

10 CFR 50.90

RS-21-045

April 7, 2021

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

LaSalle County Station, Units 1 and 2  
Renewed Facility Operating License Nos. NPF-11 and NPF-18  
NRC Docket Nos. 50-373 and 50-374

Subject: Response to Request For Additional Information (RAI) Regarding Request For License Amendment Regarding Ultimate Heat Sink (EPID-L-2020-LLA-0165)

## References:

1. Letter from D. Murray (Exelon Generation Company, LLC) to U.S. Nuclear Regulatory Commission (NRC), "Request for a License Amendment to LaSalle County Station, Units 1 and 2, Technical Specification 3.7.3, 'Ultimate Heat Sink,'" dated July 17, 2020 (ML20204A775)
2. Letter from U.S. Nuclear Regulatory Commission to B. Hanson (Exelon Generation Company, LLC), "LaSalle County Station, Units 1 and 2 – Supplemental Information Needed for Acceptance of Requested Licensing Action Regarding Request for a License Amendment to Technical Specification 3.7.3, 'Ultimate Heat Sink,'" dated August 27, 2020 (ML20239A726)
3. Letter from D. Murray (Exelon Generation Company, LLC) to U.S. Nuclear Regulatory Commission (NRC), "Supplement to the Request for License Amendment to LaSalle County Station, Units 1 and 2, Technical Specification 3.7.3, 'Ultimate Heat Sink,'" dated September 11, 2020 (ML20259A454)
4. Letter from D. Murray (Exelon Generation Company, LLC) to U.S. Nuclear Regulatory Commission (NRC), "Supplement Regarding Request to Withhold Information Related to License Amendment to Revise Technical Specification 3.7.3, 'Ultimate Heat Sink,'" dated October 22, 2020 (ML20259A454)
5. Letter from U.S. Nuclear Regulatory Commission (B. Vaidya) to J. Taken (Exelon Generation Company, LLC), "LaSalle Units 1 and 2 – Request for Additional Information (RAI) RE: Request for License Amendment Regarding Ultimate Heat Sink, (EPID-L-2020-LLA-0165)," dated March 8, 2021.

In Reference 1, Exelon Generation Company, LLC (EGC) submitted license amendment request (LAR) to revise Technical Specification (TS) 3.7.3, "Ultimate Heat Sink," to expand the already-

approved diurnal curve. In References 2 through 4, EGC submitted supplemental information necessary for the Nuclear Regulatory Commission (NRC) to complete its review of Reference 1.

In Reference 5, the NRC identified additional information needed to complete its review of Reference 1. A clarification call was held between NRC and EGC to ensure a mutual understanding of the additional information required.

Attachment to this letter contains the response to the request for additional information identified in Reference 5.

EGC has reviewed the information supporting a finding of no significant hazards consideration and the environmental consideration provided to the NRC in Reference 1. The supplemental information provided in this letter does not affect the bases for concluding that the proposed license amendment does not involve a significant hazards consideration. Furthermore, the supplemental information provided in this letter 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 amendment.

There are no regulatory commitments contained in this letter.

Should have any questions regarding this submittal, please contact Jason Taken at 630-657-3660.

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 7<sup>th</sup> day of April 2021.

Respectfully,



Dwi Murray  
Sr. Manager – Licensing  
Exelon Generation Company, LLC

Attachment : Response to Request for Additional Information

cc: NRC Regional Administrator, Region III  
NRC Senior Resident Inspector – LaSalle County Station  
NRC Project Manager, NRR – LaSalle County Station  
Illinois Emergency Management Agency – Division of Nuclear Safety

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Response to Request for Additional Information

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**Response to Request for Additional Information**

**Request for Additional Information: RAI EICB – 1**

The license amendment request expands the already-approved TS temperature limit of the cooling water supplied to the plant from the UHS to vary with the diurnal curve by changing the average sediment level limit in the intake flume and UHS from 18 inches to 6 inches. The result is an increase in UHS effective volume, according to the application, of 24% which decreases temperature response due to the increased volume. The adjusted TS Figure 3.7.3-1 is based on the following equation:

Maximum peak cooling water temperature – Transient Heat-up Rate – Instrument Uncertainty\* – 0.25°F adjustment = Adjusted Initial UHS Temperature

\*In the application, the Instrument Uncertainty is stated as 0.75°F.

Provide the technical basis for the proposed values used to calculate the limits for the peak initial UHS temperature. Specifically, discuss how the reduction in "additional margin" used to calculate the peak initial UHS temperature is sufficient to ensure the maximum temperatures do not exceed the safety analysis limit and justify the reduction of margin from 0.42°F to 0.25°F.

Discuss the methodology used to calculate the "instrument uncertainty" and if it is still bounded by the increased operating temperatures to ensure the maximum temperatures do not exceed the safety analysis limit.

The staff needs this information to verify the adequacy of the calculation and compliance with GDC 13 and 10 CFR 50.36.

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**Note:** To ensure a clear understanding of each component of the RAI response, the RAI response has been divided into two parts.

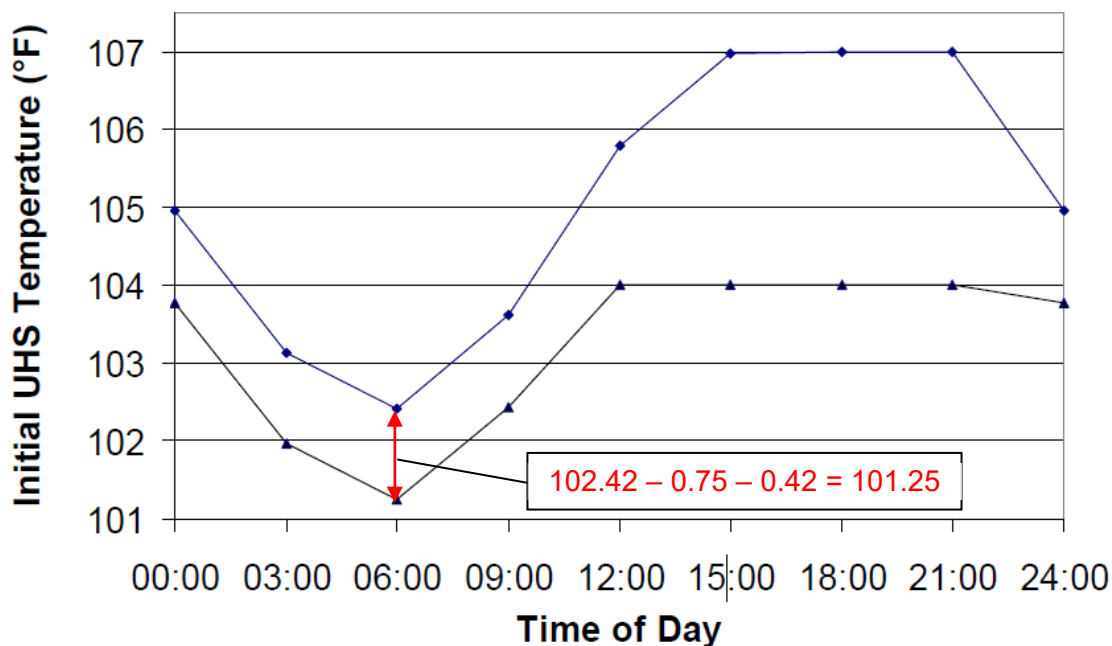
**RAI EICB-1 Part 1:**

Provide the technical basis for the proposed values used to calculate the limits for the peak initial UHS temperature. Specifically, discuss how the reduction in "additional margin" used to calculate the peak initial UHS temperature is sufficient to ensure the maximum temperatures do not exceed the safety analysis limit and justify the reduction of margin from 0.42°F to 0.25°F.

**EGC Response:**

The proposed diurnal curve is derived by taking the temperature limit of 107°F and subtracting the instrument uncertainty and a discretionary additional margin of 0.25°F.

The current 0.42°F of additional margin was added to reference the most limiting initial UHS temperature in the existing diurnal curve to the previous Technical Specification 3.7.3, "Ultimate Heat Sink," temperature limit of 101.25°F as described in Reference 1.



**Figure 7 from Reference 1**

The results of analyses performed at worst case synthetic weather conditions identified the maximum initial water temperatures that would result in a peak UHS water temperature of 107°F. The most restrictive initial temperature for silt levels at 18 inches was 102.42°F starting at 06:00 in the morning. This temperature value was referenced to the past Technical Specifications (TS) peak lake temperature limit of 101.25°F which was in effect prior to approval

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of the existing diurnal curve implemented through Reference 2. Instrument uncertainty for the Circulating Water (CW) inlet temperature instruments is 0.75°F.

Therefore, Additional Margin =  $102.42 - 101.25 - 0.75 = 0.42^{\circ}\text{F}$ .

The additional discretionary margin of 0.42°F, while not required, was included to provide added conservatism to the overall temperature limitations of the diurnal curve. The value of 0.42°F was subtracted from the most limiting initial UHS temperature after the analysis was performed for the determination of the peak initial temperatures which would result in a maximum UHS temperature of 107°F. An operationally convenient discretionary 0.25°F adjustment factor, or margin, was used in generating the proposed TS Figure 3.7.3-1 in Reference 3 for the 6 inch siltation level to ensure that the peak initial UHS temperature does not exceed 106°F which is the highest evaluated temperature for non-safety related systems.

For this reason, the change in the additional margin of 0.42°F to 0.25°F will not impact the results of the original analysis. The current instrument uncertainty provides sufficient margin to conservatively monitor UHS temperature without the risk of inadvertently exceeding the maximum UHS temperature of 107°F.

The analysis also has other conservatisms built in to ensure the maximum initial temperatures of the diurnal curve will not result in cooling water temperatures exceeding 107°F and are as follows:

1. The presence of wind and air movement above the water is a primary driver in heat transfer from the UHS. Wind sensitivity studies have shown that when the UHS water surface temperature exceeds 100°F, unstable atmospheric conditions will exist over the UHS. Consequently, the wind coefficients will remain less than 0.3 for all hours of the day which is shown to reduce the maximum UHS temperature by 1°F for 18-inch sediment levels. Since the temperature is the driving force in these studies, the same results may be applied to the UHS with initial temperatures up to two degrees higher.
2. The accident energy deposited in the UHS is based on decay heat generated by 3559MWt for each unit. Additionally, 105% of the sensible heat from both reactors is conservatively assumed to be deposited in the UHS.
3. No thermal losses are assumed from the buried piping extending from the UHS to the plant (i.e., three 36 inch lines, one 30 inch line, and two 14 inch lines, each approximately 1000 feet in length). Likewise, no thermal losses are assumed from the buried piping from the plant returning to the UHS (i.e., two 48 inch lines and one 20 inch lines each approximately 5000 feet in length).
4. All Core Standby Cooling System (CSCS) and Emergency Core Cooling System (ECCS) pumps are assumed to operate during the entire 30-day post design basis event period. All pump brake-horsepower is assumed to be continuously deposited into the UHS.

Therefore, the above conservatisms provide sufficient margin to account for reduction in discretionary margin from 0.42°F to 0.25°F.

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**RAI EICB-1 Part 2:**

Discuss the methodology used to calculate the "instrument uncertainty" and if it is still bounded by the increased operating temperatures to ensure the maximum temperatures do not exceed the safety analysis limit.

**EGC Response:**

The temperature instruments have not been changed since the original evaluation in Reference 1 was performed. Additionally, the "instrument uncertainty" is still bounded by the proposed increasing operating temperatures in Reference 3. Therefore, the evaluation of instrument uncertainty remains unchanged from Reference 1 application. The current uncertainty evaluation is documented in LaSalle County Station Calculation L-003230, Revision 1, Revision 1A, and Revision 1B, "CW Inlet temp Uncertainty Analysis," which was provided in Reference 4.

**REFERENCES:**

1. Letter from D. M. Gullott (Exelon Generation Company, LLC) to U.S. Nuclear Regulatory Commission, "Request for a License Amendment to LaSalle County Station, Units 1 and 2, Technical Specification 3.7.3, 'Ultimate Heat Sink,'" dated July 12, 2012 (ML12200A330).
2. LaSalle County Station, Units 1 and 2, Issuance of Amendment Revising the Ultimate Heat Sink Temperature Limit (CAC Nos. ME9076 and ME9077), dated November 19, 2015 (ML15202A578).
3. Letter from D. Murray (Exelon Generation Company, LLC) to U.S. Nuclear Regulatory Commission (NRC), "Request for a License Amendment to LaSalle County Station, Units 1 and 2, Technical Specification 3.7.3, 'Ultimate Heat Sink,'" dated July 17, 2020 (ML20204A775).
4. Attachment 4 of "Supplemental Information Related to License Amendment Request to LaSalle County Station, Units 1 and 2 Technical Specification 3.7.3, 'Ultimate Heat Sink,'" dated September 17, 2012 (ML12269A074).