



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

December 1, 2015

Mr. Thomas D. Gatlin
Vice President, Nuclear Operations
South Carolina Electric & Gas Company
Virgil C. Summer Nuclear Station
Post Office Box 88, Mail Code 800
Jenkinsville, SC 29065

SUBJECT: VIRGIL C. SUMMER NUCLEAR STATION, UNIT NO. 1 – REQUEST FOR
ADDITIONAL INFORMATION REGARDING LICENSE BASIS CHANGES IN
STEAM GENERATOR TUBE RUPTURE ANALYSIS (CAC NO. MF4699)

Dear Mr. Gatlin:

By letter dated August 27, 2014, the South Carolina Electric & Gas Company (SCE&G, the licensee) submitted a license amendment request (LAR) to revise Facility Operating License No. NPF-12 for the Virgil C. Summer Nuclear Station, Unit No. 1. SCE&G is proposing to revise the licensing basis to incorporate a supplemental analysis to the steam generator tube rupture accident.

The U.S. Nuclear Regulatory Commission (NRC) staff has determined that a request for additional information (RAI) is needed to continue the review as discussed in the Enclosure. We request that SCE&G respond to these RAIs by January 15, 2016. Please note that the NRC staff's review is continuing and further requests for information may be developed.

Sincerely,

A handwritten signature in black ink that reads "Shawn Williams".

Shawn Williams, Senior Project Manager
Plant Licensing Branch II-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-395

Enclosure:
Request for Additional Information

cc w/encl: Distribution via Listserv

REQUEST FOR ADDITIONAL INFORMATION

LICENSE AMENDMENT REQUEST

LICENSE BASIS CHANGES IN STEAM GENERATOR TUBE RUPTURE ANALYSIS

VIRGIL C. SUMMER NUCLEAR STATION, UNIT NO. 1

DOCKET NO. 50-395

The U.S. Nuclear Regulatory Commission (NRC) staff reviewed the Virgil C. Summer Nuclear Station (VCSNS) License Amendment Request (LAR), dated August 27, 2014 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML14245A408). Based on supplements dated September 10, 2015 (ADAMS Accession No. ML15258A021) and November 5, 2015 (ADAMS Accession No. ML15313A023) the NRC staff has determined that the following requests for additional information (RAI) are required to complete the review.

RAI-MET-1:

Background: In the Updated Final Safety Analysis Report (UFSAR), Section 2.3.3.2, "Operational Program," the licensee discusses the influence of Monticello Reservoir on the atmospheric dispersion in the site vicinity, especially for wind directions impacting the reactor site at the east end of the reservoir. The licensee proposes correction factors for X/Q for those cases where the atmospheric parameters collected at the meteorological tower might underestimate dispersion. The licensee indicates that these factors are necessary for the estimation of short-term diffusion characteristics to plant personnel and the factors would be applicable to all distances from the release points to the Low Population Zone (LPZ). However, the licensee provides no detail about how these correction factors were produced or applied in the latest calculations in the Steam Generator Tube Rupture (SGTR) licensee amendment request (LAR) and the RAI responses. Although the UFSAR states that Section 2.3 is being retained for historical purposes only, the NRC staff believes that the basis for these factors is still valid and should be taken into consideration for the calculation of the X/Q values in the STGR analysis.

Request: Please provide all relevant bases and calculations used to produce the correction factors for atmospheric dispersion. Please update the analyses to include the 2012-2014 meteorology data. Alternatively, provide staff with written justification that no correction factors were needed or used.

RAI-MET-2:

Background: The NRC staff carried out an audit-type analysis of the MET files and the Excel data provided by the licensee. The staff noted several apparent inconsistencies in the meteorology data provided, including:

- In late June of 2012, there are 10 hours, in 3 separate periods where the average temperature was 30 °C, while the readings for the hours in question were -17 °C. For the same hours, dew point readings averaged about +17 °C.

Enclosure

- There are a significant number of records where dew point exceeds ambient temperature by a small amount, generally less than 0.2 °C.
- Bad data in the Excel file appeared as either “99” or “-99”, and would also appear as bad data for an identical period in the corresponding MET files. However, some bad data identified only in the MET files by “99” or “9999” was not correspondingly tagged as bad data in the Excel file. In these instances, the data in the Excel file were fixed values for the time period of the bad-tagged data in the MET file. The origin of these fixed values substituted into the Excel file could not be determined by the NRC staff. Table 1 indicates the periods of long runs of constant values in the Excel file that were identified either from a Run-Length Encoding (RLE) analysis or manual inspection.

Table 1. Results of the RLE and visual analysis of the meteorology data in the Licensee’s Excel spreadsheet showing the continuous periods (i.e., hours) over which either the data is shown to be bad (i.e., marked by -99) or the data are constant.***

Start Time	End Time	Consecutive Hours	Notes
3/11/12 2:00	3/12/12 8:00	30	All constants within each column
8/6/12 11:00	8/7/12 13:00	26	All constants within each column
8/13/12 0:00	8/13/12 10:00	11	All constants within each column
8/21/12 13:00	8/22/12 9:00	21	All Constants within each column*
10/23/12 14:00	10/30/13 8:00	163	-99 in all columns
11/3/12 10:00	11/4/12 8:00	23	All constants within each column
11/20/12 15:00	11/26/12 10:00	140	-99 in all columns
2/2/13 3:00	2/4/13 11:00	57	All constants within each column
4/30/14 2:00	5/10/14 18:00	257	-99 in all columns**
5/14/14 17:00	5/15/14 9:00	17	-99 in all columns**
5/18/14 14:00	5/22/14 21:00	103	-99 in all columns**
6/11/14 10:00	6/12/14 8:00	23	-99 in all columns**
7/2/14 13:00	7/4/14 9:00	44	-99 in all columns**
9/7/14 14:00	9/11/14 14:00	97	-99 in all columns**
*except one row of data			
** (except two columns)			
*** fewer than 10 consecutive hours are omitted from the table.			

Request: Please describe the overall meteorology data collection program and its use in calculating onsite and offsite atmospheric dispersion factors; including procedures, standards, different towers and heights and selection of parameters from each, and other applicable criteria. Also, please identify whether these data issues are isolated incidents or are indicative of a larger quality assurance and control issue.

RAI-MET-3:

Background: The licensee supplied sufficient information for the NRC staff to recreate licensee PAVAN results for identical parameter inputs. The NRC staff's review showed that the licensee's calculations employed only 7 wind-speed categories. The NRC's confirmatory analysis using the same meteorological data but employing 12 wind-speed categories lead to X/Q values approximately 20% higher than the licensee's results in some instances, allowing for a possible non-conservatism in the licensee's analyses. Section 4.6 of the PAVAN user's manual (NUREG/CR-2858) suggests that wind speed should have a large number of categories; e.g., calm, 0.5, 0.75, 1.0, 1.25, 1.5, 2.0, 3.0, 4.0, 5.0, 6.0, 8.0 and 10.0 meters per second.

Request:

Provide the PAVAN input data set that was provided informally via e-mail on November 17, 2015. Please justify using 7 wind-speed categories, when a finer grouping of wind speed would affect the offsite atmospheric dispersion factors. Alternatively, provide the results of a revised PAVAN analysis using a Joint Frequency Distribution table based on finer wind-speed categories.

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