

From: [Guzman, Richard](#)
To: [Shayan Sinha](#)
Cc: [Danna, James](#)
Subject: Millstone Unit 3 - LAR for TS Changes to Spent Fuel Storage and New Fuel Storage - Request for Additional Information (EPID: L-2018-LLA-0126)
Date: Monday, February 11, 2019 1:22:25 PM

Shayan,

On February 4, 2019, the U.S. Nuclear Regulatory Commission (NRC) staff sent Dominion Energy Nuclear Connecticut, Inc. (DENC, the licensee) the subject Request for Additional Information (RAI) as a draft (via e-mail shown below). This RAI relates to proposed technical specification changes for spent fuel pool storage and new fuel storage for Millstone Power Station, Unit No. 3 (MPS3). This information request was discussed with your staff on February 11, 2019. As agreed on the call, please provide your formal response by March 28, 2019 (i.e., within 45 days of the RAI issuance date).

Updated below is the official (final) RAI. A publicly available version of this e-mail and RAI will be placed in the NRC's ADAMS system. Please contact me should you have any questions in regard to this request.

Thanks,
Rich

~~~~~

Rich Guzman  
Sr. PM, Division Operator Reactor Licensing  
Office of Nuclear Reactor Regulation  
U.S. Nuclear Regulatory Commission  
Office: O-9C7 | Phone: (301) 415-1030  
[Richard.Guzman@nrc.gov](mailto:Richard.Guzman@nrc.gov)

---

**From:** Guzman, Richard  
**Sent:** Monday, February 4, 2019 1:19 PM  
**To:** Shayan Sinha <[Shayan.Sinha@dominionenergy.com](mailto:Shayan.Sinha@dominionenergy.com)>  
**Subject:** Millstone Unit 3 - LAR for TS Changes to Spent Fuel Storage and New Fuel Storage - DRAFT Request for Additional Information (EPID: L-2018-LLA-0126)

Shayan,

By letter dated May 3, 2018 (Agencywide Documents Access and Management System Accession No. ML18128A049), Dominion Energy Nuclear Connecticut, Inc. (DENC) submitted a license amendment request regarding proposed technical specification changes for spent fuel storage and new fuel storage in the Millstone Power Station, Unit No. 3 (MPS3) spent fuel pool. The NRC staff has determined that additional information is needed to complete its review, as described in the request for additional information (RAI) shown below.

This RAI is identified as draft at this time to confirm your understanding of the information

that the NRC staff needs to complete the evaluation. Please contact me if you would like to set up a conference call to clarify this request for information. I plan to send the RAI formally the week of 2/11.

Thanks,

~~~~~

Rich Guzman

Sr. PM, Division Operator Reactor Licensing

Office of Nuclear Reactor Regulation

U.S. Nuclear Regulatory Commission

Office: O-9C7 | Phone: [\(301\) 415-1030](tel:3014151030)

Richard.Guzman@nrc.gov

REQUEST FOR ADDITIONAL INFORMATION
REGARDING PROPOSED TECHNICAL SPECIFICATION CHANGES
FOR SPENT FUEL STORAGE AND NEW FUEL STORAGE
DOMINION ENERGY NUCLEAR CONNECTICUT, INC.
MILLSTONE POWER STATION UNIT 3
DOCKET NO. 50-423
EPID: L-2018-LLA-0126

By letter dated May 3, 2018, Dominion Energy Nuclear Connecticut, Inc., the licensee for Millstone Power Station, Unit 3 (MPS3), submitted a license amendment request (LAR) proposing changes to the MPS3 Technical Specifications regarding new and spent fuel storage. On the basis of the provided information, the NRC staff has determined that additional information is needed to complete its review, as described in the request for additional information (RAI) shown below.

RAI 1

In Attachment 1 of the LAR, the licensee states that there is a 9x9 rack module that was previously approved for installation, but was not installed. The current LAR assumes this 9x9 rack module is installed. With respect to the uninstalled rack, is there any impact to the criticality analysis due to its actual absence; for example, does the missing rack module allow for potentially more reactive locations for misplaced than if the rack was actually installed?

RAI 2

Section 7.1, "New Fuel Storage Area KENO Model," states the analysis used 8,000 generations, 16,000 neutrons per generation, and 1,000 skipped generations. This is

different than what is stated in section 6.1.1, "CSAS5," for how convergence was verified for KENO cases. How was convergence verified for the New Fuel Storage Area (NFSA) KENO Models?

RAI 3

With respect to the analysis for the New Fuel Storage Area under optimum moderation, Table 7.10 indicates the cases were run at 32 degrees Fahrenheit (°F) whereas Table 7.5 indicates the optimum moderation situation would be more reactive at higher temperatures. Additionally, Table 7.10 doesn't include the full suite of biases and uncertainties that are included in Table 7.9 for the NFSA fully flooded biases and uncertainties rack-up. Please justify the use of 32°F for the optimum moderation cases and not including the full suite of biases and uncertainties for the optimum moderation situation.

RAI 4

Section 8.3, "Bounding Depletion Boron," indicates the depletion analysis used a cycle average soluble boron of 1050 ppm. The reference for using a cycle average soluble boron is J. C. Wagner, "Impact of Soluble Boron Modeling for PWR Burnup Credit Criticality Safety Analyses," Trans. Am. Nucl. Soc., 89, pp. 120 (2003). That reference indicates that using a cycle average soluble boron could be non-conservative for fuel discharged to the SFP following a mid-cycle shutdown or short cycle. Describe how the analysis accounts for this potential.

RAI 5

The Maximum Wet Annular Burnable Absorbers (WABA) results in Table 8.9 differ from those in Table 8.7. Explain the difference.

RAI 6

During storage, a fuel assembly may occupy various positions within the storage cell and some may be more reactive than assuming all fuel assemblies are centered in the storage cell. Section 9.6.4, "Asymmetric Fuel Placement," addresses this for Region 2. However, for Region 2, a 2x2 array was used. In a 2x2 array, while the four assemblies in the array can be moved closer together, they are also being moved further away from adjacent 2x2 arrays. This results in potentially offsetting reactivity effects in the model. Justify the use of a 2x2 array for the Region 2 asymmetric analysis.

RAI 7

Section 9.6.11, "Region 2 Control Rod Credit," states: "Removal of the control rod must be performed with the assembly in a Region in which it qualifies for storage without the control rod." It is also a requirement that the insertion of the control rod must be performed with the assembly in a Region in which it qualifies for storage without the control rod. Explain how these requirements are controlled.

RAI 8

Section 11.1, "Fuel Handling," states that procedures will preclude fuel outside the storage

racks from being closer than 12 inches. Provide the following information:

- a. How procedures will prevent operators from moving an assembly within 12 inches of any other fuel.
- b. Whether there are any physical barriers that prevent moving an assembly within 12 inches of other fuel.
- c. How fuel handling operators will know the distance between a fuel assembly being moved and any other fuel.

RAI 9

Section 11.3.2, "Reconstituted Fuel," addresses the process of reconstituting fuel and the storage of reconstituted fuel. Provide the following information:

- a. Region 1 wasn't explicitly modeled. Confirm that the requirement for storage cells that are face adjacent to the fuel assembly being reconstituted will also be applied to Region 1.
- b. The analysis did not address the number of fuel rod lattice locations that can be empty during the reconstitution process. Specify the number of fuel rod lattice locations that can be empty during the reconstitution process.
- c. The analysis addresses one fuel assembly with two empty fuel rod lattice locations. How would the licensee address other fuel assemblies with empty fuel rod lattice locations?
