



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

March 5, 2021

MEMORANDUM TO: Kevin Roche, Lead Inspector
Special Inspection Team

FROM: Andrea D. Veil, Acting Director *Andrea Veil* Signed by Veil, Andrea
Office of Nuclear Reactor Regulation on 03/05/21

SUBJECT: REVISION TO NATIONAL INSTITUTE OF STANDARDS AND
TECHNOLOGY TEST REACTOR SPECIAL INSPECTION TEAM
CHARTER

By memorandum dated February 8, 2021 (Agencywide Documents Access and Management System Accession No. ML21039A472), you were selected to lead a Special Inspection Team (SIT) to assess the circumstances surrounding the National Institute of Standards and Technology (NIST) test reactor radiation release and worker contamination event resulting in the declaration of an Alert. This memorandum issues a revision to the previous SIT Charter based upon new information reported by NIST. During your inspection, you should continue to assess the licensee's response to the event, the factors that contributed to the event and any radiation release, radiation doses received by workers and any potential doses to members of the public, and the corrective actions taken as a result of the event.

Based upon the current understanding of the event and associated extenuating circumstances, as well as new information obtained, a special inspection remains appropriate. The other inspector selected for this inspection team is William Schuster (Phil O' Bryan, alternate inspector). The inspection team is supplemented by Richard Clement. Additional expertise and resources will be added to the inspection team, as additional information regarding the event progression, root cause, and recovery activities becomes available. The objectives and other details of this inspection are discussed in the enclosed revised SIT Charter. The enclosed revised SIT Charter was developed to provide you guidance for this specific inspection.

CONTACT: Travis L. Tate, NRR/DANU
301-415-3901

K. Roche

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If you have any questions regarding the objectives or other matters related to this inspection, contact your Office of Nuclear Reactor Regulation management as specified in the enclosed charter.

Docket No. 50-184

License No. TR-5

Enclosure:

As stated

K. Roche

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SUBJECT: REVISION TO NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY
TEST REACTOR SPECIAL INSPECTION TEAM CHARTER
DATED: March 5, 2021

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NRR-106

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DATE	3/4/2021	3/4/2021	3/4/2021	3/5/2021

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SPECIAL INSPECTION TEAM CHARTER, REVISION 1:
NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY TEST REACTOR
ALERT EMERGENCY EVENT

March 5, 2021

In response to the National Institute of Standards and Technology (NIST) test reactor declaring an Alert following indications of high reactor building exhaust stack radiation, confirmed contaminated workers, and potential fuel failure, a Special Inspection Team (SIT) was chartered. The purpose of this SIT is to independently assess the licensee's investigation of the causes, consequences, and corrective actions for the radiation release event leading to the Alert declaration. SITs should emphasize fact finding, that is, fully understanding the circumstances surrounding an event, corrective actions, and probable cause(s), including conditions preceding the event, chronology, precursors, human factors considerations, quality assurance considerations, and radiological considerations. Violations identified as a result of the inspection shall be documented in accordance with applicable U.S. Nuclear Regulatory Commission (NRC) guidance.

A. Background

On February 3, 2021, following a 6-week outage for reactor refueling, operators were performing a reactor startup with the reactor operating at 10 megawatts (50 percent power) when the reactor automatically tripped offline at 0909 Eastern Standard Time (EST) in response to indications of high exhaust stack radiation. Operators subsequently declared an Alert in accordance with the NIST emergency instructions. Once the reactor was secured, the reactor confinement building and control room were evacuated. The reactor was initially monitored by operators via the remote Emergency Control Station. NIST personnel were contaminated but have since been externally decontaminated. Monitoring of internal contamination of personnel found no significant contamination. Later that day, the Alert was downgraded to a Notification of Unusual Event at 1532 EST in accordance with NIST emergency instructions and then the emergency event was terminated at 1935 EST because samples confirmed the exit criteria was met.

On March 2, 2021, based upon remote visual inspection results and conditions experienced, NIST reported a violation of technical specification 2.1 Safety Limit, which states: "The reactor fuel cladding temperature shall not exceed 842°F (450°C) for any operating conditions of power and flow."

The reactor remains in a stable shutdown condition. The licensee restored control room access and is monitoring the reactor 24-hours/day.

Enclosure

B. Objectives

The inspection team is expected to perform data gathering and fact-finding in order to address the following:

1. Develop the sequence of events related to the event.
2. Evaluate the licensee's response to the event, including assumptions and calculations.
3. Assess the consequences of the event (i.e., impacts on equipment, fuel, and occupational and public doses).
4. Assess the adequacy of facility procedures for special nuclear material accounting, receipt, and inspection, and procedures for fueling and defueling operations.
5. Review any related maintenance and/or outage actions that could have contributed to the event.
6. Assess the licensee's determination of the root cause of the event.
7. Assess the licensee's completed and planned corrective actions to ensure all deficiencies associated with the event are adequately addressed and the corrective actions will prevent recurrence.

C. Guidance

The inspection team will continue the inspection which commenced on February 9, 2021, and the inspection will include onsite review and validation of the licensee's evaluation. Additionally, monitoring of the licensee's activities to evaluate and address the event will be performed by remote inspection, as appropriate. The staff will issue an interim report(s) at the appropriate time. A final report documenting the results of the inspection should be issued within 30 days of the completion of the inspection. While the inspection team is on site, you will provide daily status briefings to management in Headquarters. The inspection team is to emphasize fact-finding in its review of the circumstances surrounding the event, and it is not the responsibility of the inspection team to examine the regulatory process. The inspection team should notify the Non-Power Production and Utilization Facility Oversight (UNPO) Branch Chief of any potential generic issues identified related to this event for discussion with the National Organization of Test, Research, and Training Reactors community. Safety concerns that are not directly related to this event should be reported to the UNPO Branch Chief for appropriate action. The applicable guidance of NRC Manual Chapter 2545, "Research and Test Reactor Inspection Program, Inspection Procedure 93812, "Special Inspection," and Management Directive 8.3, "NRC Incident Investigation Program," should be considered for this inspection. This charter may be modified should significant new information warrant revision.