Mark J. Ajluni, P.E.
Nuclear Licensing Director

Southern Nuclear Operating Company, Inc.
40 Inverness Center Parkway
Post Office Box 1295
Birmingham, Alabama 35201

Tel 205.992.7673
Fax 205.992.7885

SOUTHERN COMPANY

February 10, 2012

Docket Nos.: 50-424
50-425

NL-12-0177

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

Vogtle Electric Generating Plant, Units 1 and 2
Response to NRC Request for Additional Information for
License Amendment Request to Revise
Technical Specification 3.7.9 Ultimate Heat Sink (UHS)

Ladies and Gentlemen:

By letter dated September 1, 2011 (Agencywide Documents Access and Management System (ADAMS) Accession Number ML112450171), Southern Nuclear Operating Company (SNC) submitted a license amendment request for revision of Technical Specification (TS) 3.7.9 "Ultimate Heat Sink (UHS)." Subsequently, by letter dated January 11, 2012 (ADAMS Accession Number ML11355A007), the NRC submitted a Request for Additional Information (RAI) to enable completion of the review. The responses to the RAIs 2, 4, and 5 are provided in the Enclosure. Please note that response to RAIs 1, 3, and 6 require generation of a new calculation and/or a calculation revision, and response to those RAIs is scheduled to be provided by April 30, 2012.

Mr. M. J. Ajluni states he is Nuclear Licensing Director 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.

This letter contains no NRC commitments. If you have any questions, please contact B. D. McKinney at (205) 992-5982.

A001
NRR

Respectfully submitted,

Mark J Ajluni

M. J. Ajluni
Nuclear Licensing Director

Sworn to and subscribed before me this 10th *day of* February, *2012.*

Notary Public

My commission expires: 11-30-14

MJA/JLS

Enclosure: Response to Request for Additional Information

cc: Southern Nuclear Operating Company
Mr. S. E. Kuczynski, Chairman, President & CEO
Mr. D. G. Bost, Executive Vice President & Chief Nuclear Officer
Mr. T. E. Tynan, Vice President – Vogtle
Mr. B. L. Ivey, Vice President – Regulatory Affairs
Mr. B. J. Adams, Vice President – Fleet Operations
RType: CVC7000

U. S. Nuclear Regulatory Commission
Mr. V. M. McCree, Regional Administrator
Mr. P. G. Boyle, NRR Senior Project Manager - Vogtle
Mr. L. M. Cain, Senior Resident Inspector – Vogtle

State of Georgia
Mr. Allen Barnes, Environmental Director Protection Division

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Enclosure

Response to Request for Additional Information

RAI-1

Title 10 of the Code of Federal Regulations (10 CFR), Part 50, Section 50.36, Technical Specifications (TSs), requires that a Limiting Conditions for Operation (LCO) be established for a structure, system, or component that is part of the primary success path and which functions or actuates to mitigate a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. A loss of offsite power (LOSP) is one such transient that must be considered.

With respect to a LOSP, the current LCO for Technical Specification 3.7.9, "Ultimate Heat Sink" (UHS), (submitted April 26, 2004, Agency wide Documents Access and Management System (ADAMS) Accession No. ML041190306, with request for additional information (RAI) response dated April 18, 2005, ADAMS Accession No. ML051110207), accounts for a tornado induced LOSP where a missile strike damages one Nuclear Service Cooling Water (NSCW) cooling tower cell and makes it inoperable. In the License Amendment Request (LAR) dated September 1, 2011 (ADAMS Accession No. ML112450171), the licensee states that loss of an NSCW fan due to tornado is for LOSP only - not for Loss of Coolant Accident (LOCA). The Nuclear Regulatory Commission (NRC) staff concurs, but notes that the current TS LCO conservatively accounts for a LOSP, even though LOCA heat loads were used in the analysis.

In the LAR, Southern Nuclear Operation Co., Inc. (the licensee) presented new Figure 3.7.9-1, which proposes new NSCW cooling tower fan requirements as a function of wet bulb temperature and NSCW basin temperature. This figure is based on the calculation in Enclosure 5 of the LAR. Enclosure 5 calculates UHS fan requirements using plant heat rejection rates for LOCA. However, the NRC staff does not see justification for Figure 3.7.9-1 in the LAR for a tornado induced LOSP where an additional fan cell is lost due to missile strike. The NRC staff concurs with the licensee that plant heat rejection rates for LOCA does not apply to a tornado induced LOSP, but plant heat loads for shutdown with loss of offsite power do apply. (Note the hot standby heat loads for LOSP in Enclosure 6 of the LAR are not applicable here). The NRC staff notes that Final Safety Analysis Report (FSAR) Table 9.2.5-10 provides NSCW heat loads for shutdown with LOSP.

a) Please provide justification for the proposed LCO of the LAR using heat loads for shutdown with LOSP, where only three NSCW cooling tower fans would be available to mitigate a tornado induced LOSP when operating in the four fan/spray cell required region of Figure 3.7.9-1.

b) Please provide justification for the proposed LCO of the LAR using heat loads for shutdown with LOSP, where only two NSCW cooling tower fans would be available to mitigate a tornado induced LOSP when operating in the three fan/spray cell required region of Figure 3.7.9-1.

SNC Response to RAI-1

Response to requests for information (RAIs) 1, 3, and 6 require generation of a new calculation and/or a calculation revision, response to this RAI is scheduled to be provided by April 30, 2012.

RAI-2

The licensee has previously stated in their April 18, 2005, response to a NRC RAI that three fans supported acceptable temperature limits (i.e., basin temperature < 95 degrees Fahrenheit (°F)) for emergency cooling for LOCA when ambient wet bulb temperature is a maximum of 67 °F. The licensee in their September 1, 2011, submittal now states that a maximum ambient wet bulb temperature of 73 °F is sufficient to keep basin temperature < 95 °F with three fans running for LOCA. The licensee stated that this is a result of a new engineering calculation. The licensee has proposed changing the corresponding Condition LCO according to the new engineering calculation. Explain why the maximum wet bulb temperature limit considering LOCA is proposed to change from 67 °F to 73 °F, including what has changed between the April 18, 2005 submittal and the September 1, 2011, submittal.

SNC Response to RAI-2

The maximum allowable wet bulb temperature has changed due to the analysis using a lower starting temperature of the NSCW basin temperature. Recorded plant data shows that the maximum temperature of the basin during summer months to be less than 80 °F, that is, to be approximately 10 degrees less than the previous design basis temperature utilized in the analysis per the submittal on April 18, 2005. Since the actual basin temperatures are lower than the design basis temperature, the heat sink capacity of the NSCW system has been determined to be greater, thus allowing for a higher allowable wet bulb temperature that determines the cooling tower fan performance, hence 67 °F has changed to 73 °F allowable wet bulb temperature (as indicated in calculation X4C1202S31, version 2, sheet 6 of 6). Therefore, proposed Figure 3.7.9-1, per the TS submittal, allows plant operations to determine the number of cooling tower fans required to be in operation based on the actual basin temperature and ambient wet bulb temperature.

RAI-3

The licensee has presented a justification in the LAR to increase the completion time (CT) to seven days for restoring a fan to operable status as described in proposed new Condition B.

The licensee's justification states:

> Current analysis demonstrates that when four fans/spray cells are required by proposed TS Figure 3.7.9-1, three running fans and associated spray cells would mitigate the most likely transient of a LOSP. Being able to mitigate a LOSP during the proposed seven-day Completion Time provides additional assurance that the NSCW system will provide the needed cooling function. Enclosure 6 is a calculation that supports the proposed change in Completion Time by the conclusion that a Loss of Offsite Power transient can be mitigated with three fans/spray cells in operation.

However, Enclosure 6 uses heat loads to hot shutdown and not total NSCW heat loads for shutdown with loss of offsite power as shown in Table 9.2.5-10 of the FSAR. If a LOSP occurs, it may be necessary to shutdown to Mode 5, which has not been accounted in Enclosure 6.

Please provide adequate justification for your conclusion that a LOSP transient can be mitigated with three fans/spray cells in operation when operating in proposed Condition B.

SNC Response to RAI-3

Response to requests for information (RAIs) 1, 3, and 6 require generation of a new calculation and/or a calculation revision, response to this RAI is scheduled to be provided by April 30, 2012.

RAI-4

The licensee has proposed compensatory measures as provision for extending the CT to seven days when in Condition B. Some of the proposed compensatory measures are unquantifiable and cannot be identified. Measures such as "additional oversight," "other safety significant components," cannot be measured or enforced.

a) It is unclear how "additional oversight" for the switchyard, emergency diesel generators (EDG), and auxiliary feed water pumps will be determined and validated. Please explain.

b) It is unclear what safety significant components will not have planned maintenance during NSCW fan repair. Please explain.

c) How will you ensure that both emergency EDG's and both NSCW trains are verified operable when in Condition B?

SNC Response to RAI-4(a)

Additional oversight for the emergency diesel generators and auxiliary feed water pumps will be accomplished via the use of procedure NMP-OS-010 "Protected Train/Division and Protected Equipment Program." This procedure is used for management of the protected train/division and for posting protected equipment when redundant equipment is out of service. Posting is used to prevent unintended consequences from operation, maintenance, or nearby activity. Operation of protected plant equipment is limited or prohibited. Additional oversight for the switchyard will be accomplished via the use of NMP-GM-021 "Switchyard Access and Maintenance Controls." See response to RAI-4(b) for additional oversight details regarding NSCW.

SNC Response to RAI-4(b)

Procedure NMP-OS-010 "Protected Train/Division and Protected Equipment Program" indicates that equipment shall be posted "...when redundant components that are important for plant safety are made unavailable." Therefore, at a minimum, the safety significant components which will not have planned maintenance include the both trains of NSCW. Specific equipment (per NMP-OS-010-003 "Vogtle Protected Equipment Logs") that will be posted for work on NSCW Train A (B) includes:

- NSCW pumps 2, 4, and 6 (1, 3, and 5)
- NSCW train B (A)
- NSCW B (A) switchgear room
- NSCW transfer pump train B (A)
- NSCW transfer pump breaker BBB-18 (ABB-18)

SNC Response to RAI-4(c)

Both NSCW trains and the emergency diesel generators will be verified operable by ensuring there are no LCOs for the NSCW trains and the emergency diesel generators (by review of the LCO logs) and that there is no schedule work that would make a NSCW train or an emergency diesel generator inoperable (by review of scheduled work activities).

RAI-5

The licensee has made a regulatory commitment in Enclosure 4. The NRC staff has the following concerns regarding this regulatory commitment:

a) The Regulatory Commitment in Enclosure 4 can be applicable when inclement weather is forecasted. Please define inclement weather for the purposes of implementing this Regulatory Commitment.

b) Does planned maintenance make a fan inoperable? If so, how does this Regulatory Commitment add safety when you could not make a second fan inoperable and remain in Condition B? If planned maintenance would not make the fan inoperable, then how are you enhancing safety by not performing this maintenance?

SNC Response to RAI-5(a)

For the purpose of the regulatory commitment, inclement weather is defined as severe weather, as that term is used in procedure 11889-C "Severe Weather Checklist." The purpose of the checklist is to provide instructions for preparing the plant to withstand the effects of a severe weather event such as a hurricane, tornado, or heavy rain. Entry into the checklist should be considered for the following conditions:

- A tornado warning issued for either Burke County or Savannah River Site.
- Weather anticipated that will result in a Notification of Unusual Event in accordance with the VEGP Emergency Plan.
- Or as deemed necessary by the Shift Manager.

The measures put in place for the NSCW commitment will be similar to those approved by the NRC for entering extended EDG allowable outage times, reference Safety Evaluation dated May 20, 1998, TAC Nos. M96769 and M96770. That safety evaluation, page 5, stated:

"As a precautionary measure, the licensee will consult extended weather forecasts prior to entering extended EDG AOTs. For the occurrence of a severe weather event such as a hurricane where it is not reasonable to foresee such an event for an extended period in

advance, the licensee has in place administrative controls, which require the units to be placed in shutdown, to at least Mode 3, within 2 hours prior to projected 74 mph sustained winds reaching the site. This additional measure will help to minimize the risk of having a severe weather-related event during an extended EDG AOT."

The terms of the NRC safety evaluation were implemented for the EDG per procedure 13419-C "Diesel Generator Extended AOT" and a similar procedure will address inclement/severe weather for NSCW.

SNC Response to RAI-5(b)

Planned maintenance on a fan does make a fan inoperable. If while operating with four fans (while in the four-fan region of proposed Figure 3.7.9-1) and one fan is taken out of service for maintenance, the plant will be subject to a TS Required Action during which, based on engineering calculations, continued plant operation is acceptable under the limitations imposed by the applicable Required Action. If operating with four fans while in the three-fan region of proposed Figure 3.7.9-1 and one fan is taken out of service for maintenance, the plant will not be subject to a TS Required Action, and that situation, based on engineering calculations, is acceptable for continued plant operation. The plant may not deliberately take a second fan out for maintenance and remain in the proposed Condition B, nor would it be the intent to deliberately enter the proposed Condition C.

To preclude planned maintenance during imminent inclement weather serves two purposes:

1) To maintain margin and defense in depth to minimize the possibility of natural phenomena (such as tornadoes) affecting remaining fan/spray cells or the opposite train and operable NSCW cooling tower fan/spray cells is considered to enhance safety.

2) It is a preventative measure against the possibility of exceeding the TS allowed completion time due to delays caused by personnel safety concerns related to inclement weather. Not exceeding the TS allowed completion time is considered to enhance safety (noting that exceeding the completion time could result in Mode changes).

RAI-6

The licensee is requesting to extend the CT from 72 hours to seven days to restore operability of one NSCW cooling tower after one required fan/spray cell became inoperable. One of the licensee's justifications for this extension is the availability of the other operable NSCW cooling tower (assuming no single failure during the CT) for a design basis accident (DBE).

a) Discuss the possible single failures that could render the operable NSCW cooling tower inoperable or ineffective during a DBE should it occur during the CT, e.g. loss of the associated EDG, loss of a nuclear service water pump, etc. Discuss the compensatory measures that will be enacted during the CT that will reduce the possibility of loss of operability or effectiveness of the redundant operable NSCW cooling tower.

b) If the redundant operable NSCW cooling tower was lost during the extended CT for a DBE as discussed above, discuss the resultant max basin temperature of the other and only remaining cooling tower (cooling tower for which the seven day CT was entered) which has the remaining three fans

SNC Response to RAI-6

Response to requests for information (RAIs) 1, 3, and 6 require generation of a new calculation and/or a calculation revision, response to this RAI is scheduled to be provided by April 30, 2012.