



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

January 11, 2022

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

Subject: NBSR License Amendment Request

Ref: Docket 50-184, TR-5 Facility License

Sirs/Madams:

On December 23, 2021, we submitted a license amendment request to modify NBSR Technical Specification 3.9.2.1. Attached to this letter is a revised No Significant Hazard Consideration Determination, which should replace the December 23, 2021 No Significant Hazard determination in its entirety.

Respectfully,

Robert Dimeo
Director

I declare under penalty of perjury that the foregoing is true and correct.

Executed on January 11, 2022

Enclosure: No Significant Hazard Consideration Determination

Cc: Susan T. Gray, Program Manager
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No Significant Hazard Consideration Determination

January 11, 2022

In a license amendment request dated December 23, 2021, the NIST Center for Neutron Research (NCNR) requested an amendment to the facility license Technical Specifications (TS). As required by 10 CFR 50.91(a), the following revised analysis is presented to show the proposed amendment does not create a significant hazard using the criteria of 10 CFR 50.92(c).

1. Does the proposed amendment involve a significant increase in the probability or consequences of an accident previously evaluated?

The proposed license amendment will modify NBSR Technical Specification 3.9.2.1 to provide increased assurance that the reactor shall not be operated until a redundant inspection is made to verify that all elements are latched in their proper position in the core grid. In this proposed modification, two checks are performed after the fuel elements are latched in the core grid, and these checks are designed to assure that the fuel elements are latched. Both checks are based on a determination of the angular orientation of the fuel head and, hence, the position of the latch bar. Note that the angular orientation of the fuel head and latch bar of a latched element is distinguished from that of an unlatched element. In the first check – the rotational latch check – a mechanical tool is used to determine the angular orientation of the latch bar, comparing it to a reference angle, thus assuring that the fuel element is latched in the core grid based on its angular orientation. The second check, which is performed after the rotational latch check, is a visual (non-contact) inspection of the angular orientation of the head of the fuel element. This visual inspection provides additional and independent verification that each fuel element is latched in the core grid. Thus, these increased latch verification requirements – in which the angular orientation of the head of the fuel element is determined by both mechanical and visual means – reduce the probability of an accident from the previous technical specification requirement, as this provides redundancy where it was not present before. Therefore, the proposed amendment does not increase the probability of an accident previously evaluated. In addition, the technical specification amendment will have no impact on the consequences of an accident. Therefore, the proposed technical specification amendment requiring a redundant latch check will not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Does the proposed amendment create the possibility of a new or different kind of accident from any accident previously evaluated?

The proposed license amendment is to modify NBSR Technical Specification 3.9.2.1 to provide increased assurance that the fuel elements are latched in the core grid using two verification methods: a mechanical verification and visual verification. In this proposed modification, two checks are performed after the fuel elements are latched in the core

grid, and these checks are designed to assure that the fuel elements are latched. Both checks are based on a determination of the angular orientation of the fuel head and, hence, the position of the latch bar. Note that the angular orientation of the fuel head and latch bar of a latched element is distinguished from that of an unlatched element. In the first check – the rotational latch check – a mechanical tool is used to determine the angular orientation of the latch bar, comparing it to a reference angle, thus assuring that the fuel element is latched in the core grid based on its angular orientation. The second check, which is performed after the rotational latch check, is a visual (non-contact) inspection of the angular orientation of the head of the fuel element. This visual inspection provides additional and independent verification that each fuel element is latched in the core grid. These checks are designed to avoid an accident involving inadvertent movement of the fuel from the grid. No other changes to reactor fuel movements or operations are being proposed. The proposed amendment to the technical specifications for redundant fuel latching verification will not change the operations, process variables or reactor structures, systems, or components. Therefore, the proposed amendment for redundant fuel latch verification will not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does the proposed amendment involve a significant reduction in a margin of safety?

The proposed license amendment is to modify NBSR Technical Specification 3.9.2.1 to provide increased assurance that the fuel elements are latched in the core grid using two verification methods: a mechanical verification and visual verification. In this proposed modification, two checks are performed after the fuel elements are latched in the core grid, and these checks are designed to assure that the fuel elements are latched. Both checks are based on a determination of the angular orientation of the fuel head and, hence, the position of the latch bar. Note that the angular orientation of the fuel head and latch bar of a latched element is distinguished from that of an unlatched element. In the first check – the rotational latch check – a mechanical tool is used to determine the angular orientation of the latch bar, comparing it to a reference angle, thus assuring that the fuel element is latched in the core grid based on its angular orientation. The second check, which is performed after the rotational latch check, is a visual (non-contact) inspection of the angular orientation of the head of the fuel element. This visual inspection provides additional and independent verification that each fuel element is latched in the core grid. The requirement of a redundant check in the revised technical specifications will result in an increased margin of safety as compared with the previous technical specification requirement by reducing the potential for a fuel element inadvertently being removed from the core grid. Therefore, the proposed amendment of requiring a redundant verification of fuel element latching does not involve a significant reduction in a margin of safety.

Conclusion

Based on the above determinations, the NCNR concludes that the proposed amendment to NBSR technical specification 3.9.2.1. does not involve a significant hazards

consideration under the standards set forth in 10CFR50.92(c) and accordingly, a finding of no significant consideration is justified.