Director (SRO)
H. Spence	Records Administration Specialist
B. Knibbe	Operations

## **INSPECTION PROCEDURES USED**

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

### Opened and Closed

NCV 05000170/2021202-01	AFRRRI Does Not Meet Staffing Requirements of Technical Specification 6.1.3
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### Closed

IFI 05000170/2019201-01	The AFRRRI ERG, dated April 1996, contains outdated information and needs to be updated.
IFI 05000170/2019201-02	Review the impact of the "N" parking lot construction to AFRRRI's emergency evacuation routes and muster locations as referenced on page A-3 of the AFRRRI ERG.