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Docket Nos.: 52-025  
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ND-09-0003

U.S. Nuclear Regulatory Commission  
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Washington, DC 20555-0001

Southern Nuclear Operating Company  
Vogtle Electric Generating Plant Units 3 and 4 Combined License Application  
Response to Request for Additional Information Letter No. 019

Ladies and Gentlemen:

By letter dated March 28, 2008, Southern Nuclear Operating Company (SNC) submitted an application for combined licenses (COLs) for proposed Vogtle Electric Generating Plant (VEGP) Units 3 and 4 to the U.S. Nuclear Regulatory Commission (NRC) for two Westinghouse AP1000 reactor plants, in accordance with 10 CFR Part 52. During the NRC's detailed review of this application, the NRC identified a need for additional information, involving control room habitability during accidental release of chemicals, required to complete their review of the COL application's Final Safety Analysis Report (FSAR) Section 2.2, "Nearby Industrial, Transportation, and Military Facilities." By letter dated December 12, 2008, the NRC provided SNC with Request for Additional Information (RAI) Letter No. 019 concerning this control room habitability during accidental release of chemicals information need. This RAI letter contains one RAI question numbered 02.02.03-1. The enclosure to this letter provides the SNC response to this RAI. The details of the evaluation for plant-specific chemical hazards are addressed in this response as requested. During the preparation of this response, SNC determined that FSAR Table 2.2-201, related to this subject matter, contains inaccurate information. Corrections to the plant-specific and standard material will be provided in the next revision to the application.

If you have any questions regarding this letter, please contact Mr. Wes Sparkman at (205) 992-5061.

DD92  
NRO

Mr. J. A. (Buzz) Miller states he is a Senior Vice President of Southern Nuclear Operating Company, is authorized to execute this oath on behalf of Southern Nuclear Operating Company and to the best of his knowledge and belief, the facts set forth in this letter are true.

Respectfully submitted,

SOUTHERN NUCLEAR OPERATING COMPANY



Joseph A. (Buzz) Miller

Sworn to and subscribed before me this 9<sup>th</sup> day of January, 2009

Notary Public: Maria H. Buie

My commission expires: 05/06/09

JAM/BJS:aga

Enclosure: Response to NRC RAI Letter No. 019 on the VEGP Units 3 & 4 COL Application Involving Control Room Habitability During Accidental Release of Chemicals

cc: Southern Nuclear Operating Company

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Nuclear Regulatory Commission

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**Southern Nuclear Operating Company**

**ND-09-0003**

**Enclosure**

**Response to NRC RAI Letter No. 019**

**on the VEGP Units 3 & 4 COL Application**

**Involving**

**Control Room Habitability During Accidental Release of Chemicals**

**FSAR Section 2.2, Nearby Industrial, Transportation, and Military Facilities**

**eRAI Tracking No. 933**

**NRC RAI Number 02.02.03-1:**

RG 1.206 provides guidance regarding the information that is needed to ensure potential hazards in the site vicinity are identified and evaluated to meet the siting criteria in 10 CFR 100.20 and 10 CFR 100.21. Concerning FSAR Section 2.2.3.2.3.2, please provide the details for the Vogtle Units 3 and 4 site-specific evaluation of other chemical hazards from onsite storage tanks (chemicals listed in Table 2.2-201) in addressing the potential control room habitability impacts due to toxic chemical concentrations, tank explosions, flammable vapor clouds ( explosion due to delayed ignition) from accidental chemical release.

**SNC Response:**

FSAR Table 2.2-201 lists seven chemicals that are in addition to those proposed by Westinghouse for use in the Turbine Island Chemical Feed System. These chemicals are comparable in function to those proposed by Westinghouse and are currently used for similar applications in VEGP Units 1 and 2. The chemicals that are listed as being site-specific are:

- Methoxypropylamine (MPA) – as a pH control agent
- Phosphinosuccinic Oligomer (PSO) – as a corrosion inhibitor
- Phosphoric Acid – as a corrosion inhibitor
- Proprietary tagged high strength polymer – as a silt dispersant
- Stabilized Bromine – as a biocide
- Sodium Bromide – as a biocide
- Ammonium Bisulfite\* – as a detoxification agent

\* It should be noted that FSAR Table 2.2-201 incorrectly lists the detoxification agent as Aluminum Bisulfite. The correct chemical is Ammonium Bisulfite. The discussion below reflects the analysis of Ammonium Bisulfite. As discussed below, Table 2.2-201 will be revised or replaced in a future revision of the VEGP Units 3 & 4 COLA. The identification of the chemical will be corrected at that time.

The Material Safety Data Sheets (MSDS) for each of the chemicals indicate that the chemical is either not flammable itself or is not flammable in the solution in which it is stored and would not burn unless all of the water of the solution would first evaporate or boil away prior to ignition. This is not considered a credible event. For this reason, no tank explosion or flammable vapor cloud evaluation was necessary for these chemicals.

In addition, with the exception of MPA and Ammonium Bisulfite, the MSDS for each chemical also indicates that toxicity is not a threat through inhalation of the chemical vapors. For those chemicals, no further evaluation was necessary.

For MPA and Ammonium Bisulfite, the toxicity evaluation was performed based on the following data and assumptions:

- The chemical is stored in the chemical storage area of the Turbine Building, at least 211 ft. from the Control Room air intake. The Control Room air intake is located 19.9 m above grade.
- The meteorological conditions are:
  - Wind speed – 1 m/s
  - Stability class – F
  - Ambient temperature – 25°C
  - Relative humidity – 50%
  - Atmospheric pressure – 1 atmosphere
- The area of the spill is confined to the floor area of the chemical storage area (160.5 m<sup>2</sup>).
- No credit is taken for confinement of the vapor cloud in the turbine building. Instead, the evaluation is performed as if the spill occurs in the open and the vapor cloud is allowed to travel unencumbered toward the control room air intake.
- For MPA:
  - The chemical is in a 60% solution in water.
  - The chemical is stored in two 800 gallon tanks. The evaluation considers the spill from the complete failure of the largest single container, which is 800 gallons.
  - The toxicity limit is taken as the time-weighted average exposure limit (TWA) of 5 ppm.
- For Ammonium Bisulfite:
  - The chemical is in a 60% solution in water.
  - The chemical is stored in one 1000 gallon tank. The evaluation considers the spill from the complete failure of the largest single container.
  - The toxicity limit is taken as the IDLH (immediately dangerous to life or health) of SO<sub>2</sub>, which is 100 ppm.

The evaluations for both MPA and Ammonium Bisulfite concluded that the concentrations of these chemicals outside the control room and inside the control room were negligible and therefore did not pose a toxic hazard to the control room operators.

While no COLA change is provided at this time for this RAI response, VEGP COLA Table 2.2-201 will be revised or replaced as necessary in a future revision of the VEGP Units 3 & 4 COLA. The revision will incorporate changes from two sources: 1) associated DCD changes (including those from Revision 17 and a pending submittal by Westinghouse providing additional DCD changes), and 2) the standard portions of the TVA response to Request for Additional Information Letter No. 137 for Bellefonte Units 3 & 4 (the RCOLA) concerning the Westinghouse standard chemicals, as appropriate. As noted above, at that time the identification of the chemical used as a detoxification agent will be corrected from Aluminum Bisulfite to Ammonium Bisulfite.