

10CFR50.90

November 04, 2021

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

Calvert Cliffs Nuclear Power Plant, Units 1 and 2  
Renewed Facility Operating License Nos. DPR-53 and DPR-69  
Docket Nos. 50-317 and 50-318

Subject: Supplement to Response to Request for Additional Information Regarding  
the Spent Fuel Pool Cooling - Shutdown Cooling Systems Licensing Design  
Basis License Amendment Request

- References:
1. Letter from David P. Helker (Exelon Generation Company, LLC) to U.S. Nuclear Regulatory Commission, "Spent Fuel Pool Cooling - Shutdown Cooling Systems Licensing Design Basis License Amendment Request," dated June 14, 2021 (ADAMS Accession No. ML21165A406)
  2. Letter from Michael Marshall, U.S. Nuclear Regulatory Commission to David P. Rhoades, Exelon Generation Company, LLC, "Calvert Cliffs Nuclear Power Plant, Units 1 and 2 – Audit Plan in Support of Review of License Amendment Request Regarding Change Spent Fuel Pool Cooling Design Basis (EPID L-2021-LLA-0112)," dated July 20, 2021 (ADAMS Accession No. ML21200A074)
  3. Letter from David P. Helker (Exelon Generation Company, LLC) to U.S. Nuclear Regulatory Commission, "Spent Fuel Pool Cooling - Shutdown Cooling Systems Licensing Design Basis License Amendment Request Supplement," dated August 13, 2021 (ADAMS Accession No. ML21225A353)
  4. Email from Andrea Mayer, U.S. Nuclear Regulatory Commission, to Francis J Mascitelli, Exelon Generation Company, LLC, "Request for Additional Information: Calvert Cliffs 1 & 2 LAR to Revise Spent Fuel Pool Cooling - Shutdown Cooling Systems Licensing Basis (L-2021-LLA-0112)," dated October 5, 2021 (ADAMS Accession No. ML21287A093)
  5. Letter from David P. Helker (Exelon Generation Company, LLC) to U.S. Nuclear Regulatory Commission, "Response to Request for Additional Information Regarding the Spent Fuel Pool Cooling - Shutdown Cooling Systems Licensing Design Basis License Amendment Request," dated October 25, 2021 (ADAMS Accession No. ML21298A043)
  6. Email from Andrea Mayer, U.S. Nuclear Regulatory Commission, to Francis J. Mascitelli, Exelon Generation Company, LLC, "Re: Calvert Cliffs SFPC-SDC LAR RAI Response," dated November 2, 2021

In accordance with 10 CFR 50.90, "Application for amendment of license, construction permit, or early site permit," Exelon Generation Company, LLC (Exelon) requested changes to the Spent Fuel Pool and Shutdown Cooling Licensing Design Basis of the Calvert Cliffs Nuclear Power Plant, Units 1 and 2 (CCNPP) (Reference 1).

The original proposed changes would revise the Updated Final Safety Analysis Report (UFSAR) Section 9.4, "Spent Fuel Pool Cooling System," design basis to allow for partial and full core offloads without being supplemented with one train of the Shutdown Cooling (SDC) system. In addition, the Spent Fuel Pool temperature would be allowed to increase from a maximum of 120 °F and 130 °F for partial and full core offloads, respectively, to a maximum of 150°F under certain conditions.

On July 20, 2021 NRC announced an Audit Plan to review License Amendment Request (LAR) referenced supporting calculations (Reference 2).

On August 13, 2021 Exelon supplemented the Reference 1 License Amendment Request (LAR) to reduce the LAR scope (Reference 3). The scope of the request was revised to include only full core offloads during refueling outages conducted when the spent fuel pool cooling system (SFPC) service water temperature can be maintained below 50 °F and the SDC system is unavailable to assist the SFPC system, if required.

On October 5, 2021 NRC issued a Request for Additional Information (RAI) (Reference 4) in order to complete their Audit Review of the LAR supporting calculations.

On October 25, 2021, Exelon responded to the RAI (Reference 5). Subsequently, in Reference 6, it was noted by NRC that information requested in Reference 4 for the spent fuel pool liner stresses was not included in the Reference 5 response.

The attachment to this letter contains the requested information for the spent fuel pool liner stresses.

Exelon has reviewed the information supporting a finding of no significant hazards consideration, and the environmental consideration, that were previously provided to the NRC in References 1, 3 and 5. Exelon has concluded that the information provided in this response does not affect the bases for concluding that the proposed license amendments do not involve a significant hazards consideration under the standards set forth in 10 CFR 50.92. In addition, Exelon has concluded that the information in this response does not affect the bases for concluding that neither an environmental impact statement nor an environmental assessment needs to be prepared in connection with the proposed amendments.

There are no regulatory commitments contained in this response.

In accordance with 10 CFR 50.91, "Notice for public comment; State consultation," paragraph (b), Exelon is notifying the State of Maryland of this response to a request for additional information by transmitting a copy of this letter and its attachment to the designated State Official.

Should you have any questions concerning this submittal, please contact Frank Mascitelli at (610) 765-5512.

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 4<sup>th</sup> day of November 2021.

Respectfully,



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David P. Helker  
Sr. Manager - Licensing and Regulatory Affairs  
Exelon Generation Company, LLC

Attachment: Supplement to the RAI Response for the Spent Fuel Pool Liner Stresses

cc: Regional Administrator, Region I, USNRC  
USNRC Senior Resident Inspector, CCNPP  
Project Manager [CCNPP] USNRC  
S. Seaman, State of Maryland

**ATTACHMENT**

**Calvert Cliffs Nuclear Power Station, Units 1 and 2  
Renewed Facility Operating License Nos. DPR-53 and DPR-69  
Docket Nos. 50-317 and 50-318**

**Spent Fuel Pool Cooling - Shutdown Cooling Systems Licensing Design Basis  
License Amendment Request**

**Supplement to the RAI Response for the Spent Fuel Pool Liner Stresses**

Attachment  
SFPC-SDC Systems Licensing Design Basis LAR  
Supplement to the RAI Response for the Spent Fuel Pool Liner Stresses  
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- References:
1. Letter from David P. Helker (Exelon Generation Company, LLC) to U.S. Nuclear Regulatory Commission, "Spent Fuel Pool Cooling - Shutdown Cooling Systems Licensing Design Basis License Amendment Request," dated June 14, 2021 (ADAMS Accession No. ML21165A406)
  2. Letter from Michael Marshall, U.S. Nuclear Regulatory Commission to David P. Rhoades, Exelon Generation Company, LLC, "Calvert Cliffs Nuclear Power Plant, Units 1 and 2 – Audit Plan in Support of Review of License Amendment Request Regarding Change Spent Fuel Pool Cooling Design Basis (EPID L-2021-LLA-0112)," dated July 20, 2021 (ADAMS Accession No. ML21200A074)
  3. Letter from David P. Helker (Exelon Generation Company, LLC) to U.S. Nuclear Regulatory Commission, " Spent Fuel Pool Cooling - Shutdown Cooling Systems Licensing Design Basis License Amendment Request Supplement," dated August 13, 2021 (ADAMS Accession No. ML21225A353)
  4. Email from Andrea Mayer, U.S. Nuclear Regulatory Commission, to Francis J. Mascitelli, Exelon Generation Company, LLC, " Request for Additional Information: Calvert Cliffs 1 & 2 LAR to Revise Spent Fuel Pool Cooling - Shutdown Cooling Systems Licensing Basis (L-2021-LLA-0112)," dated October 5, 2021 (ADAMS Accession No. ML21287A093)
  5. Letter from David P. Helker (Exelon Generation Company, LLC) to U.S. Nuclear Regulatory Commission, "Response to Request for Additional Information Regarding the Spent Fuel Pool Cooling - Shutdown Cooling Systems Licensing Design Basis License Amendment Request," dated October 25, 2021 (ADAMS Accession No. ML21298A043)
  6. Email from Andrea Mayer, U.S. Nuclear Regulatory Commission, to Francis J. Mascitelli, Exelon Generation Company, LLC, "Re: Calvert Cliffs SFPC-SDC LAR RAI Response," dated November 2, 2021

By letter dated June 14, 2021, Reference 1, as supplemented by letter dated August 13, 2021, Reference 3, (Agencywide Documents Access and Management System (ADAMS) Accession No. ML21165A406 and ML21225A353, respectively), Exelon Generation Company, LLC (Exelon) submitted a license amendment request (LAR) to revise the Updated Final Safety Analysis Report (UFSAR) and the Technical Requirements Manual for Calvert Cliffs Nuclear Power Plant, Units 1 and 2 (CCNPP), to allow for a full core offload in the spent fuel pool (SFP) without being supplemented with one train of the Shutdown Cooling (SDC) system. The proposed amendment also includes a change in the calculational methodology used in the SFP heat-up analysis.

From July 6 to August 29, 2021, the NRC staff conducted a regulatory audit to review licensee calculations supporting the LAR to determine if additional information contained in the analyses performed in support of the requested change is needed to support or develop conclusions for the staff's safety evaluation. An audit plan was issued by the NRC staff by letter dated July 20, 2021, Reference 2 (ADAMS Accession No. ML21200A074).

Attachment  
SFPC-SDC Systems Licensing Design Basis LAR  
Supplement to the RAI Response for the Spent Fuel Pool Liner Stresses  
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The Nuclear Regulatory Commission (NRC) staff has determined, during the regulatory audit, that additional information was needed to complete its review of the request (Reference 4). On October 25, 2021 Exelon provided a response to the Request for Additional Information (RAI) (Reference 5). In an email dated November 2, 2021 (Reference 6), NRC indicated that the stresses for the Spent Fuel Pool (SFP) liner were not included in the RAI response. This supplement to the RAI response provides the requested information involving the SFP liner. NRC RAI is shown below in italics:

**REQUEST FOR ADDITIONAL INFORMATION**

*“Describe, with quantitative results, how the structural acceptance criteria were met for the SFP walls and its liner for the controlling load combinations including thermal loads.”*

**Exelon Response:**

The SFP Liner allowable stress is 18,000 psi. The thermal stresses were developed using equations from the following references:

- Buckling Strength of Metal Structures by Friedrich Bleich
- Theory of Elastic Stability by Stephen Timoshenko
- Handbook of Structural Stability by Column Research Committee of Japan

The calculated thermal stress on the SFP liner at 155°F is approximately 6,407 psi. This calculated stress is acceptable when compared to the allowable of 18,000 psi.