

MAR 13 2017

Docket Nos.: 50-424
50-425

NL-17-0232

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D. C. 20555-0001Vogtle Electric Generating Plant, Units 1 and 2
Response to Request for Additional Information on Technical Specifications Change to Adopt
Risk Informed Completion Times

Ladies and Gentlemen:

By letter dated September 13, 2012, Southern Nuclear Operating Company (SNC) submitted a license amendment request to modify the Vogtle Electric Generating Plant, Units 1 and 2, Technical Specifications (TS) to implement risk informed completion times into their TS, per the guidelines of Nuclear Energy Institute (NEI) Report NEI 06-09, Revision 0-A, "Risk Informed Technical Specifications Initiative 4b, Risk Managed Technical Specifications (RMTS) Guidelines".

Since then, there have been multiple letters between the NRC and SNC.

On February 3, 2017, the NRC issued an electronic request for additional information (RAI). The questions are based primarily on discussions between the NRC and SNC from a public meeting held on January 26, 2017. The NRC revised questions #6, #10, and #11 via another electronic request for additional information provided to SNC on March 7, 2017. Those revisions were based primarily on discussions between SNC and the NRC, initiated in public meetings held on February 7, 2017, and February 28, 2017.

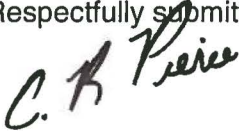
Enclosure 1 to this letter provides the responses for all the RAIs except for RAIs #5, #6, and #10. Those will be provided later on a mutually agreed upon date. With the responses to RAIs #5, #6, and #10, SNC will also provide the reconciled TS mark-ups and clean pages.

To further facilitate the NRC's review, Enclosure 2 to this letter provides a draft version of proposed Section 5.5.22 to the VEGP TS.

This letter contains no NRC commitments. If you have any questions please contact Ken McElroy at 205.992.7369.

Mr. C. R. Pierce states he is Regulatory Affairs 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.

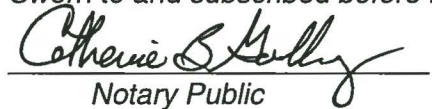
Respectfully submitted,



C. R. Pierce
Regulatory Affairs Director

CRP/OCV/

Sworn to and subscribed before me this 13th day of March, 2017.


Notary Public

My commission expires: 1/2/2018

Enclosure: 1. Response to Request for Additional Information
2. Draft of Section 5.5.22

cc: Southern Nuclear Operating Company
Mr. S. E. Kuczynski, Chairman, President & CEO
Mr. D. G. Bost, Executive Vice President & Chief Nuclear Officer
Mr. D. R. Madison, Vice President – Fleet Operations
Mr. M. D. Meier, Vice President – Regulatory Affairs
Mr. B. K. Taber, Vice President – Vogtle 1 & 2
Mr. B. J. Adams, Vice President – Engineering
Mr. D. D. Sutton, Regulatory Affairs Manager – Vogtle 1 & 2
RType: CVC7000

U. S. Nuclear Regulatory Commission
Ms. C. Haney, Regional Administrator
Mr. M. D. Orenak, NRR Project Manager – Vogtle 1 & 2
Mr. M. F. Endress, Senior Resident Inspector – Vogtle 1 & 2

State of Georgia
Mr. R. E. Dunn, Director- Environmental Protection Division



**Vogtle Electric Generating Station
Response to Request for Additional Information on Technical Specifications
Change to Adopt Risk Informed Completion Times**

Enclosure 1

Response to Request for Additional Information

Enclosure 1 to NL-17-0232
Response to Request for Additional Information

By letter dated September 13, 2012, as supplemented by letters dated August 2, 2013, July 17, 2014, November 11, 2014, December 12, 2014, March 16, 2015, and May 5, 2015, February 17, 2016, April 18, 2016, and July 13, 2016 (ADAMS Accession Nos. ML12258A055, ML13217A072, ML14198A574, ML14315A051, ML14346A643, ML15075A479, ML15125A446, ML16048A096, ML16109A338, and ML16195A503, respectively), Southern Nuclear Company, Inc. (SNC), proposed changes to the Technical Specifications (TSs) for the Vogtle Electric Generating Plant (VEGP or Vogtle). The proposed amendment would modify TS requirements to permit the use of Risk Informed Completion Times (RICTs) in accordance with Topical Report (TR) Nuclear Energy Institute (NEI) 06-09, Revision 0-A, *Risk Informed Technical Specifications Initiative 4b, Risk-Managed Technical Specifications (RMTS) Guidelines*. The NRC staff has identified the following information needs associated with SNC's amendment request.

The NRC staff noted that, over the course of the review and via the supplemental letters, the specific proposed revisions to the TSs have changed. Included as Attachment 1 to the NRC's Request for Additional Information (RAI) of February 3, 2017, the NRC staff generated a list of those TS changes that currently remain in the license amendment request. Although not required, the NRC staff indicated that it would be prudent for SNC to verify the list and, if appropriate, identify discrepancies to ensure consistent understanding.

The NRC's Attachment 1 from their February correspondence has not been reproduced in this letter, however, once the TS pages have been finalized, SNC will perform a verification of Attachment 1 and, if necessary, notify the NRC of any significant discrepancies.

Following are the NRC's specific RAI questions.

RAI #1

On June 15, 2016, the staff issued a Request for Additional Information that included question PRA RAI S-1 (A). PRA RAI S-1 (A) requested that SNC adopt a 24 hour backstop for Conditions involving a technical specification loss of function (TS-LOF, i.e., loss of operability of all trains) but with retained PRA Functional, or to discuss a proposed alternative. In the letter dated July 13, 2016, SNC provided a response to the staff's RAI.

SNC's response proposed the adoption of a graduated approach to determine the backstop completion time for a TS LOF condition. Specifically, SNC proposed to use an administrative backstop of either 24 hours or 7 days based on the calculated plant configuration-specific RICT. The NRC Staff has found that the RAI response did not provide an evaluation justifying extending the backstop up to 7 days.

The proposed TS 5.5.22, Risk Informed Completion Time Program, states that the RICT for high risk plant configurations may not exceed 24 hours; the RICT for low risk plant configurations may not exceed 7 days. Please revise the proposed TS Admin Section 5.5.22, constraints (a) and (e), to specify that the RICT may not exceed 24 hours or provide a justification of how the reduction in defense-in-depth and safety margins associated with a 7 day backstop continues to be in accordance with the guidance in RG 1.174.

SNC Response to RAI #1

SNC will adopt the 24 hour backstop for all Technical Specifications loss of function Conditions included in the RICT program scope. Section 5.5.22, "Risk Informed Completion Time

Program" will be revised to indicate that the backstop on a loss of function Condition cannot exceed 24 hours.

RAI #2

In the Table provided on Page E1-3 in the RAI response dated July 13, 2016, SNC provided a list of systems with description of the TS LOF conditions. The proposed TS 5.5.22 in the same RAI response contains several constraints (e.g., 24 hour backstop and remaining mitigating capabilities) on developing a RICT that can be used for these conditions. However, the proposed TS changes do not identify the Conditions to which these constraints apply. Please propose a modification to the affected TS that stipulates that the Conditions will be subject to the 24 hour backstop and associated mitigating capabilities.

SNC Response to RAI #2

The Technical Specifications loss of function Conditions will be revised to include a second note at the actual LCO Condition. In addition to the standard note indicating that the Condition is not applicable when intentionally removing a component from service that would result in a loss of function, a second note will be added to indicate the paragraphs of Section 5.5.22 which apply to the loss of function Condition. The second note will state:

"The following Section 5.5.22 constraints are applicable: parts b, c.2, c.3, d, e, f and g."

Section 5.5.22 has been re-numbered since it was last provided to NRC in the July, 2016 letter. Therefore, to facilitate your review, Enclosure 2 provides a draft of the new proposed Section 5.5.22.

RAI #3

The staff reviewed the proposed TS 5.5.22, Risk Informed Completion Time Program, as provided in Enclosure 3 in the letter dated July 13, 2016, and identified the need for some additional clarification.

(1) Enclosure 3, Part c. currently states:

- c. When a RICT is being used, any plant configuration change within the scope of the RICT Program must be considered for the effect on the RICT.

This proposed wording appears to be circular. The parallel limitation from the NRC SE on NEI 06-09 is:

- c. *When a RICT is being used, any plant configuration change within the scope of the Configuration Risk Management Program (CRMP) must be considered for the effect on the RICT.*

Please clarify the logic of the proposed limitation or revise TS 5.5.22 accordingly.

(2) Enclosure 3, Part e.2 and e.3 currently state:

- e.2. *For design basis accident scenarios that are not modeled in the PRA because they do not affect the CDF or the LERF, the PRA Functionality evaluation*

performed following a TS LOF Condition entry will ensure SSCs not supporting CDF/LERF will remain available and sufficient.

- e.3. *For design basis initiators modeled in the internal events PRA, the PRA Functionality determination performed subsequent to a TS LOF Condition entry will ensure design basis success criteria for parameters (e.g., flow rate, temperature limits) are met.*

The NRC staff recognizes that the proposed changes are consistent with SNC's February 17, 2016, and April 18, 2016, RAI response that SNC referenced in the NRC Staff's June 15, 2016, RAI S-1(A). However, RAI S-1(A) summarized SNC's earlier proposed changes as:

- ii. *Design basis success criteria parameters shall be met for design basis accident scenarios that are not modelled in the internal events PRA as described in the response to 2.a.*
- iii. *Design basis success criteria parameters shall be met for design basis accident scenarios modelled in the internal events PRA as described in the response to 2.c.*

SNC's July 13, 2016, response to RAI S-1(A) implied that the wording in NRC RAI S-1(A) would be used. The response did not clarify that the wording in the original SNC responses would be used which substantively changes the scope of the response.

The proposed wording in constraints e.2 and e.3 does not provide assurance that the plant will maintain its capability to mitigate all design basis accident scenarios when in a technical specification loss of function condition for which PRA Functional has been declared. To provide assurance that all design basis accidents can be mitigated during a loss of function, propose revised wording to constraints e.2 and e.3 to include all design basis accident scenarios in the determination of PRA Functional with as simple a statement as possible, e.g.;

- e.2 *Design basis success criteria parameters shall be met for all design basis accident scenarios*

Alternatively, if SNC proposes to retain PRA Functional that does not include meeting all design basis success criteria for all design basis accident scenarios additional information is requested. The table provided on Page E1-3 retains the application of PRA Functional for the identified loss of function Conditions. For each such LCO and Condition, similarly to the information provided for LCO 3.7.14.B, "ESF Coolers and Chillers", please identify all the design basis functions fulfilled by the LCO and their design basis success parameter values. Compare these functions with the PRA Functions, including the PRA success parameter values. Summarize and justify the loss in defense-in-depth and safety margins for any design basis accident scenarios that would no longer be mitigated with the PRA Functional equipment.

SNC Response to RAI #3

- (1) Part c of Section 5.5.22 will be changed to read as follows:

"When a RICT is being used, any plant configuration change within the scope of the Configuration Risk Management Program must be considered for the effect on the RICT".

- (2) Parts f.2 and f.3 (renumbered from e.2 and e.3) of Section 5.5.22 will be combined into one part (f.2) and will read as follows:

"Design basis success criteria parameters shall be met for all design basis accident scenarios for establishing PRA Functionality where a RICT is applied".

RAI #4

In a letter dated April 18, 2016, SNC furnished responses to the staff's RAI regarding the application of a RICT to selected Conditions in Technical Specification 3.8.1. The RAI response states:

SNC has modified the license amendment request to eliminate the current risk-informed Condition B and to apply a Risk Informed Completion Time only to the condition with the 72 hour front stop (current VEGP LCO 3.8.1, Condition C).

However, in the TS mark-up provided in Enclosure 2 to the letter, existing Condition C, its Required Action and associated Completion Time, are marked for deletion; and the Completion Time associated with Required Action B.6 is shown with a Completion Time of 72 hours, and proposed to be retained.

During its review of the requested change, the staff compared the marked-up TS page 3.8.1-5 with the currently approved version of this page. It appears that in the currently approved version, the Completion Time associated with Required Action B.6 is "14 days from discovery of failure to meet LCO". This page was last modified in Amendment No. 100 for Unit 1 and Amendment No. 78 for Unit 2.

Please clarify the description of the proposed changes to TS 3.8.1.

SNC Response to RAI #4

The intent of the changes made to LCO 3.8.1 in the April 18, 2016 letter was to revise the LCO Condition for an inoperable diesel generator consistent with the TSTF-505 mark-up.

Therefore, the intent is to apply a Risk Informed Completion Time only to the current Required Action (RA) B.6, renumbered as B.4. The intent is also to apply a 72 hour front stop to current RA B.6, renumbered to B.4 in the revised pages.

The clean pages provided in the April 18, 2016 letter were correct. However, there was a mistake in the marked-up pages; the error was in the markup of Required Action (RA) B.6, renumbered as B.4, "Restore DG to OPERABLE status".

The error in the mark-up was that the Completion Time (CT) for RA B.6 was provided as a *clean* 72 hours. Although the 72 hours is indeed the intended CT, the CT as given in the current VEGP Technical Specifications is "14 days from discovery of failure to meet the LCO".

Consequently, rather than showing a clean 72 hours without showing the 14 days, the mark-up should have presented the current 14 day CT with red strikethrough lines, and inserted the new 72 hour CT.

Current Condition 3.8.1.C was correctly deleted, since RAs B.2 and B.5 are being eliminated. Condition 3.8.1.H will be the default condition when the RAs and CTs of Condition 3.8.1.B cannot be met.

A new mark-up will be provided when the final VEGP Technical Specifications changed pages are sent to NRC.

RAI #5

The SNC Response to RAI #5 will be provided at a later date.

RAI #6

The SNC Response to RAI #6 will be provided at a later date.

RAI #7

LCO 3.5.1 A, "One accumulator inoperable due to boron concentration not within limits," is proposed in the scope of the RICT program. In response to RAI #12 provided in letter dated July 17, 2014, the licensee stated that this condition will be modeled in the PRA by assuming loss of accumulator as a surrogate. The RAI response further states that "loss of accumulator is the worst case surrogate for this degraded condition."

As described in the UFSAR, the minimum boron concentration requirement assures reactor subcriticality in a post LOCA environment. The maximum boron concentration is used in determining the cold leg to hot leg recirculation injection switchover time. Also maintaining the boron concentration within the specified limits "assures that the resulting sump pH will be maintained in an acceptable range so that the effect of chloride and stress corrosion on mechanical systems and components will be minimized." Since these considerations are typically not addressed in the PRA:

- a) Explain how modeling the accumulator as unavailable (i.e., no injection) in the PRA represents the worst case impact of the accumulator boron concentration not being within limits or remove Condition 3.5.1.A from the RICT program.
- b) Address how the response to part a) above affects proposed LCO 3.5.1.C, "Two or more accumulators inoperable", and propose any modifications to 3.5.1.C as deemed necessary.

SNC Response to RAI #7

SNC will remove Condition 3.5.1.A, "One accumulator inoperable due to boron concentration not within limits", from the RICT program.

Furthermore, SNC will revise the LCO 3.5.1.C Condition statement to read, "Two or more accumulators inoperable for reasons other than boron concentration not within limits".

RAI #8

In Table provided on Page E1-3 in the RAI response dated July 13, 2016, SNC provided a list

of TS LOF conditions in the RICT program. Condition 3.5.4 D, "RWST inoperable for reasons other than Conditions A and B" is recognized as a TS LOF condition, but condition 3.5.4 B, "One or more sludge mixing pump isolation valves inoperable" is not. As indicated in the response to question 1 provided in letter dated August 2, 2013, the sludge pump mixing isolation valves provide the isolation capability to prevent loss of the RWST water volume. These valves isolate the safety related portion of the sludge mixing line (connecting to the RWST) from its non-safety related, non-seismically qualified portion of the line. It appears that one or more inoperable mixing isolation valves could result in loss of the RWST inventory in a seismic event, therefore justify why condition 3.5.4 B was not included in the list of TS LOF conditions or include it as a TS LOF and apply the 24-hour backstop and applicable conditions accordingly.

SNC Response to RAI #8

Current Condition 3.5.4.B reads, "One or more sludge mixing pump isolation valves inoperable".

There are two sludge mixing pump isolation valves which separate the safety and non-safety related portions of the sludge mixing line; the valves are situated in series. Consequently loss of one valve would not be a loss of function. Loss of both valves, however, could result in the loss of the RWST upon a seismic event, as the RAI question suggests.

SNC proposes to separate Condition B into two LCO Conditions. The revised Condition 3.5.4.B will read as follows:

"One sludge mixing pump isolation valve inoperable".

The new Condition 3.5.4.C will read as follows:

"Two sludge mixing pump isolation valves inoperable".

Condition B will be included in the RICT program.

Revised Condition 3.5.4.B will have a front stop of 72 hours. The 24 hour completion time will be retained for the case of two inoperable isolation valves (new Condition 3.5.4.C).

RAI #9

LCO 3.4.11, "Power Operated Relief Valves; Condition E – 2 PORVs Inoperable and incapable of being manually cycled"

According to the UFSAR, the design success criteria for PORVs are to (a) depressurize the Reactor Coolant System (RCS) with 1 of 2 PORVs and to (b) not experience excessive seat leakage in 2 of 2 PORVs. Some required actions for this condition direct the licensee to close and remove power from the associated block valves within one hour if the associated PORV(s) become inoperable. The block valves, which are in a series with the PORVs, are required to be closed to isolate the PORVs in the case of excessive leakage or a stuck open PORV. However, de-energizing the block valves in the closed position renders them incapable of allowing RCS depressurization, which is also a design basis function. If both PORVs become inoperable this is a Technical Specification LOF condition (both PORVs inoperable) and the licensee must demonstrate that the system retains the ability to meet its

design success criteria for parameters. With both block valves closed, the plant is unable to meet its design basis function of RCS depressurization, therefore please justify inclusion of this condition in the scope of the RICT program, or remove it from the program.

SNC Response to RAI #9

As mentioned in the above RAI, for loss of function, SNC committed to demonstrating that the system retains its ability to meet its design success criteria *for parameters*, e.g., temperature limits, flow rates, and limits on water volumes to name a few. These are akin to the parameters discussed in the 10 CFR 50.2 definition for “design bases”:

“... the specific values or ranges of values chosen for controlling parameters as reference bounds for design”.

However, there are no such design basis parameters identified in the LCO Statement which would preclude this LCO Condition from being included in the RICT program. Therefore, SNC does not believe that the design basis parameter restriction would necessitate removing this LCO Condition from the RICT program.

In other words, for any loss of function condition, including this one, design basis parameters must be met. However, if the LCO statement, or the specific LCO Condition, does not limit itself solely to a design basis parameter, then a RICT could be taken depending on the specific condition causing the inoperability. Such is the case with LCO Condition 3.4.11.E.

Consequently, a RICT could be entered, in accordance with the guidance provided in NEI 06-09, Section 2.3.1, Item 11, PRA Functionality Assessment Guidance, presuming all other restrictions associated with a loss of function, including the design basis parameter restriction, could also be met.

The VEGP TS Bases for LCO 3.4.11 state:

“The PORVs also provide the safety related means for reactor coolant system depressurization to achieve safety-grade cold shutdown and to mitigate the effects of a loss of heat sink or an SGTR”. [Steam Generator Tube Rupture].

The TS Bases also points out that manual operator actions are assumed in the mitigation of these events:

“As such, automatic action is not required to mitigate these events, and PORV automatic operation is, therefore, not an assumed safety function”.

With respect to LCO 3.4.11.E, if both PORVs were closed and incapable of being cycled open, then the RCS depressurization could not be accomplished regardless of the status of the block valves and a RICT could not be taken.

On the other hand, if both PORVs were open and could not be manually closed, the block valves would be closed and de-energized per Required Action 3.4.11.E.1 and E.2.

In this condition, however, manual actions could be taken to accomplish an RCS depressurization if needed. This could be done by re-energizing the block valves and manually opening them, although it would take some time (approximately 15 to 30 minutes) to restore

power. If NEI 06-09, Section 2.3.1, Item 11, PRA Functionality Assessment Guidance could still be met even with the *additional* manual operator action to re-energize the block valves, a RICT could be entered. If NEI 06-09, Section 2.3.1, Item 11, PRA Functionality Assessment Guidance could not be met, then a RICT would not be entered.

Further clarification will be added to the Bases to specify that the PORVs being closed and not capable of opening represents a loss of PRA Functionality.

RAI #10

Response will be provided to NRC at a later date.

RAI #11

In Section 4.0, "Limitations and Conditions" of the NRC Staff safety evaluation (SE) to NEI 06-09, the staff stated:

As part of its review and approval of a licensee's application requesting to implement the RMTS, the NRC staff intends to impose a license condition that will explicitly address the scope of the PRA and non-PRA methods approved by the NRC staff for use in the plant-specific RMTS program. If a licensee wishes to change its methods, and the change is outside the bounds of the license condition, the licensee will need NRC approval, via a license amendment, of the implementation of the new method in its RMTS program.

Please propose a license condition limiting the scope of the PRA and non-PRA methods to what is approved by the NRC staff for use in the plant-specific RMTS program. An example is provided below.

The risk assessment approach, methods, and data shall be acceptable to the NRC, be based on the as-built, as-operated, and maintained plant; and reflect the operating experience at the plant. Acceptable methods to assess the risk from extending the completion times must be PRA methods accepted as part of this license amendment, or other methods currently approved by the NRC for generic use. If a licensee wishes to change its methods and the change is outside the bounds of this license condition, the licensee will need prior NRC approval, via a license amendment.

SNC Response to RAI #11

SNC proposes to adopt the following license condition:

The risk assessment approach and methods, shall be acceptable to the NRC, be based on the as-built, as-operated, and maintained plant; and reflect the operating experience at the plant as specified in RG 1.200. Acceptable methods to assess the risk from extending the completion times may include methods that have been accepted for use in the RICT program, or methods generically approved for use by NRC. If SNC wishes to change its methods to include one for which there is no consensus of the method of analysis, either generically or specific to this license condition, SNC will need NRC approval, via a license amendment, of the implementation of the new method in its RMTS program.

**Vogtle Electric Generating Station
Response to Request for Additional Information on Technical Specifications Change to
Adopt Risk Informed Completion Times**

Enclosure 2

Draft of Section 5.5.22

5.5.22 Risk Informed Completion Time Program

This program provides controls to calculate a Risk Informed Completion Time (RICT) and must be implemented in accordance with NEI-06-09, Revision 0-A, "Risk-Managed Technical Specifications (RMTS) Guidelines." The program shall include the following:

- a. The RICT may not exceed 30 days.
- b. A RICT may only be utilized in MODE 1 and 2.
- c. When a RICT is being used, any plant configuration change within the scope of the Configuration Risk Management Program must be considered for the effect on the RICT.
 1. For planned changes, the revised RICT must be determined prior to implementation of the change in configuration.
 2. For emergent conditions, the revised RICT must be determined within the time limits of the Required Action Completion Time (i.e., not the RICT) or 12 hours after the plant configuration change, whichever is less.
 3. Revising the RICT is not required if the plant configuration change would lower plant risk and would result in a longer RICT.
- d. Use of a RICT is not permitted for voluntary entry into a configuration which represents a loss of a specified safety function or inoperability of all required trains of a system required to be OPERABLE.
- e. Use of a RICT is permitted for emergent conditions which represent a loss of a specified safety function, or inoperability of all required trains of a system required to be OPERABLE, if one or more of the trains are considered "PRA Functional" as defined in Section 2.3.1 of NEI 06-09. The RICT for these loss of function conditions may not exceed 24 hours.
- f. Use of a RICT is permitted for emergent conditions which represent a loss of a specified safety function or inoperability of all required trains of a system required to be OPERABLE if one or more trains are considered "PRA Functional" as defined in Section 2.3.1 of NEI 06-09. However, the following additional constraints shall be applied to the criteria for "PRA Functional".
 1. Any SSCs credited in the PRA Functionality determination shall be the same SSCs relied upon to perform the specified Technical Specifications safety function.
 2. Design basis success criteria parameters shall be met for all design basis accident scenarios for establishing PRA Functionality where a RICT is applied.
- g. A RICT entry is not permitted, or a RICT entry made shall be exited, for any condition involving a TS loss of Function if a PRA Functionality determination that reflects the plant configuration concludes that the LCO cannot be restored without placing the TS inoperable trains in an alignment which results in a loss of functional level PRA success criteria.