From:	Wiwel, Michael < Michael. Wiwel@pseg.com>		
Sent:	Thursday, December 21, 2023 9:36 AM		
То:	James Kim		
Subject:	[External_Sender] PSEG Response to Questions Associated with Supplement		
	to Salem-Hope Creek EAB Reduction LAR		

Jim,

The following is our response to the questions posed by NRC staff on the EAB LAR supplement. Please contact me if you have any questions. Thanks and have a happy holiday.

# 1. NRC Request No. 1:

PSEG's response to NRC Request No. 1 in their Oct. 30, 2023, submittal (ML23303A144) is silent with respect to the determination of vector-averaged wind directions obtained from the ultrasonic anemometer measurements. The NRC staff recognizes that mean vector-averaged wind directions can be weighted in two ways – that is, either using the concurrent wind speeds or by assigning a unit wind speed of 1 m/sec to each measurement.

If the former approach was used, then the resultant average wind direction values could be affected by more variable instantaneous wind directions that typically occur under low wind speed conditions during the averaging period. If the latter weighting approach was used, then the resulting hourly wind directions would essentially represent an arithmetic averages.

Further, if the former approach was used and distances to the Exclusion Area Boundary (EAB) differ by sector, then the PAVAN dispersion modeling analyses may have to be redone using scalar-averaged (or unit wind speed vector) wind directions because sector distance variability would not have been appropriately accounted for consistent with the dispersion model used. Based on that portion of the PAVAN input files for Hope Creek and Salem Units 1 and 2 provided by PSEG for this LAR, the proposed EAB receptor distances appear to be uniform across all direction sectors.

Without additional information about the wind direction averaging approach, the direction of plume travel in a straight-line Gaussian dispersion model could be affected by the use of vector-averaged wind directions if weighted by concurrent, not unit, wind speeds. Therefore:

## a) **Question**:

Confirm whether the hourly mean wind directions developed by the data processor and used as input to the PAVAN dispersion model were determined as values weighted by the actual concurrent wind speed or if the sampled wind directions during an averaging period were only weighted by a 1 m/sec unit wind speed.

**<u>Response</u>**: The hourly mean wind directions used as input to the PAVAN dispersion models for the new PSEG EAB are unit vector calculations that are

determined as sampled wind directions during an averaging period weighted by a 1m/sec wind speed.

## b) **Question**:

Update Section 2.3.3 of the respective Hope Creek and Salem 1 and 2 UFSARs as well as applicable text in this LAR to clarify the wind speed and wind direction data averaging approaches used.

#### Response:

UFSAR changes have been developed for The Hope Creek and Salem UFSARs as part of the engineering change associated with reduction of the site EAB to document the updates associated with the proposed change. The UFSAR changes will be incorporated following approval of the license amendment request. The updated UFSARs will be transmitted to the NRC per the schedule required by 10 CFR 50.71(e).

## 2. NRC Request Nos. 3

NRC staff reviewed three MS Excel files of onsite hourly meteorological data provided by PSEG for each year during the 2019 thru 2021 period of record (POR). The staff understands, based on the responses to NRC Requests No. 4 and No. 5, that the joint frequency distributions (JFDs) in Attachment 2 are based on the delta-T (i.e., the measured temperature difference) between the 150 ft and 33 ft levels and the 33 ft-level wind speed. The NRC staff notes that these Excel files include, among other data, hourly delta-T values for three measurement intervals (i.e., 150 ft – 33 ft, 197 ft -33 ft, and 300 ft – 33 ft) as well as discrete hourly ambient temperature values for the 300-ft and 33-ft levels. The staff also notes that the measurement accuracy criteria for vertical temperature difference systems differs from that of ambient temperature systems as listed in Table 2 of Reg Guide 1.23 (Rev. 1, dated March 2007) (i.e., the former being more stringent).

Given the available information and data mentioned above, the NRC staff compared the reported hourly delta-T values for the 300 ft – 33 ft vertical interval versus the differences calculated between the concurrent 300-ft and 33-ft temperature values. The NRC staff expected some differences between the reported and "calculated" delta-Ts (and, therefore, stability class determinations) because of the different measurement system accuracy criteria. Nevertheless, the number of differences based on the two methods suggested potential equipment issues such that data substitution, if needed, based on the differences between the discrete ambient temperature measurements would be questionable. More importantly, the NRC staff notes that there doesn't appear to be any explanation in either the Hope Creek or Salem 1 and 2 UFSARs of how or if the reported hourly delta-T values are adjusted in determining the various stability classes reflected in the JFDs in Attachment 2 or presented elsewhere.

In checking the stability class counts (A thru G) of the JFDs in Attachment 2, the NRC staff assumed that the reported hourly delta-T values for the 150 ft – 33 ft vertical interval in the Excel files were adjusted to the degrees C per 100 m criteria for defining the seven stability classes as listed in Table 1 of Reg Guide 1.23. The individual stability class counts, after conversion of the reported temperature measurement units and

adjustment of the vertical distance interval to 100 m (assuming that the same temperature lapse rate between 150 ft and 33 ft persisted over the 100-m interval), appear to reasonably represent the values in the JFDs in Attachment 2. Please address the following:

## a) **Question**:

Confirm that the methodology described above as used by the NRC staff was essentially followed by PSEG in developing the stability class components of the JFDs in Attachment 2. If not the case, then explain how the stability classes were determined.

#### **Response:**

The seven stability classes used to develop the JFDs provided in Attachment 2 of the LAR supplement provided by PSEG on October 30, 2023 (ML23303A144) were developed from the hourly delta-T values obtained from the 150 ft – 33 ft sensor elevations. These values were adjusted to the degrees C per 100 m criteria per Reg. Guide 1.23.

#### b) **Question**:

In either case, update Section 2.3.3 of the respective Hope Creek and Salem 1 and 2 UFSARs by explaining the methodology used as well as other applicable text in the LAR submittal. This is important information for this review and so that subsequent users of the hourly meteorological data base (e.g., PSEG and NRC reviewers, users of delta-T data that may be reported in the Emergency Response Data System) will not make inadvertent adjustments to the delta-T data prior to its use.

## Response:

UFSAR Changes have been developed for The Hope Creek and Salem UFSARs as part of the engineering change associated with reduction of the site EAB to document the updates associated with the proposed change. The UFSAR changes include a description of the elevations from which the delta-T values are obtained in development of the JFDs. The UFSAR changes will be incorporated following approval of the license amendment request.

# 3. NRC Request No.5

# Question:

The following discrepancies in the Oct. 30, 2023, response appear to be editorial errors. The NRC staff notes that the composite POR for the JFD in Sent. 1 of this response is stated as "all three years (2019-2022)." Similarly, the title of Attachment 3 for the composite JFD is rendered as "All Three Years (2019-2023)" whereas the composite JFD itself indicates the POR, as understood by the NRC staff, is from 2019 to 2021.

#### **Response:**

The text within the response to NRC Request 5 as well as the title block for Attachment 3 in the supplement provided by PSEG on October 30, 2023 (ML23303A144) contained editorial errors regarding the span of years associated with the composite POR for the JFDs. The POR for the JFD information transmitted in Attachment 3 to the supplement are for the three-year period of 2019 through 2021.

# Mike Wiwel Principal Licensing Engineer | **PSEG** Nuclear LLC Office: (856) 339 - 7907 | Cell: (610) 836 - 2434

From: James Kim 
Sent: Monday, December 11, 2023 7:51 AM
To: Wiwel, Michael 
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Cc: Montgomery, Richard 
Richard.Montgomery@pseg.com>; Thomas, Brian J.
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Subject: [EXTERNAL] PSEG - Review of Supplement to Salem-Hope Creek EAB Reduction LAR

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Mike,

Attached are further clarification questions regarding PSEG's formal responses submitted on Oct. 30, 2023. These further clarification questions focus on the meteorological (Met) data that PSEG provided for this LAR to modify (reduce) the Exclusion Area Boundary (EAB) distances for the Hope Creek and Salem Units 1 and 2 facilities. The NRC staff from External Hazard Branch had to initially focus on this info and data simply because if the Met data isn't correct, then the PAVAN dispersion modeling would have to be redone as it is a direct input to the modeling analysis. The X/Qs that come out of the dispersion modeling are, in turn, a direct input to the Radiation Consequence Branch dose assessment evaluations.

Please let me know if you want to have a clarification call.

Thanks,

Jim

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AM

Created By: Michael.Wiwel@pseg.com

**Recipients:** 

"James Kim" <James.Kim@nrc.gov> Tracking Status: None

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