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April 8, 2022

Docket Nos.: 52-025  
52-026

ND-22-0242  
10 CFR 50.55a

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

**Southern Nuclear Operating Company  
Vogtle Electric Generating Plant Units 3 and 4  
Request for Alternative: Alternative Requirements for Main Turbine System Valve Testing  
(VEGP 3&4-IST-ALT-02)**

Ladies and Gentlemen:

Pursuant to 10 CFR 50.55a(z)(1), Southern Nuclear Operating Company (SNC) requests NRC authorization to use an alternative to the requirements of 10 CFR 50.55a(f) and the ASME Operation and Maintenance of Nuclear Power Plants (OM) Code requirements for quarterly full stroke testing of main turbine system valves as currently identified in Revision 2 of the Vogtle Electric Generating Plant Units 3&4 Inservice Testing Program Plan - 1st Interval (SNC letter No. ND-22-0254) submitted to NRC on April 7, 2022. The proposed alternative would establish partial stroke testing every six months consistent with the Vogtle Units 3 and 4 Turbine Maintenance and Inspection Program (UFSAR section 10.2.3.6, bullet 5). As a result of the changes made by this Alternative, the fail-safe test will become part of the existing Cold Shutdown stroke test. This request was discussed with NRC Staff during the December 13, 2021, pre-submittal public meeting.

The details of the 10 CFR 50.55a(z) request for an alternative are provided in Enclosure 1 of this letter.

Associated markups of the inservice testing program plan are provided in Enclosure 2 of this letter.

SNC requests the NRC authorize this proposed alternative by October 8, 2022, which is expected to be prior to the first Program Plan required quarterly full stroke test of these valves at power.

This letter contains no regulatory commitments. This letter has been reviewed and confirmed to contain no security-related information. Should you have any questions, please contact Ms. Amy Chamberlain at (205) 992-6361.

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 8<sup>th</sup> day of April 2022.

Respectfully submitted,

SOUTHERN NUCLEAR OPERATING COMPANY



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Amy C. Chamberlain  
Manager, Regulatory Affairs  
Southern Nuclear Operating Company

- Enclosure 1: Request for Alternative: Alternative Requirements for Main Steam and Turbine System Valve Testing (VEGP 3&4-IST-ALT-02)
- Enclosure 2: Markup of Vogtle Units 3 and 4 Inservice Testing Program Plan – 1<sup>st</sup> Interval

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**Southern Nuclear Operating Company**

**ND-22-0242  
Enclosure 1**

**Vogtle Electric Generating Plant (VEGP) Units 3 and 4**

**Request for Alternative:  
Alternative Requirements for Main Steam and Turbine System Valve Testing  
(VEGP 3&4-IST-ALT-02)**

(This enclosure consists of 4 pages, including this cover page.)

<b>Plant Site-Unit:</b>	Vogtle Electric Generating Plant (VEGP) – Units 3 and 4
<b>Interval-Interval Dates:</b>	Applies to the initial inservice test (IST) interval for Units 3 and 4
<b>Requested Date for Approval:</b>	Authorization is requested by October 8, 2022
<b>ASME Code Components Affected:</b>	<p>Specific alternative requested is applicable to Main Turbine System (MTS):</p> <ul style="list-style-type: none"> <li>- Turbine stop valves: MTS-PL-V001A/B and MTS-PL-V003A/B, and</li> <li>- Turbine control valves: MTS-PL-V002A/B and MTS-PL-V004A/B.</li> </ul> <p>These are Class N, Active, Category B valves.</p>
<b>Applicable Code Edition and Addenda:</b>	ASME Operation and Maintenance of Nuclear Power Plants (OM) Code, 2012 Edition for 1 <sup>st</sup> Inservice Test Interval
<b>Applicable Code Requirements:</b>	Quarterly exercise (ISTC-3510), full stroke exercise (ISTC-3521(a))
<b>Reason for Request:</b>	<p>10 CFR 50.55a(z) allows for alternatives to the requirements when the licensee can demonstrate that: 1) the proposed alternative would provide an acceptable level of quality and safety; or 2) compliance with the specified requirements of this section would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.</p> <p>The proposed alternative test methodology and frequency provides an acceptable level of quality and safety, while reducing the risk of an unplanned turbine trip and associated potential challenges to safety systems.</p>

<p><b>Proposed Alternative and Basis for Use:</b></p>	<p><b>Proposed Alternative:</b></p> <p>In lieu of the Code requirement for full-stroke testing of these valves on a quarterly frequency per ISTC-3510 and ISTC-3521(a), it is proposed to establish partial stroke testing on a semi-annual basis (six-month frequency as identified in Code Case OMN-20).</p> <p><b>Basis for Use:</b></p> <p>The turbine stop and control valves close to perform the function of providing backup isolation in the event of a main steam line break (MSLB) or steam generator tube rupture with the single failure of a main steam isolation valve (MSIV) to mitigate the event (Bases for Technical Specification 3.7.2, "Main Steam Line Flow Path Isolation Valves"), and to prevent the generation of turbine missiles in the event of a turbine overspeed condition (UFSAR Section 10.2). When Westinghouse was designing the AP1000, the stroking of these valves was assumed, as documented in the DCD, to be informed by industry initiatives to minimize the chances of an unanticipated turbine trip (turbine valve testing is the most common cause of unplanned reactor trips), while maintaining the probability of generating a turbine missile at an appropriately low probability (see UFSAR Subsection 10.2.3.6). This testing frequency (every six months) is within the assumed testing frequency used in the PRA which demonstrated an acceptable overall risk, including the use of these valves in their MSIV backup function. Additionally, the change from full-stroke to partial stroke exercising during operation minimizes the required power reduction (to 90% for partial stroke testing vs. to 75% for full stroke testing) and associated secondary transient which also contributes to reducing the risk of a turbine trip event. The UFSAR discussion of the turbine maintenance and inspection program in Subsection 10.2.3.6 indicates:</p> <p>"Turbine valve testing is performed at six-month intervals. The semi-annual testing frequency is based on nuclear industry experience that turbine-related tests are the most common cause of plant trips at power. Plant trips at power may lead to challenges of the safety-related systems. Evaluations show that the probability of turbine missile generation with a semi-annual valve test is less than the evaluation criteria."</p> <p>The Unit 3 Turbine Maintenance and Inspection Program (submitted on July 9, 2020) identifies this testing at six-month intervals as partial stroke testing.</p> <p>The partial stroke testing on a six-month frequency, provides an acceptable level of quality and safety. As such, SNC proposes this alternative to the OM Code under 10 CFR 50.55a(z)(1).</p> <p>Note: Approval of this Alternative will require the fail safe test to be done in conjunction with the existing full stroke exercise on a Cold Shutdown frequency.</p>
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<b>Duration of Proposed Alternative:</b>	Through the end of the first Vogtle Unit 3 & Unit 4 IST interval
<b>References:</b>	<ol style="list-style-type: none"><li>1. Vogtle Electric Generating Plant Units 3&amp;4 INSERVICE TESTING PROGRAM PLAN - 1st INTERVAL, Revision 2, submitted to NRC (via SNC letter No. ND-22-0254) on April 7, 2022.</li><li>2. Vogtle Electric Generating Plant Units 3&amp;4 TURBINE MAINTENANCE AND INSPECTION PROGRAM (ADAMS Accession No. ML20192A048) submitted to NRC on July 9, 2020</li><li>3. UFSAR Subsection 10.2.3.6, Maintenance and Inspection Program Plan (relative to turbine rotor integrity)</li></ol>
<b>Status:</b>	Awaiting NRC authorization



**Southern Nuclear Operating Company**

**ND-22-0242  
Enclosure 2**

**Vogtle Electric Generating Plant (VEGP) Units 3 and 4**

**Markup of Vogtle Units 3 and 4 Inservice Testing Program Plan – 1<sup>st</sup> Interval**

(This enclosure consists of 4 pages, including this cover page.)

ND-22-0242  
 Enclosure 2  
 Markup of Vogtle Unit 3 Inservice Testing Program Plan – 1<sup>st</sup> Interval

Revise the MTS stop and control valve stroke testing Frequencies as follows:

**MTS**

Valve ID Description	Class	Aug	Cat	A/P	Valve Size	Valve Type	Act. Type	Drawing & Coord	Normal	Safety	Fail-Safe	Required Test	Freq	Code Dev.	Plan Notes
<b>SV3-MTS-PL-V001A</b> Main Stop Valve #1	N	Y	B	A	28"	GL	EH	SV3-MTS-M6-002 F-6	O	C	C*	PI <del>STC</del> <u>PSE</u> STC FST	2y <u>QSA</u> CS <u>QCS</u>	CSJ-MTS-1	* Note 8
<b>SV3-MTS-PL-V001B</b> Main Stop Valve #3	N	Y	B	A	28"	GL	EH	SV3-MTS-M6-002 C-6	O	C	C*	PI <del>STC</del> <u>PSE</u> STC FST	2y <u>QSA</u> CS <u>QCS</u>	CSJ-MTS-1	* Note 8
<b>SV3-MTS-PL-V002A</b> Control Valve #1	N	Y	B	A	28"	GL	EH	SV3-MTS-M6-002 F-6	O	C	C*	PI <del>STC</del> <u>PSE</u> STC FST	2y <u>QSA</u> CS <u>QCS</u>	CSJ-MTS-1	* Note 8
<b>SV3-MTS-PL-V002B</b> Control Valve #3	N	Y	B	A	28"	GL	EH	SV3-MTS-M6-002 C-6	O	C	C*	PI <del>STC</del> <u>PSE</u> STC FST	2y <u>QSA</u> CS <u>QCS</u>	CSJ-MTS-1	* Note 8
<b>SV3-MTS-PL-V003A</b> Main Stop Valve #2	N	Y	B	A	28"	GL	EH	SV3-MTS-M6-002 E-6	O	C	C*	PI <del>STC</del> <u>PSE</u> STC FST	2y <u>QSA</u> CS <u>QCS</u>	CSJ-MTS-1	* Note 8
<b>SV3-MTS-PL-V003B</b> Main Stop Valve #4	N	Y	B	A	28"	GL	EH	SV3-MTS-M6-002 D-6	O	C	C*	PI <del>STC</del> <u>PSE</u> STC FST	2y <u>QSA</u> CS <u>QCS</u>	CSJ-MTS-1	* Note 8
<b>SV3-MTS-PL-V004A</b> Control Valve #2	N	Y	B	A	28"	GL	EH	SV3-MTS-M6-002 E-6	O	C	C*	PI <del>STC</del> <u>PSE</u> STC FST	2y <u>QSA</u> CS <u>QCS</u>	CSJ-MTS-1	* Note 8
<b>SV3-MTS-PL-V004B</b> Control Valve #4	N	Y	B	A	28"	GL	EH	SV3-MTS-M6-002 D-6	O	C	C*	PI <del>STC</del> <u>PSE</u> STC FST	2y <u>QSA</u> CS <u>QCS</u>	CSJ-MTS-1	* Note 8

ND-22-0242  
Enclosure 2  
Request for Alternative (VEGP 3&4-IST-ALT-02)

**Unit 3 IST Program Plan markups shown – Unit 4 markups would show identical changes...**

Select Table Notes

8. MTS-V001A/B, V002A/B, V003A/B V004A/B fail closed on loss of hydraulic pressure, but not on loss of electrical power to the fast-acting solenoid valves.

Select IST Program Plan Legend information (for reviewer information):

Class N – non-safety related  
Aug Y - Augmented scope (not required by ASME OM Code)  
Cat. B - OM Code Category “B” Valve (see OM Code)  
A/P A – Active valve  
Valve Type GL – Globe Valve  
Act. Type AO - Air Operated actuator  
Act. Type EH - Electro-Hydraulic Operated actuator  
Position O – Open  
Position C – Closed  
Required Test PI - Remote Position Indication Verification  
[Required Test PSE – Part-Stroke Exercise](#) (new)  
Required Test STC – Stroke Time Closed test  
Required Test FST - Fail-Safe Test  
Freq 2y – Two-year frequency  
Freq Q – Quarterly frequency  
[Freq SA –Semi-Annually or six-month frequency](#) (new)  
Freq CS – Cold shutdown frequency

**9.0 COLD SHUTDOWN TESTING JUSTIFICATIONS**

Revise CSJ-MTS-1 as shown:

COLD SHUTDOWN JUSTIFICATION  
CSJ-MTS-1

SYSTEM: Main Turbine

VALVE(S): SV3/4-MTS-PL-V001A/B, V002A/B, V003A/B, V004A/B

CATEGORY: B

CLASS: N

FUNCTION: These valves close to provide a backup to the MSIVs

QUARTERLY TEST REQUIREMENT: Exercise and stroke time closed [and fail-safe test](#).

COLD SHUTDOWN JUSTIFICATION: The valves are exercised quarterly using the non-safety turbine valve test controls. This test circuit does not include, the “skid-mounted” fast acting solenoid valves credited to perform the required function of closing these valves to back up the MSIVs. The fast-acting solenoid valves cannot be tested at power, as the turbine controls design assumed these valves would be tested on a Cold Shutdown frequency as documented in Table 3.9-16 of the DCD, and therefore does not support testing of the fast-acting solenoids as part of the online valve testing capability. Operation of the fast-acting solenoids at power would result in a turbine trip.

QUARTERLY PARTIAL STROKE TESTING: None. The safety function solenoid valves do not have the capability for partial stroking.

COLD SHUTDOWN TESTING: Exercise and stroke time closed [and fail-safe test](#) the turbine bypass valves using the fast-acting solenoid valves.