## LeeRAIsPEm Resource

**From:** Brian Hughes
**Sent:** Tuesday, September 30, 2008 7:43 AM
**To:** LeeRAIsPEm Resource
**Subject:** RAI 446 final.doc SRP Section: 02.03.01 - Regional Climatology
**Attachments:** RAI 446 final.doc

**Hearing Identifier:** Lee_COL_RAI
**Email Number:** 31

**Mail Envelope Properties** (D841D501B2C4D244B75AB897F70C149481B008C8AC)

**Subject:** RAI 446 final.doc SRP Section: 02.03.01 - Regional Climatology
**Sent Date:** 9/30/2008 7:43:08 AM
**Received Date:** 9/30/2008 7:43:09 AM
**From:** Brian Hughes

**Created By:** Brian.Hughes@nrc.gov

**Recipients:**
"LeeRAIsPEm Resource" <LeeRAIsPEm.Resource@nrc.gov>
Tracking Status: None

**Post Office:** HQCLSTR01.nrc.gov

| **Files** | **Size** | **Date & Time** |
|---|---|---|
| MESSAGE | 3 | 9/30/2008 7:43:09 AM |
| RAI 446 final.doc | 34926 | |

**Options**
**Priority:** Standard
**Return Notification:** No
**Reply Requested:** No
**Sensitivity:** Normal
**Expiration Date:**
**Recipients Received:**

Request for Additional Information No. 446 Revision 0

9/11/2008

William States Lee III, Units 1 and 2
Duke Energy Carolinas, LLC
Docket No. 52-018 and 52-019
SRP Section: 02.03.01 - Regional Climatology
Application Section: 2.3.1

QUESTIONS

02.03.01-1

In accordance with NUREG-0800, Section 2.3.1, please identify the National Climatic Data Center's (NCDC) state climatic division for the proposed Lee site in FSAR Section 2.3.1.1, or justify a reasonable alternative.

02.03.01-2

Based on historical hurricane data (1899 - 2005) from NOAA's Coastal Services Center (http://maps.csc.noaa.gov/hurricanes/), the staff was unable to reproduce the same number of hurricanes that have affected North and South Carolina presented in FSAR Section 2.3.1.2.1. Attachment 1 shows a comparison between the values presented in the FSAR and those obtained by the staff. Please review the accuracy of the hurricane statistics presented in FSAR Section 2.3.1.2.1.

02.03.01-3

AP1000 DCD, Rev. 16, Tier 1 Table 5.0-1 lists Tornado Maximum Pressure Differential as a Tier 1 Site Parameter. Please include this site parameter and a corresponding site characteristic in FSAR Table 2.0-201 and Subsection 2.3.1.2.2.

02.03.01-4

The staff cautions against the use of the NCDC Storm Events Database because many severe weather reports are often incomplete or missing as the period of record considered increases. The following graph in Attachment 1 shows the annual number of thunderstorm events that have occurred in the region. Note the increase in the number of reported events. It appears that the data becomes more consistent after 1996. Please revise FSAR Section 2.3.1.2.3 to account for this data, or justify another alternative. Also, please include a reference to an annual NCDC LCD summary for any nearby first order observing stations.

02.03.01-5

The staff cautions against the use of the NCDC Storm Events Database because many severe weather reports are often incomplete or missing as the period of record

considered increases. The following graph in Attachment 1 shows the annual number of hail events that occurred in the region. Note the increase in the number of reported events. It appears that the data becomes more consistent after 1984. Please revise FSAR Section 2.3.1.2.5 to account for this data, or justify another alternative.

02.03.01-6

FSAR Section 2.3.1.2.7 stated that the equivalent ice thickness due to freezing rain with concurrent 3-second gust speeds for a 100-year mean recurrence interval is approximately 0.75 inches for the north central South Carolina area. Based on the stated reference, "Extreme Ice Thicknesses from Freezing Rain," the staff found 0.75 inches to be the 50-year value. A conversion factor of 1.25 is recommended to convert from a 50-year recurrence interval to a 100-year. Please verify the accuracy of the current estimate.

02.03.01-7

Based on data from the South Carolina State Climate Office, the staff found the following maximum 24-hour winter precipitation amounts at three nearby stations:

Ninety-Nine Islands: 3.37 inches, 12/28/1958
Gaffney 6 E: 3.76 inches, 02/21/1961
Greenville/Spartanburg: 3.80 inches, 03/05/1963

Based on these precipitation amounts, please justify the 48-hour probable maximum winter precipitation value for the proposed Lee site of 3.54 inches. Also, please consider changing the wording of "probable maximum winter precipitation" for the 3.54 inch estimate, or provide an explanation in FSAR Section 2.3.1.2.7.2 why the PMWP for the Ninety-Nine Islands station is 3.54 inches, while the PMWP estimate based on NOAA's HMR-53 report is 30.5 inches.

02.03.01-8

Based on NCDC Snow Climatology database (http://www.ncdc.noaa.gov/ussc/index.jsp), the staff found that the highest observed maximum snowfall amount, maximum snow depth, and 100-year estimate of snowfall for Cherokee County, SC occurred at the Gaffney 6E observation station. The 100-year snowfall amount for Gaffney 6 E, based on data from 1894 through 2006, was 16.3 inches, the maximum snow depth was 17.0 inches, and the observed maximum snowfall was 17.0 inches. Please justify why the more conservative estimate of 17.0 inches is not used to estimate the weight of the 100-year return snowpack.

02.03.01-9

Please describe the additional resulting weight from the 48-hour probable maximum precipitation (PMWP) on the roof of the PCS tank if the central hole is blocked by a pre-

existing 100-year snowpack. Also, please estimate the additional weight if at least part of the 48-hour PMWP falls as frozen precipitation.

02.03.01-10

10 CFR 52.79(a)(iii) requires a COL applicant to identify the most severe of the natural phenomena that have been historically reported for the site and surrounding area and with sufficient margin for the limited accuracy, quantity, and time in which the historical data have been accumulated. In addition, NUREG-0800, Section 2.3.1, states the applicability of data on severe weather phenomena to represent site conditions during the expected period of reactor operation should be substantiated.