



Rensselaer

SCHOOL OF ENGINEERING

January 5, 2022

Attn: Document Control Desk
United States Nuclear Regulatory Commission
Washington, D. C. 20555-001

REFERENCE: "RENSSELAER POLYTECHNIC INSTITUTE – NUCLEAR REGULATORY COMMISSION ROUTINE INSPECTION REPORT NO. 05000225/2021201 AND NOTICE OF VIOLATION", ADAMS Accession No. ML21305A916, dated December 06, 2021.

U.S. Nuclear Regulatory Commission:

This letter submits our response to the notice of violation as described in the December 6, 2021 letter, referenced above.

The Information provided in this response letter includes: (1) the reason for the violation; (2) the corrective steps that have been taken and the results achieved; (3) the corrective steps that will be taken; and (4) the date when full compliance will be achieved; for each identified violation. Details are provided in the attached document with this cover letter.

Sincerely,

A handwritten signature in black ink, appearing to read "Wei Ji".

Dr. Wei Ji, Facility Director
School of Engineering
Rensselaer Polytechnic Institute

cc:

Dr. Shekhar Garde, Dean, School of Engineering
Dr. Hyun Kang, Nuclear Safety Review Board (NSRB) Chair
Ms. Annette Chism, Director, Environmental, Health, Safety and Risk Management
Ms. Ginger Carvalho, Radiation Safety Officer
Dr. Jason Thompson, Reactor Critical Facility (RCF) Operations Supervisor

Reply to a Notice of Violation, dated December 6, 2021

Radiation and Monitoring Surveillance

The Rensselaer Polytechnic Institute (RPI) Critical Experiments Facility (RCF) technical specifications (TS) Section 4.7, "Radiation Monitoring," states in part, that "The criticality detector system, CAM [continuous air monitor] and area gamma monitors shall be tested with a radiation source at least monthly and daily if the reactor is operated and calibrated semiannually." RPI TS, Section 1.3, "Definitions," defines monthly as an interval not to exceed 6 weeks and semiannually as an interval not to exceed 7.5 months.

Contrary to the above, RPI failed on several occasions to perform testing with a radiation source on a monthly interval and the calibration on a semiannual interval as required. Specifically, the test for the radiation area monitors was not performed between the periods of June 21 to August 13, 2020; October 15, 2020, to February 6, 2021; and April 27 to June 12, 2021, exceeding the TS monthly (6 weeks maximum) requirement. Further, the calibration for the continuous air monitor was not performed between the periods of October 9, 2019, to June 21, 2020; and August 21, 2020, to April 13, 2021, exceeding the TS semiannual (7.5 months) requirement.

This is a Severity Level IV violation (Section 6.1).

Response:

(1) the reason for the violation

Violations to TS Section 4.7 occurred due to a misinterpretation of TS Section 4.2 combined with an abnormally sporadic meeting schedule between March 2020 and August 2021. TS Section 4.2 specifies the required surveillances to ensure that all reactor control and safety systems are operable. This includes a list of specifications (eight in total) with the eighth stating "Requirements 1 thru 6 may be waived when the instrument, component, or system is not required to be operable, but a channel test shall be performed on the instrument, component or system prior to being declared operable." Consequently, several surveillances can be safely postponed during a lapse in operations at the facility (such as for periods between March 2020 and August 2021). This allowance was mistakenly assumed to include the radiation monitoring requirements specified in TS 4.7. The surveillance violations coincided with a directive to minimize RCF operations as well as the onset of the COVID-19 pandemic which ultimately derailed the already sparse meeting schedule. Prior to this, RCF staff consistently met at the facility on a weekly basis for operations which ensured all surveillances were properly tracked and performed.

(2) the corrective steps that have been taken and the results achieved

Since September 2021, RCF staff have returned to a regular operations schedule and therefore are readily available at the facility in order to perform surveillances on time. To address future

scenarios where the RCF staff may not regularly be present at the facility, the surveillance checklist has been revised to clearly indicate which surveillances can be postponed and which must be completed regardless of operation status as seen in Figure 1. This version of the checklist is stored in the RCF's dual-verification-secured RPI BOX which is available to all staff members and can be easily referred to while away from the facility. Additionally, the RCF staff have made an effort to review and remain aware of all surveillance frequencies. The checklist revisions along with the return to a normal operation schedule have resulted in the radiation and monitoring surveillances being consistently completed on time.

Surveillance	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Annual Surveillances												
OS Review E Plan												
FD Review E Plan												
Operations Report												
EP Exercise												
Power Calibration												
Startup Calibration												
Semiannual Surveillances												
CAM Calibration												
Area Radiation Monitor Calibration												
Fuel Inventory												
NSRB Meeting												
Rod Rop Timing												
Water Dump Timing												
Monthly Surveillances												
Integral Power												
Continuous Air Monitor Check												
Area Monitor Check												
10CFR Requirements												
74.13 - Material Status Report												

Key
done
ready to do
late
upcoming
Operation Independent Surveillance (No leeway on dates)
Operation Dependent (Must be in spec to operate)

Figure 1. Revised RCF Surveillance Checklist.

(3) the corrective steps that will be taken

RCF staff will continue to adhere to the revised surveillance checklist which clearly indicates which surveillances may and may not be postponed pending operations. In the event regular operations cease (pandemic related or otherwise), performing the radiation monitoring surveillances will be the responsibility of the Operations Supervisor and may be delegated to another senior staff member with unescorted access to the RCF as needed. As these surveillances are non-operational, they can safely be performed by a single staff member.

(4) the date when full compliance will be achieved

The tests for area radiation monitors have been in full compliance since June 12, 2021 and the calibration of the continuous air monitor has been in full compliance since April 13, 2021. Since then, each surveillance continues to be performed at an appropriate frequency.

Review and Audit

The RPI RCF TS Section 6.2, "Review and Audit," item 1, states in part, that "The NSRB [Nuclear Safety and Review Board] shall meet at least semiannually."

Contrary to the above, the NSRB failed to meet on a semiannual basis during calendar years 2020 and 2021. Specifically, the NSRB met on December 17, 2019, September 9, 2020, and September 14, 2021. The NSRB Charter requires a minimum of two regularly scheduled meetings each year with one in the spring and the other in the fall.

This is a Severity Level IV violation (Section 6.1).

Response:

(1) the reason for the violation

In the year 2020, the NSRB had one regular meeting on September while its charter requires two meetings a year at the article 3.1. The missed meeting was due to the RPI campus closure responding to the COVID pandemic. Online meeting was not considered at the early phase of pandemic.

In the year 2021, the NSRB wanted to resume in-person meetings in spring but was not allowed due to the RPI COVID policy in place in the spring. The NSRB decided to delay the spring meeting to the summer, expecting the restriction to be lifted. However, the restrictions were not lifted. Instead, the NSRB decided to have two virtual meetings in September and December.

(2) the corrective steps that have been taken and the results achieved

During the campus closure, the NSRB continued its review and audit function as shown in two email voting cases on February 2020 and August 2020. This form of meeting is defined at the article 3.4 of NSRB charter.

(3) the corrective steps that will be taken

From 2022, the NSRB will resume spring and fall meetings on the semiannual basis that is required by the NSRB Charter. In an event that NSRB cannot meet in-person, the meeting will be done virtually.

(4) the date when full compliance will be achieved

After the NSRB resumes spring and fall meetings in 2022, full compliance with the TS and NSRB Charter requirements will be achieved.