UNITED STATES DEPARTMENT OF COMMERCE
National Institute of Standards and Technology
Gaithersburg, Maryland 20899-

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U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Subject: Follow-up to event report

Ref: NRC Event Report #55120, Docket 50-184, Facility License TR-5

Sirs and Madams:

On March 5, 2021, the NCNR (NIST Center for Neutron Research) submitted a report of exceeding a safety limit on the event of February 3, 2021 (original Event Report #55094). In response to the event, we instituted an investigation into the root causes and have uncovered evidence to suggest that there was an unlatched element in the core prior to reactor startup on February 3. The investigation has identified inadequacies in the implementation of administrative and procedural controls. Specifically, these inadequacies are as follows:

1) training and proficiencies in fuel latching,
2) procedures in fuel movements and latching,
3) enforcement of procedural compliance
4) implementation of latch verification methods, and
5) management oversight of refueling staffing

Accordingly, we reported this by telephone to the NRC Headquarters Operation Center on May 6, 2021 and are submitting this 14-day report in accordance with NBSR Technical Specification 6.7.2(1)(g).

In addition, in accordance with reporting requirements in NBSR Technical Specification 6.7.2(1)(d) we have identified that the intent of the following Limiting Conditions for Operation was not met:

- *TS 3.1.3 The reactor shall not operate unless all grid positions are filled with fuel length fuel elements or thimbles, except during subcritical and critical startup testing with natural convections flow.*
  Even though it was believed that this specification was met on February 3, 2021 prior to reactor startup, subsequent investigation found that an element in position J-7 was out of the lower grid plate. It is now presumed that this element was out of position prior to reactor startup.

- *TS 3.9.2.1. "Following handling of fuel within the reactor vessel, the reactor shall not be operated until all fuel elements that have been handled are inspected*

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to determine that they are locked in their proper positions in the core grid structure. This shall be accomplished by one of the following methods:

(1) Elevation check of the fuel element with main pump flow.

(2) Rotational check of the element head in the latching direction only.

(3) Visual inspection of the fuel element head or latching bar."

After the refueling on January 4, 2021, the required rotational checks were completed and signed off. However, the investigation following the February 3 event showed that these checks were done incorrectly, and thus did not meet the intent of TS 3.9.2.1.

Please feel free to contact me if you have any questions.

Respectfully submitted,

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Deputy Director and Chief of Reactor Operations and Engineering

NIST Center for Neutron Research